

CANAL RECORD

VOLUME 2

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CANAL



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THE CANAL RECORD

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

August Excavation.

The grand total of excavation during the month of August was 3,252,506 cubic yards, all of which, except 100,035 cubic yards, was taken from the Canal prism. This is 83,666 cubic yards more than the highest previous record for excavation in the rainy season, that of July, 1908, and 227,764 cubic yards short of the highest record, that of March, 1908. There were 26 working days in August, the same number as in July. Of the grand total of August excavation 1,876,515 cubic yards were dry excavation and 1,375,991 by dredges.

The average rainfall in August for the territory in which excavation is in progress was 11.91 inches, as compared with 11.14 inches in the previous month, and with 12.27 inches in August, 1907.

In the Atlantic Division the excavation was 842,788 cubic yards, of which 130,263 cubic yards were taken from the locks' site at Gatun, 57,999 from the spillway, and 638,217 cubic yards by dredges. Compared with July, the steam shovel excavation was 32,303 cubic yards less, largely because excavation in the spillway of Gatun Dam is practically finished, and one shovel was taken off the work at Mindi, while the spoil tracks were being lowered. Of the total excavation by dredges 638,217 cubic yards were taken out of the Canal prism in Limon Bay, and this is the highest record ever made by the Colon dredges.

In the Central Division the excavation was 1,540,610 cubic yards, practically all of which was taken out by steam shovels. As compared with July, this is 73,528 cubic yards more. The old Culebra division is now Culebra section of the Central Division, and the amount excavated in this section was 1,171,927 cubic yards, 50,602 more than in July, 1908, and 385,061 cubic yards more than in August, 1907. In the old Chagres division, now Chagres section of the Central

Division, all previous records were broken by an excavation of 368,683 cubic yards.

All previous records were broken in the Pacific Division by an excavation of 869,108 cubic yards. Of this amount the dredges took out 737,774 cubic yards, while the dry excavation amounted to 131,334 cubic yards.

A detailed statement of the excavation in the three divisions follows:

ATLANTIC DIVISION

Locality.	From Canal Prism	Outside Canal Prism	Total excavation
	cu. yds.	cu. yds.	cu. yds.
<i>Dry excavation—</i>			
Gatun spillway.....		57,999	57,999
Gatun locks.....	130,263		130,263
Mindi.....	16,309		16,309
Total.....	146,572	57,999	204,571
<i>Wet excavation—</i>			
Colon dredging.....	638,217		638,217
Total wet and dry excavation.....	784,789	57,999	842,788

CENTRAL DIVISION

<i>All dry excavation—</i>			
Chagres section.....	366,810	1,873	368,683
Culebra section.....	1,133,153	38,774	1,171,927
Total.....	1,499,963	40,647	1,540,610

PACIFIC DIVISION

<i>Dry excavation—</i>			
Miraflores locks.....	91,065	375	91,440
Pedro Miguel locks.....	21,203	1,014	22,217
Cardenas Hill.....	17,677		17,677
Total.....	129,945	1,389	131,334
<i>Wet excavation—</i>			
La Boca.....	737,774		737,774
Total wet and dry excavation.....	867,719	1,389	869,108

TOTAL EXCAVATION, ENTIRE CANAL

Dry excavation.....	1,776,480	100,035	1,876,515
Wet excavation.....	1,375,991		1,375,991
Total.....	3,152,471	100,035	3,252,506

Rainfall in August.

The rainfall for August, 1908, was not uniform over the Canal prism. The Atlantic Division had an excess of 1.15 inches over the average for the month. The Central Division had a decrease of 1.50 inches from the average for the month. The Pacific Division had an excess of 3.68 inches over the average for the month. At Alhajuela, on the upper Chagres, the excess over the monthly average was 2.85 inches. The rainfall at Bohio for the month was one of the heaviest recorded for August covering a period of 38 years. The previous records have been:

Cristobal.....August, 1883.....	25.43 inches
Cristobal.....August, 1890.....	20.51 inches
Cristobal.....August, 1894.....	23.03 inches
Gatun.....August, 1895.....	24.12 inches
Bohio.....August, 1897.....	25.20 inches
Bohio.....August, 1898.....	33.31 inches
Bohio.....August, 1901.....	24.25 inches
Bohio.....August, 1903.....	20.50 inches
Alhajuela.....August, 1905.....	26.10 inches

The rainfall at Bohio on August 7 was the heaviest for one shower recorded on the

Isthmus since the American occupation. Between 2.30 and 5.30 in the afternoon, 7.62 inches fell.

Maximum recorded during the month:

	Five min.	Ten min.	One hr.
Ancon, August 7.....	.64	1.20	2.89
La Boca, August 7.....	.65	1.24	3.28
Pedro Miguel, August 27.....	.56	1.04	3.30
Bohio, August 7.....	.61	1.15	4.50
Porto Bello, August 7.....	.64	1.18	3.77

August Rainfall for Three Years.

Station.	1906.	1907.	1908.	Avg'e since station rainy estab'd. days.	No.	
<i>Atlantic Division—</i>						
Cristobal.....	18.31	18.89	16.89	15.22	26	
Brazos Brook.....	16.25	17.51	18.19	17.32	27	
Gatun.....		16.37	16.22	18.90	27	
Bohio.....	9.02	9.10	20.50	15.76	28	
<i>Central Division—</i>						
Tabernilla.....		11.34	11.02	11.18	24	
San Pablo.....		10.98	10.70	10.84	24	
Bas Obispo.....		12.20	10.23	10.02	26	
Gambo.....		11.33	12.69	11.84	12.46	26
Empire.....		12.24	11.24	8.11	10.74	24
Camacho Dam.....		12.02	12.17	8.28	10.82	22
Culebra.....		12.97	11.81	7.74	10.73	26
Rio Grande.....		12.61	11.41	7.65	10.83	26
<i>Pacific Division—</i>						
Pedro Miguel.....			9.31		23	
La Boca.....		7.53	8.63	10.48	7.27	21
Ancon.....		6.43	7.46	11.48	7.34	21
<i>Upper Chagres—</i>						
Alhajuela.....		26.10	10.67	16.67	13.79	27

Contract for Gatun Cableways.

A contract for the cableways of the material and concrete handling plant for the Gatun Locks has been let to the Lidgerwood Manufacturing Company of New York, for \$309,000. This contract includes one single unloading cableway and two duplex unloading cableways for the docks, and four duplex cableways for the locks.

The lowest bid received was that of the Balance Cable Crane Company, which was informal, no bond having been given when the bid was made. The plant which the company offered did not comply with the specifications and was unsuited to the work.

The next lowest bidder was the New York Cableway and Engineering Company. Its lowest bid of \$277,800 offered motors for the important part of the work, which were evidently too weak. Another of its bids, \$299,975, remedied the defects in the lowest bid, as to the motors, but offered other parts of the mechanism which did not seem suitable for the work.

The S. Flory Manufacturing Company offered a bid of \$278,400, but the bid was somewhat irregular, in that the total figure did not agree with the total obtained by adding the different items, that total being \$295,340. But apart from this informality, certain parts of the mechanism were such that the guaranteed capacity of the unloading cableways was small as compared with the capacity of the mechanism guaranteed by other bidders, and to accept the bid would evidently have cost the Government more by reason of slow operation than it would to accept the bid of another bidder.

The most favorable bid offered for the

NOTES OF PROGRESS.

(Continued)

Government was that of the Lidgerwood Manufacturing Company, at \$309,000. Upon the recommendation of a committee consisting of Lieut.-Col. H. F. Hodges, Maj. Wm. L. Sibert, and Mr. Geo. D. Brooke, it was determined to accept the last named bid.

Mindi Work at Sea Level.

Excavation at Mindi is down to sea level for practically the whole length of the channel. This work extends from the old French canal at Mile 5 through the Mindi hills, a distance of half a mile, and the channel will be 500 feet wide at grade. Most of the excavation is in argillaceous sandstone. Steam shovel work was begun there in July, 1907, and up to August 1, 560,474 cubic yards had been taken from the prism at this point. There yet remain to be excavated about 1,000,000 cubic yards. It was the original intention to take the excavation down to below sea level with steam shovels, breaking up the remaining rock with numerous blasts of dynamite and then taking the rock out with dipper dredges. This plan was adopted because it was not thought feasible to keep the excavation below sea level dry enough for steam shovels. Experience with the pumping at Santa Cruz and Matachin, where the work has advanced without interruption throughout the rainy season, has led to the decision to continue the steam shovel work at Mindi below sea level. With this end in view a sump is being dug at the north end of the cut and is already down 25 feet. Two old French 10-inch centrifugal pumps, belt-driven by two old French engines, have been installed and it is believed they will prove equal to every demand made by the rainy season and by seepage from the sea and the old French canal. A small stream of water is flowing into the sump at 16 feet below sea level, apparently from the sea, but it is not so large that any difficulty is anticipated in keeping the cut free from water from this source. A track for the dirt trains is being put in at sea level and a parallel track will shortly be put in at a lower level, so that the shovels will not be interrupted by the lowering of the tracks, made necessary by the progress of the excavation. Two steam shovels will be continued at the work for the present.

Gatun Dam Work.

The second experimental dam at Gatun has been finished and 85 inches of water has been turned on to the south, or upstream toe. This represents the 85-foot head against Gatun Dam, as the experimental dam is on a scale of 1 to 12. Sand was pumped into this dam from both the upstream and downstream toes, with the result that the finer particles of silt were deposited about half-way between the toes, forming a core of fine impervious material at the center of the dam. Although the experiment is not completed, the progress so far made shows that the seepage through this dam becomes regularly less as the water advances toward the center, until it is almost nothing at the core.

The borings on the site of the Dam are practically complete, and the test pit, which is down to 90 feet below sea level, will probably not be sunk to a much greater depth. The recent developments merely confirm

the conclusion based on investigations at an earlier period, that the foundation is satisfactory. A report in detail has been made to the Chief Engineer.

The second tier of the trestling has been completed along the rock ridge of the south toe of the Dam at elevation 45, and is rapidly being filled with rock from Bas Obispo, rock and earth from Mindi, and the excavation from the lock sites and the spillway. Excavation in the spillway has been completed and the shovels are now at work cleaning up.

Topographic Map of Central Division.

A base line 3,028 feet long has been accurately measured on level ground at Empire and monuments have been set at each end. Monuments have also been established for the summits of all hills within 4,000 feet of the Canal on each side between Bas Obispo and Pedro Miguel. These, together with the base line, will form a system of triangulation, and the correct altitude of each monument will be determined from levels run from existing monuments. Stadia surveys will then be tied onto the triangulation monuments and the Canal and Panama railroad lines, so that a correct contour and topographic map can be made of the territory surveyed. These surveys are being made at times when engineers are not busy with Canal work, so that no additional men are employed to do this work. The map will be started soon, and when completed will show the general topography, such as hills, streams, reservoirs, houses, Canal and railroad lines on a scale of one to five thousand.

Cutting Into Banks at the Terminals.

At both the Atlantic and Pacific ends of the Canal the dredges have begun to lessen the distance between the two oceans. In Limon Bay two dipper and two old French ladder dredges are working their way into the bank toward the Mindi Hills. They are excavating coral and blue rock to a depth of 20 feet. As the channel is being made through the dry land, the rock is blasted in advance, and up to the present no subaqueous blasting has been necessary. These dredges will be followed by the sea-going suction dredge *Ancon*, which will work in the mud below the rock strata, and carry the channel down to 40 feet.

At La Boca, the Pacific end of the Canal, ladder dredge No. 14, one of the old French dredges, has been moved to a point opposite the end of the Panama railroad wharf, and is at work on the west bank, opening a channel 14 feet deep at low tide. The sea-going ladder dredge *Gopher* is widening the first cut in the reef at the entrance to the harbor and when this work is finished will join dredge No. 14 in cutting the channel into the main land. The two will be followed by the sea-going suction dredge *Culebra*, which will lower their cut to a depth of 45 feet at mean tide.

Fresh Fruit and Vegetables.

After September 12, cold storage deliveries from New Orleans to the Subsistence Department on the Isthmus will be made every week instead of once in ten days, as heretofore. This saving of three days will make it possible to keep a better stock of fruits, and also to replenish the vegetable supply more frequently. The *Cartago*, which arrived

August 27, brought 30 boxes of lemons, 5 tons of onions, 100 bunches of leeks, 5 bushels of okra and 1,000 watermelons. The *Advance* which arrived August 29, brought one ton of lettuce, one ton of tomatoes, 20 bushels of cucumbers, 400 dozens of green corn, 2,000 cantaloupes, and 20 barrels of apples. There are due on September 2, one ton of lettuce, 100 bunches of celery, 20 tons of cabbage, 4 tons tomatoes, ½-ton carrots, 20 bushels cucumbers, 60 tons potatoes, ½-ton beets, ½-ton summer squash, 500 pounds cauliflower, 50 crates cantaloupes, 80 crates peaches, 20 barrels apples. There are due on September 8, one ton lettuce, 200 bunches celery, 20 bushels cucumbers, 25 dozen green corn, 100 pounds green lima beans, 15 crates cantaloupes and 50 crates peaches.

Frogs, Switches and Switchstands.

R. Budd, chief engineer, Panama railroad; A. S. Zinn, Resident Engineer, Central Division, and E. J. Banta, mechanical engineer, have been appointed a committee to prepare standard specifications for frogs, switches and switchstands. It is probable that two grades will be provided, the better grade for the Panama railroad main tracks and ballasted tracks of the Isthmian Canal Commission, and the second grade for side tracks and spurs on the Panama railroad and the temporary tracks on Canal work.

Wreck at Gorgona.

Engine 604, drawing a loaded train of Lidgerwood flats, ran into the rear of a train drawn by engine 206 at Gorgona at 4.20 o'clock on the afternoon of August 28. Engine 604 was thrown off the track and overturned and two cars were derailed. The engineer and fireman crawled out of the overturned locomotive unhurt, and no one was seriously injured in the wreck. One thousand five hundred dollars will cover the damage done to locomotive and cars. Although the loss is slight and the injuries almost negligible, this wreck is noteworthy because it is the first time in seven months that an engine of the Central Division has been overturned, on the main line, although dirt trains are run within sight of one another eight hours a day.

Flood Stages in the Chagres.

Maximum height of Chagres above low water for the week ending midnight, August 29, 1908:

	STATIONS.				
	Vieja.	Alhajuela.	Gambau.	Bolito.	Gatun.
Height of low water above mean sea level, feet.....	129	92	46	0	0
Maximum height above low water:					
Sunday, Aug. 23....	.69	1.88	2.25	6.05	2.40
Monday, Aug. 24....	.90	1.55	2.00	5.55	2.04
Tuesday, Aug. 25....	.85	1.80	2.30	5.50	2.50
Wednesday, Aug. 26....	.52	2.01	3.10	5.45	1.70
Thursday, Aug. 27....	.55	2.85	3.50	4.30	1.90
Friday, Aug. 28....	.80	1.69	2.75	6.60	1.90
Saturday, Aug. 29....	.72	.....	2.75	6.34	2.05

The work of stopping the crevices in the side hills in Comacho reservoir has been finished and the reservoir is now filling with water.

HYDROPHOBIA.

Recommendations of the Sanitary Department in Regard to It.

Rabies or hydrophobia is a fatal infectious disease, transmitted by the bite of a rabid animal. It is most common among dogs, cats, cattle and horses, in the order named, although many other animals are liable to the disease, and when so diseased all may transmit it to man in biting. Precautions should be taken therefore against bites from any such animals.

When a dog is becoming rabid it is noticed by those who are familiar with him that his character has rather suddenly altered. A lively dog mopes and is depressed. A dull and quiet dog becomes restless or affectionate.

About 85 per cent of dogs developing rabies become restless, excited and more or less vicious and furious, their voice is altered and they sooner or later show some tendency to rush about tearing and biting whatever is in their way. They will bite their master or any other person and will bite and swallow pieces of wood, clothing, glass, nails, etc. During this stage the dog may travel long distances biting dogs and other animals and thus spreading the disease. Later the dog becomes paralyzed, the paralysis generally appearing first in one or both of the hind legs. The jaw drops, saliva drools from his mouth and his eyes are staring. He soon becomes quite exhausted from his fury and from the spasmodic contraction of muscles, becoming completely prostrated before death.

The remaining 15 per cent become paralyzed almost without any symptoms of excitement. These dogs creep into some dark corner and die in two or three days.

Rabies in the dog lasts usually four or five days, but the course of the disease may be as short as two or as long as ten days.

The period between the receipt of a bite and the development of symptoms in a dog is usually one to two months. The period may, however, be greatly prolonged, even to twelve months, so that the period of quarantine for dogs should be at least twelve months.

If a person is bitten by a dog that subsequently—within two or three days—develops symptoms of rabies, that person is in danger of contracting the disease, because a dog's saliva is virulent, *i. e.*, contains the virus of rabies two or three days before the symptoms of excitement, etc., appear.

The dog's saliva being virulent at this period and during the period of active symptoms, precautions should be taken to prevent saliva from the dog's tongue or mouth getting into a fresh cut or abrasion on one's hand or other exposed part.

Wounds made by rabid animals should be treated immediately by cleansing with very warm water, followed by careful cauterization with a hot iron or carbolic or nitric acid under the direction of a physician.

A person bitten by a rabid animal should immediately present himself for the Pasteur preventive treatment for hydrophobia, or make arrangements for taking the treatment in some one of the institutions in the United States. Any delay may be attended by the gravest danger.

A dog or other animal suspected of having rabies should, when it is possible, be closely

confined and kept under observation for ten days, because if rabid it will certainly die within this period.

All animals bitten by a dog suspected of having rabies should be confined until the results of microscopic examination of the dog's brain are known, when if negative, they may be released—if positive, destroyed or quarantined.

It is of the greatest importance that all dogs suspected of being rabid and known to have bitten persons or animals should be confined and kept under observation; if that be impracticable the dogs should be killed, and their bodies sent immediately, or packed in ice and sent as soon as possible, for diagnosis to the Board of Health Laboratory, Ancon Hospital.

Under no circumstances should dogs or other animals, suspected of having rabies, be destroyed by burning or burial until it has been positively ascertained that no persons or animals have been bitten.

When it is certainly known that the suspected dog or animal has not bitten persons or animals the dog or animal may be destroyed, preferably by burning and immediate burial.

Rabid dogs should not be shot through the head as that interferes with subsequent examination of the brain.

During the past ten months rabies has spread to several places in the Canal Zone, from Panama to Mount Hope, so that every one should regard stray dogs, cats and other animals with suspicion as possible conveyors of the rabid virus.

LETTERS FROM THE LINE.

Labor Day at Empire.

THE CANAL RECORD:

The mechanics of Empire and the rest of the Zone respectfully invite all white employes of the Isthmian Canal Commission and Panama railroad to take part in the picnic and dance to be given at Empire September 7, 1908. A band will play good music day and night. Refreshments will be served all day long, some good speakers will speak briefly and to the point, and at night there will be a dance. The morning exercises will include a parade and athletic games, and in the afternoon a baseball game will be played between the boilermakers and machinists. Special trains will be arranged for to accommodate people from along the line who wish to stay for the dance. A ticket entitling the holder and his family, or his lady friends, to admission, both to the games and to the dance are being sold at \$2 gold a piece by the following committee: L. H. La Noue, R. W. Cook, H. Surtees, Chas. Poultney, G. M. Earle, Patrick Kelly, William Fox, J. W. Fein, all of Empire shops.

R. W. COOK,
Secretary.

Empire, C. Z., August 28.

A Masonic Stag Party.

THE CANAL RECORD:

The Empire Masonic Club will hold a stag party and entertainment on September 9, at the new fraternal ball at Empire. The entertainment will consist of selections by local talent and after it is over a smoker will be held at which refreshments will be served. The entertainment will begin at 7.30 o'clock in the evening. Brothers let the good spirit move you. Don't fail to attend.

ENTERTAINMENT COMMITTEE.

Empire, C. Z., August 29.

OFFICEHOLDERS AND POLITICS.

Warning Against Political Assessments and Partisan Activity.

At the request of the United States Civil Service Commission, publicity is given to the following abstract of a pamphlet published by that Commission relative to political assessments and the partisan activity of officeholders:

Persons in the employ of the United States Government while retaining the right to vote as they please and to express privately their opinion on political subjects shall take no active part in political management or political campaigns.

Employes of the Isthmian Canal Commission will be subject to discharge for political activity.

The following forms of activity have been held to be forbidden by the provisions of law:

Service on political committees; service as delegates to county, State, or district conventions of a political party, although it was understood that the employes were not "to take or use any political activity in going to these conventions, or otherwise violate the civil service rules;" continued political activity and leadership; the publication of a newspaper in the interests of a political party; holding office in a club which takes active part in political campaigns and management; the circulation of petitions having a political object; service as a commissioner of election in a community where it was notorious that a commissioner of election must be an active politician; accepting nomination for a political office with intention of resigning from competitive service if elected.

Existing laws in the United States provide as follows:

No person in public service is for that reason under any obligations to contribute to any political fund, or to tender any political service and will not be removed or otherwise prejudiced for refusing to do so. No person in said service has any right to use his official authority or influence to coerce the political action of any person or body.

No officer or employe of the United States Government shall discharge, promote or degrade, or in any manner change the official rank or compensation of any other officer or employe, or promise or threaten so to do, for giving or withholding or neglecting to make any contribution of money or other valuable thing for any political purpose.

No officer or employe of the United States Government shall directly or indirectly give or hand over to any other officer or employe any money or other valuable thing on account of or to be applied to the promotion of any political object whatever.

No person shall, in any place occupied in the discharge of official duties by any officer or employe of the United States Government, solicit in any manner whatever, or receive, any contribution of money or other thing of value for any political purpose whatever.

Any person who shall be guilty of violating any of the above provisions shall be guilty of a misdemeanor, and shall on conviction thereof be punished by a fine not exceeding \$5,000, or by imprisonment for a term not exceeding three years, or by such fine and imprisonment both, in the discretion of the court.

Liquor Saloons Closed Labor Day.

It is ordered and directed, by the Isthmian Canal Commission, that all saloons and public drinking places in the towns of Las Cascadas, Empire and Culebra, be closed, and that no liquor be sold by them between the hours of 12 m., Sunday, September 6, and 6 a. m., Tuesday, September 8, 1908.

GEO. W. GOETHALS,
Chairman.

D. D. GAILLARD,
WM. L. SIBERT,
JO C. S. BLACKBURN,
W. C. GORGAS,

Members of the Isthmian Canal Commission.

NOTE: Civil Engineer H. H. Rousseau and Mr. Jackson Smith, members of the Commission are absent in the United States.

Culebra, August 27, 1908.

The best record for excavation in one day in the Central Division during August was made August 28, when 60,210 cubic yards, car measurement, of rock and earth were taken out.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION.
MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	62,835	.....	62,835	.....
February.....	65,632	.....	65,632	.....
March.....	21,430	.....	21,430	.....
April.....	54,333	.....	54,333	.....
May.....	32,092	.....	32,092	.....
June.....	34,515	.....	34,515	.....
July.....	731	.....	731	.....
August.....	15,257	.....	15,257	.....
September.....	28,537	.....	28,537	.....
October.....	41,078	.....	41,078	.....
November.....	40,003	.....	40,003	.....
December.....	46,945	.....	46,945	.....
Totals.....	172,851	.....	172,851	403,932

Total to September 1, 1908—576,783 cubic yards.

COLON—DREDGES.

Months.	1906*		1907		1908	
	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism
January.....	90,700	.....	111,100	.....	444,403	46,298
February.....	105,500	.....	110,002	.....	401,887	25,835
March.....	126,650	.....	84,145	.....	515,223	31,663
April.....	87,200	.....	69,889	.....	496,366	.....
May.....	64,875	.....	133,847	.....	564,386	.....
June.....	60,700	.....	107,118	.....	572,749	.....
July.....	73,500	17,000	104,322	5,600	625,497	.....
August.....	58,050	69,000	189,170	5,127	638,217	.....
September.....	53,153	54,000	403,842	.....	.....	.....
October.....	48,837	123,540	409,632	.....	.....	.....
November.....	38,000	63,260	417,297	5,500	.....	.....
December.....	92,250	58,400	428,053	14,782	.....	.....
Totals.....	399,820	1,027,645	1,969,316	652,598	4,258,728	103,796

Total to September 1, 1908—8,411,903 cubic yards.

* No work done inside of Canal Prism.

There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Months.	1906*		1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	47,539	.....	70,177	.....	193,567	98,588
February.....	70,177	.....	100,151	.....	176,251	106,596
March.....	103,459	.....	70,528	.....	202,765	171,835
April.....	70,528	.....	138,915	.....	196,109	177,347
May.....	71,181	3,832	116,998	127,952	138,915	127,952
June.....	59,557	14,628	136,816	76,543	116,998	127,953
July.....	78,357	26,866	130,263	57,959	136,816	76,543
August.....	87,425	36,318	.....	.....	130,263	57,959
September.....	3,065	.....	.....	.....	.....	.....
October.....	11,517	.....	.....	.....	.....	.....
November.....	12,066	.....	.....	.....	.....	.....
December.....	26,628	1,107,559	232,620	.....	1,291,622	944,703
Totals.....	626,228	1,291,622	1,291,622	944,703	4,258,728	1,037,956

Total to September 1, 1908—3,603,132 cubic yards.

* No work done outside of Canal Prism.

CENTRAL DIVISION.

CULEBRA SECTION—STEAM SHOVELS.

Months.	1904	1905	1906	1907	1908
	January.....	70,650	120,990	566,750	1,227,022
February.....	.....	75,200	168,112	639,112	1,248,265
March.....	.....	132,840	239,178	815,270	1,290,885
April.....	.....	126,749	215,177	879,527	1,242,574
May.....	27,556	75,935	196,209	690,365	960,840
June.....	32,551	76,905	212,623	770,570	1,134,032
July.....	31,599	78,570	159,789	770,570	1,121,325
August.....	35,056	49,210	244,823	786,866	1,171,927
September.....	25,220	44,085	291,452	753,468	.....
October.....	19,695	52,940	327,009	834,499	.....
November.....	28,860	60,540	221,642	790,632	.....
December.....	42,935	70,630	307,689	1,025,485	.....
Totals.....	243,472	914,254	2,702,991	9,177,130	9,396,870

Total to September 1, 1908—22,434,717 cubic yards.

CHAGRES SECTION—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	169,447	.....	169,447	.....
February.....	200,145	.....	200,145	.....
March.....	324,233	.....	324,233	.....
April.....	329,483	.....	329,483	.....
May.....	235,902	.....	235,902	.....
June.....	322,115	.....	322,115	.....
July.....	345,757	.....	345,757	.....
August.....	2,900	.....	2,900	.....
September.....	21,546	.....	21,546	.....
October.....	25,627	.....	25,627	.....
November.....	44,044	.....	44,044	.....
December.....	98,682	.....	98,682	.....
Total.....	1,293,922	.....	1,293,922	1,873

Total to September 1, 1908—2,488,564 cubic yards.

FRENCH AND AMERICAN RECORDS.

Highest elevation on new center line of Canal before excavation began by the French:
At Culebra..... 312
At Bas Obispo..... 233

Greatest depth of excavation by the French:
On I. C. C. axis—At Culebra..... 161
At Bas Obispo..... 148

Greatest center-line depth remaining to be excavated when Americans took control in order to reach the bottom of an 85-foot level Canal:
At Culebra—At same point as before..... 111
At barrier on Contractor's Hill..... about 140
At Bas Obispo..... about 45

Total excavation by the French at all points and including diversion channel..... about 81,548,000
Amount excavated under American control to September 1, 1908:
In Culebra Cut..... 22,434,717
By steam shovels..... 29,872,308
By dredges..... 17,475,123

Total by steam shovels and dredges, entire canal..... 47,347,431

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....
February.....
March.....
April.....
May.....
June.....
July.....
August.....
September.....
October.....
November.....
December.....
Totals.....	11,094

Total to September 1, 1908—58,093 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	7,203	.....
February.....	38,661	.....
March.....	67,963	.....
April.....	22,261	.....
May.....	54,606	.....
June.....	68,691	.....
July.....	87,675	.....
August.....	91,065	.....
September.....
October.....
November.....
December.....
Totals.....	508,125	35,294

Total to September 1, 1908—543,419 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at the La Boca locks and dams in 1907, and 89,367 cubic yards at Cardenas Hill in March, April, May, June, July and August, 1908.

LA BOCA—DREDGES.

Months.	1906*		1907		1908	
	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism
January.....	95,940	.....	94,710	.....	460,250	.....
February.....	95,940	.....	93,480	.....	663,570	.....
March.....	116,520	.....	92,319	.....	581,250	.....
April.....	110,700	.....	104,585	.....	476,589	.....
May.....	112,340	.....	122,157	.....	530,691	.....
June.....	50,676	62,667	64,352	69,123	656,691	.....
July.....	41,533	98,400	108,338	.....	606,170	.....
August.....	54,350	108,338	168,284	.....	737,774	.....
September.....	114,308	108,780	187,625	9,250	.....	.....
October.....	51,856	92,780	384,123	.....	.....	.....
November.....	71,076	90,528	.....	.....	.....	.....
December.....	71,094	.....	.....	.....	.....	.....
Totals.....	485,153	1,191,233	1,557,695	586,094	5,204,620	.....

Total to September 1, 1908—9,024,795 cubic yards.

* No work done inside Canal Prism.

PORTO BELLO.

Village, Quarry, and Crusher Plant.

Two million yards of crushed rock will be required for concrete in the locks at Gatun and the spillway in Gatun Dam. To supply this rock a quarry is being opened at Porto Bello, a harbor on the Caribbean Sea, eighteen miles east of Colon. Primarily the reason for selecting this place was that the rock here, a massive andesite, is well suited for concrete, while the quantity is practically unlimited, enough, in fact, not only for the works at Gatun, but also for a breakwater at the Atlantic entrance to the Canal, if it be deemed wise to build one. An exploration by means of borings justifies an estimate of 20,000,000 cubic yards of good rock. Other considerations were that it is within 25 miles of Gatun, nearer than any other suitable deposit, water transportation is cheap, the harbor at Porto Bello is unexcelled, and the rock can be sent from the quarry to the crusher, and from the crusher to the conveying system by gravity, and, therefore, the handling expense will be light.

Porto Bello proper is a native settlement of some four hundred people, located on a land-locked bay one and a half miles long and half a mile wide, and in Panamanian territory. A survey made in 1903 by a detail from the U. S. S. *Atlanta*, shows a depth of from 5 to 15 fathoms in practically all the harbor. Where the Commission dock has been built the water is from 2½ to 4 fathoms deep. From the sixteenth century until the building of the Panama railroad this was the Atlantic port for overland traffic across the Isthmus. The old pack trail joined the Cruces trail at Cruces, where also the water traffic up the Chagres from Fort Lorenzo was transhipped. Some ruined forts on both sides of the bay attest that the Spaniards at an early date thought the port well worth guarding. A more modern fortress on the south shore, next to the native town, bears the date 1756. Near this fort are three churches, one still in use and another bearing marks of recent construction. The third is a ruin, but not even the sight of pigs wandering contentedly around its courtyard can divert of beauty the loggia with its dozen arches.

The quarries are being opened on the hill that rises almost sheer from the water, on the north shore of the bay, well inside the harbor, and nearer the sea than the American settlement. At an elevation of 85 feet a 45-ton steam shovel is digging a terrace around the hill for the double track system to the crusher house. Excavation for the crusher plant, and grading for the railway track into the quarry is in progress. This shovel was lifted from sea level up an incline 120 feet long, on part of which the grade was 66 per cent. A track was laid up the hill, an anchorage or "dead man" was buried at the top of the incline, and a double cylinder, double drum hoisting engine of 30 rated horsepower, located at the foot of the hill, supplied the power, use being made of an eight-part tackle.

At an elevation of 260 feet above sea level a Decauville railroad is in operation, distributing material along the 3,500 feet of hillside that it is proposed to strip. Material is sent to the 260-foot level by a trolley, operated by a hoisting engine at the foot of the hill. Stripping will be done hydrau-

lically, and to this end a 10-inch hydraulic line has been run from elevation 4 to elevation 260, and 3,500 feet along the terrace at elevation 260. On the steep incline the pipe is anchored in concrete piers about 150 feet apart. A pump capable of delivering 1,500 gallons of water per minute against a total stack and friction head of 460 feet has been installed on the shore, with an intake from the bay. Steam for this pump will be furnished by two boilers of 370 rated horsepower, now ready for operation.

From the quarry, running from elevation 85 to 260, rock will be delivered at the crusher plant at elevation 85. This plant will consist of two No. 9 and four No. 6 McCully crushers which are now on the ground ready for erection. A double transmitting pan-conveyor will take the crushed rock from the crusher to a hopper beneath the shipping bin located on the water line. This hopper empties into a double distributing bucket-conveyor which elevates the crushed stone and delivers it, by means of trippers, at the points desired in the bin. Foundations have been installed for the bin and coal bunkers. The stone bin will have a capacity of 2,400 cubic yards and the coal bunkers of 1,000 tons. From the bin the stone will be loaded by gravity onto the barges. Twelve barges and three tug boats will be employed in the service between Porto Bello and Cristobal. Each barge will carry 600 cubic yards of rock, and it is intended to deliver ultimately 2,400 cubic yards per day. Delivery will be begun by January 1, 1908.

At present the drilling is being done by Star drills, but as soon as one air compressor is installed, pneumatic drills will be used. A permanent 6-inch air line has been laid at elevation 260 to supply air to all parts of the quarry. A 2-inch water supply line is also being laid to elevation 288. Tanks with a capacity of 10,000 gallons will be erected at this elevation and kept filled by pumping from the water main. From these tanks the quarters above the reservoir level will be supplied by gravity, as will steam shovels and drills in the quarry from a line laid at elevation 260. A 25-ton derrick has been erected on the dock.

Between the hill in which the quarry is being opened and the hill that forms one side of the reservoir, is a shelf of land 2,000 feet long and only a few feet above the water.

On this shelf are located the docks, the boiler and engine house, shipping bins, coal bunkers, a machine shop, storehouse and other buildings that form the quarry plant. At a point where the shelf is a few hundred feet broad, the Commission village is located. Besides the manufacturing plant, it consists at present of six barracks for laborers, a mess kitchen for colored laborers, and a European laborers' mess, a type 5 hotel and bachelor quarters, a type 18 bachelor quarters, a tent hospital, and on a hill looking down on the village on one side and into the reservoir ravine on the other, four type 14 houses and three type 17 houses.

The population on August 15 was 612, of whom 8 were nonemployees. There are three families, 80 gold employees, 190 European laborers, 60 East Indians and 260 negro laborers.

Operations at the quarry had been in progress several months when the sanitation work was begun in January, 1908. Malaria of a virulent type had become recurrent. In

the week ending May 18, the number of malaria patients sent to the hospital was 9.9 per cent of the population, and in the week ended August 15, the percentage had dropped to 2.3. The type of malaria has become less severe and the number of recurrent cases is small. This improvement was brought about by establishing good latrines, piping water from a temporary reservoir in the hills and boiling it, cleaning the settlement of brush and using oil to prevent the breeding of malaria-carrying mosquitoes. A good sewer system has been installed and all of the buildings in use have already been connected with it.

To furnish a permanent supply of wholesome water a concrete dam of the gravity section type has been built across a mountain stream. This dam, 46 feet wide at the base, 258 feet long at the crest, and 77 feet high, crest 105 feet above sea level, foundations running down to elevation 28, and containing 5,052 cubic yards of concrete, was built in 37 days. The force engaged in its construction was divided into two sections of 50 men each, one section being at work in the sand and gravel pit loading cars, and the other in mixing and placing the concrete. The sand and gravel were dredged from the bay and pumped ashore to a bank. From here it was shoveled into Decauville cars and hauled up the tramway to a point above the mixing platform, the cars in trains of four or five being hauled by a hoisting engine stationed at the top. The gravel bank elevation was about +5, and the cars were dumped from elevation 110. From the dumping platform the material was shoveled over a 1-foot bulkhead on to a set of double screens arranged one above the other. The sand passed through the upper screen, and sand so fine as to be unsuitable for concrete work passed through the lower screen and was wasted down the hill. The gravel passed over the upper screen, and the materials were mixed in proper proportions on the mixing platform at elevation 88.5. A Chicago cube concrete mixer of two-thirds of a yard capacity was used. Water is supplied by gravity to all the buildings in the village except the family quarters located on a hill above the reservoir, which are supplied by pumping. The reservoir has a capacity of 27,000,000 gallons, and is now full of water.

Examination for Examiner of Accounts.

The Isthmian Civil Service Board will hold in the office of the Chairman at Culebra, at 9 a. m., September 3 and 4, 1908, an examination for the position of Examiner of Accounts under the Interstate Commerce Commission, at salaries ranging from \$1,800 to \$3,000 per annum, and traveling expenses. This examination is open to citizens of the United States who have had high grade training and experience in railroad accounting. An advertisement containing a description of the examination and other information of interest to applicants has been posted in every post-office in the Canal Zone.

The printed application form can be had upon application to the Secretary of the Isthmian Civil Service Board, office of the Chairman, Culebra, Canal Zone.

A stack 100 feet high, 6 feet in diameter, made of 1-4 and 3-16-inch steel, was raised at the new air compressor plant at La Boca, August 27. It was built on the ground and raised in one piece.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Empire Woman's Club opened the season with a regular meeting on September 1. The line of work for the coming year has been divided into the following departments: Educational and philanthropic, with Mrs. A. Hillermen and Mrs. Ash as chairmen; home and social, Mrs. E. P. Worrall chairman, with Mrs. H. C. Ball assistant. The home and social department is large and has been divided into several sub-departments.

The meeting on Tuesday opened with a reading of the club creed, followed by a talk on extravagance versus economy, at the close of which there was an address by Mrs. Lorin C. Collins, president of the Zone Federation, who was the guest of honor. Several musical numbers were given. Subsequent meetings will be held every Tuesday at the clubhouse at 3 o'clock. The musical and literary department has charge of the meeting September 8, and the educational and philanthropic department on the 15th. A reception will probably be given to the returning president, Mrs. F. W. Miracle, on September 22.

The Las Cascadas Woman's Club has decided to hold its meetings at the residences of the members for the next three months, instead of taking a recess for that period, as was suggested. The meetings are much enjoyed and the interest in the club keeps up to the work. At the last session, held August 27, at the residence of Mrs. Charles Lingo, 19 members were present. The club greatly regrets the loss of its president, Mrs. O. G. Randall who has removed to Empire.

Work on the new church and lodge building is rapidly going forward and club women are anticipating pleasant quarters when it is completed. A committee of members of the club was asked to name a site for which they had preference and their choice was the site decided upon.

The Ancon Woman's Club holds its regular meeting Wednesday, September 2. The principal business will be the nominating of officers for the annual meeting, the first Wednesday in October.

The Culebra Woman's Club is scheduled to open its regular season on Thursday, September 3.

A dance, given by the nurses of Ancon Hospital in the "Anconita" Saturday night, August 29, was enjoyed by about 50 couples. The Ancon orchestra furnished music and refreshments were served.

The Tivoli Club will give a dance at the Hotel Tivoli, September 12, in honor of President-elect José Domingo de Obaldia and Mrs. Obaldia.

Concert.

By the I. C. C. Band at the Hotel Tivoli, Ancon, Sunday, September 6, 1908, at 7.30 p. m.:

PROGRAM.

- | | |
|--|-----------|
| 1 March— <i>Salute to the Flag</i> | Pierson |
| 2 Selection— <i>The Whistler and His Dog</i> | Pryor |
| 3 Flower Song— <i>Delicia</i> | Frantzen |
| 4 Waltz— <i>Haunting Eyes</i> | Tobani |
| 5 Duet for Clarinets— <i>Nanine</i> | Marsal |
| MESSRS. GRAY AND HALE. | |
| 6 Selection— <i>Maritana</i> | Wallace |
| 7a Caprice— <i>The Whistler and His Dog</i> | Pryor |
| 7b Bolero— <i>Spanish Gavoty</i> | Eino |
| 8 Overture— <i>If I Were King</i> | Adam |
| 9 Descriptive— <i>A Hunting Scene</i> | Bucalossi |
| 10 March— <i>Arbitrator</i> | Bagley |

CHAS. E. JENNINGS, Musical Director.

A concert will be given at Gorgona, C. Z., on September 13.

PERSONAL.

Commissioner H. H. Rousseau, accompanied by his wife and mother, are due to arrive on the *Alliance*, September 2. On the same ship are also Hiram J. Slifer and two daughters, and M. B. DePatron, Assistant to the Chairman.

Mr. George D. Brooke, Superintendent of Motive Power and Machinery, left on his vacation in the States on August 30.

Mr. Caleb M. Saville, assistant engineer, left on his vacation August 30. On his return Mr. Saville will be stationed at Culebra.

Dedication of Chapel at Empire.

The dedication of the Commission Protestant chapel at Empire took place under the auspices of the Empire Christian League on Sunday, August 30, at 2.30 p. m., a Sunday school rally having been held on the morning of the same day. Both services were largely attended. Rev. J. H. Sobey, resident chaplain, was in immediate charge and visiting clergymen were Archdeacon Bryan and Rev. J. L. Wise. Among the speakers were Hon. H. A. Gudger, A. L. Stuntz, J. C. Forman and A. Bruce Minear. Musical selections were given by Mrs. Adolf Faure and the Lotus Glee Club. This is the fifth of the Commission "type church and lodge" buildings to be completed. The others are at Cristobal, Gorgona, Paraiso, and Culebra.

The Empire Christian League was organized in January, 1908. It is entirely undenominational and visiting ministers are privileged to conduct the services, in form as well as in doctrine, according to their own judgment and discretion, and at the close of any public service are permitted to gather the members of their own denomination together for any special ordinance of their faith. The resident chaplain officiates at all the services save one Sunday in the month, when a visitor is in charge. The Sunday school and Young People's Christian Union are under the supervision of the League, and all the literature provided in both is, as far as practicable, undenominational.

Church at Culebra.

The corner stone of the Roman Catholic Church, built on ground donated by the Commission, was laid at Culebra, August 30, by the Bishop of Panama, assisted by Commission chaplain, Rev. Father Collins. Short addresses were made by the Bishop and by Father Collins, and music was furnished by the I. C. C. band.

Atlantic Division Storehouses.

Two storehouses, 50 feet by 200 have been authorized for the Atlantic Division. One will be built at the dry dock in Cristobal and will be used for the storage of dredge parts and material for the ships and floating equipment on the Atlantic side. The other storehouse will be built alongside the docks at Gatun, where cement, stone, sand, and other material will be delivered for the Gatun Locks. Both these storehouses will be convenient to water and rail transportation.

On Saturday evening, September 5, the Pacific Masonic Club will give a smoker in the hall above the office of the Quartermaster's Department, Ancon. All American Masons of Corozal, La Boca, and Ancon are requested to be present.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The Lotus Glee Club will give the following return recitals: September 5, Cristobal; September 7, Culebra; September 8, Gorgona.

CRISTOBAL.

Basketball enthusiasm is again at a high pitch, and a local tournament is being organized preparatory to the development of a first team.

Mr. Geo. H. Wolbrecht gave another exhibition of chess playing on Monday night. He played twenty-four games during the evening, winning all excepting two, one a draw with Mr. E. M. Fechtig, and one in which he was beaten.

Mr. L. B. Cundiff, a physical director of several years' experience, has been secured to take up the work as assistant secretary in charge of the physical work at the Cristobal Y. M. C. A. Mr. Cundiff is expected to take up his work in a few days.

The orchestra from the steamship *Prinz August Wilhelm* gave a concert at the clubhouse last Monday night.

About six hundred circulars, containing a statement of the privileges offered by the Cristobal Y. M. C. A., were sent out this week to employes of the Commission who were not members. As a direct result, a considerable number of men have joined since receiving the circular.

EMPIRE.

A class was organized August 25 to study mechanical drawing and mathematics. It started with a membership of twenty, with Mr. Hampton, of the Mechanical Division, as leader. All men of Empire, interested in this study, are invited to join the class. One result of the new class is an addition of eleven members to the Y. M. C. A.

Open house was kept Monday evening, August 31, when a program by local musicians, assisted by the Norcross orchestra, was given.

Thursday evening, September 3, the Lotus Glee Club of New York will entertain, and Friday a dual meet will be held between the boys of Corozal and Empire.

It is expected the duckpin tournament will close September 7. Ten men out of the 31 entered have played their share of games, and 710 games have been rolled. The high record has been broken again by L. A. Durand, with 118.

The tenpin high score last week was rolled by Perry Brown, who made nine strikes and two spares, his score being 253.

I. O. R. M. Convention.

The eight tribes of Improved Order of Red Men will hold a convention in Colon on September 6, for the purpose of forming a Great Council of the Order on the Isthmus. A special train will leave Panama about 7 o'clock a. m., and will make stops of about one hour's duration at each of the stations along the line in which a tribe resides. All Red Men, their families, and all interested pale-faces are cordially invited to attend.

Misdirected Letters.

Division of Dead Letters.

Ancon, C. Z., September 2, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Adams, J. S.	Mannoni, L.
Barrett, Nelson M.	Merriett, Walter J.
Bell, Miss Alviria	Morse, I. V.
Bruck, Harry W.	Mullane, D.
Carson, Arthur (3)	Nalligan, Thomas
Clips, Sophia	Noland, C. P.
Dallow, Arthur	Pearson, Mr. and Mrs.
Fletcher, William	Herbert
Gibson, Loretta	Pfueger, E. B.
Golson, Miss C.	Phillip, Miss C.
Harrison, Miss Vera	Power, W. L.
Hopkins (6)	Sanderson, Frank E.
Lee, Mrs. Ernest E.	Simpson, Henry
Lund, Lars J.	Westberg, J. E.
Macfarlane, Mrs. T. W.	

The *Niara*, which arrived August 27, brought the following cargo for canal work: Seven hundred and fifty-one boiler tubes, 30 split switches, 20,000 cases 45 per cent dynamite, 905 steel bars and angles, 3,000 pairs angle plates, 2,631 rails, and 1,331 pieces castings.

The following were the arrivals and departures at the port of Ancon in the week ending August 28:

Arrivals—August 23, *Chile*, from Valparaiso.
Departures—August 25, *Mapocho*, to Valparaiso;
U. S. S. *Milwaukee*, to Anapala; August 28, *Quito*, to Buenaventura.

OFFICIAL CIRCULARS.

Labor Day a Holiday.

CIRCULAR No. 198:

Labor Day, Monday, September 7, 1908, will be observed as a holiday throughout the Canal Zone, and, as far as possible, all work will be suspended on that day.

Geo. W. Goethals,
Chairman.

Culebra, C. Z., August 27, 1908.

Transfer of Duties—Disbursing Officer and Examiner of Accounts.

CIRCULAR No. 183B:

Effective October 1, 1908: With the approval of the Secretary of War, the following duties assigned by Executive Order dated August 15, 1907, to the Disbursing Officer on the Isthmus and the Examiner of Accounts, are hereby transferred as indicated below:

1. To the Chief Quartermaster is assigned the duty of keeping property accounts with the various officers upon the Isthmus charged with the custody and use of property. The Disbursing Officer is relieved of that duty, and the Examiner of Accounts is relieved of the duty of annually verifying property accounts by an inventory of all property.

2. The Chief Quartermaster is charged with the duty of receiving and examining returns of property in the custody of all officers on the Isthmus, and shall perform all duties concerning property accounts required by the Act of Congress of March 29, 1894, under such rules and regulations as may be approved by the Secretary of War, and perform such other duties relative to the property of the Commission as may be ordered by the Chairman.

3. The Disbursing Officer on the Isthmus shall be charged with the disbursement of the funds of the Commission upon pay-rolls and approved vouchers after examination by the Examiner of Accounts, and shall have access at all times to the books, papers and records of the Examiner's office. The accounts of the Disbursing Officer shall be sent to the Examiner of Accounts as soon after the close of each month as practicable, and after the administrative examination thereof by the Examiner, the latter officer shall forward them to the Auditor for the War Department.

4. The Disbursing Officer on the Isthmus shall collect accounts and claims due the Commission, upon their transmission to him by the Examiner, and such accounts and claims shall be sent by the several departments in which they originate to the Examiner. The Disbursing Officer shall receive, safely keep, pay over, and account for as required by law and regulations, all funds that may be collected by him or paid to him.

5. The Disbursing Officer on the Isthmus shall receive all issues of coupon books and meal tickets, subject to verification of numbers and values at the time of receipt by the Examiner, who shall charge the Disbursing Officer with the same. The Disbursing Officer shall forward such books and tickets to timekeepers and others, upon requisitions therefor approved by the Examiner, and under rules prescribed by the Chairman. The Disbursing Officer and timekeepers and others receiving such books and tickets shall account therefor monthly to the Examiner.

Other duties heretofore performed by the Disbursing Officer on the Isthmus, excepting the keeping of property accounts, are hereby transferred to the Examiner of Accounts.

Geo. W. Goethals,
Chairman.

Culebra, C. Z., August 27, 1908.

Transfer.

To ALL CONCERNED: The following transfer is announced:

C. P. Allen, from District Quartermaster, La Boca, to District Quartermaster, Culebra,

W. H. South is appointed District Quartermaster, La Boca.

Effective September 8.

C. A. Devol,
Chief Quartermaster.

Culebra, August 24, 1908.

Abolition of Division of Material and Supplies.

CIRCULAR No. 246:

To All Employees of the Division of Material and Supplies: In accordance with Circular 183c, of August 14, 1908, issued by the Chairman and Chief Engineer, Isthmian Canal Commission, effective September 1, 1908, the Division of Material and Supplies will be abolished, and the duties pertaining thereto performed by the Quartermaster's Department of the Isthmian Canal Commission.

With the abolishing of the Division of Material and Supplies, and transferring the duties pertaining thereto to the Quartermaster's Department, I desire to thank the employees of this Division for the loyal

and faithful service and hearty cooperation with which they have performed their duties in handling the large amount of business for nearly three years, during which time I have been Chief of the Division, and request that they render to my successor, Maj. Devol, Chief Quartermaster, the same loyal and efficient service that they have rendered to me.

W. G. TUBBY,
Chief, Division of Material and Supply.
Cristobal, August 31, 1908.

Acting Superintendent.

To ALL CONCERNED: During the absence of the Superintendent of Motive Power and Machinery, Mr. Earle J. Banta, in addition to his other duties as Mechanical Engineer, will assume general oversight over affairs in the Mechanical Division, and is given authority to sign pay-rolls, vouchers, etc.

Geo. D. Brookline,
Superintendent of Motive Power and Machinery.

Approved:
Geo. W. Goethals,
Chairman and Chief Engineer.

Proposals for Cross and Switch Ties.

Sealed proposals will be received at the office of W. G. Tubby, Purchasing Agent on the Isthmus, Cristobal, C. Z., up to 3.30 p. m., Wednesday, September 9, 1908, at which time they will be opened in public, for the sale to the Isthmian Canal Commission of forty thousand (40,000) first-class cross ties, four thousand (4,000) second-class cross ties, ten (10) sets of No. 7 switch ties, and ten (10) sets of No. 10 switch ties according to the following specifications:

- The timber used shall be black or yellow Guaiacum, commonly called Guayacan or Lignum Vite.
- All ties shall be well and smoothly hewed out of straight-growing timber of specified dimensions and out of wind, sawed or square-cut ends, with straight and parallel faces. All ties shall have bark entirely removed when cut. Ties shall be free from splits, shakes, loose or decayed knots, or any other imperfections which may impair their strength or durability.
- Except in pole ties with rounded sides, or in half-round ties, the width of face and thickness shall conform to sizes given in the table of dimensions below, but a variation of size will be permitted of one inch over in thickness, one inch over in width, and three inches over in length.
- In pole ties with rounded sides, and in half-round ties, the width of face may be less than that given in the table of dimensions, but the least area of cross section shall not be less than the area corresponding to the tabular dimension, and in no case shall the width of face be less than six inches for first-class and five and one-half inches for second-class ties.

	Thickness by width of face		Length	Maximum variation from straight edge	
	Top and bottom	Sides			
1st class...	6"	8 1/2"	8'0"	1 1/2"	2"
2d class...	5 1/2"	7 7/8"	7'9"	1"	3"

Number	No. 7 Turnout.			No. 10 Turnout.			
	Dimensions	Length	Feet B. M.	Dimensions	Length	Feet B. M.	
4	6 1/2 x 8 1/2	9'0"	165.76	4	6 1/2 x 8 1/2	9'0"	165.76
2	do	9'6"	306.18	5	do	9'6"	218.70
4	do	10'0"	184.16	7	do	10'0"	322.28
5	do	10'6"	241.70	5	do	10'6"	241.70
3	do	11'0"	151.92	5	do	11'0"	253.20
3	do	11'6"	158.82	4	do	11'6"	211.76
4	do	12'0"	221.00	4	do	12'0"	221.00
2	do	12'6"	115.10	3	do	12'6"	172.62
4	do	13'0"	239.40	3	do	13'0"	179.52
3	7 x 9	13'6"	212.63	3	7 x 9	13'6"	212.63
1	do	14'0"	73.50	3	do	14'0"	220.50
2	do	14'6"	152.25	3	do	14'6"	228.38
2	do	15'0"	157.50	5	do	15'0"	393.75
3	5 1/2 x 8 1/2	15'6"	214.08	2	6 1/2 x 8 1/2	15'6"	142.72
47			2,594.00	56			3,154.52

Delivery will be made on the docks at Cristobal or La Boca, C. Z., or within fifty feet of any track of the Panama railroad, not more than four feet above or four feet below grade, and ties will be inspected as they are unloaded on the dock or when loaded on cars. Delivery shall not begin later than October 1, 1908, and shall be completed by January 1, 1909. Bidders shall furnish a sample not less than five inches square and twelve inches long of the kind of wood they propose to furnish, and submit certified check, money order or cash in the amount of one hundred (100) dollars, U. S. currency, as evidence of responsibility and ability to carry out the provisions of the contract, and nine hundred (900) dollars, U. S. currency, additional at the time of execution of the contract. Bids shall be enclosed in sealed envelopes plainly marked "Proposals for Furnishing Guaiacum Ties." The Commission reserves the right to reject any and all bids.

COMMISSARY DEPARTMENT.

COMMISSARY PRICES

For week beginning September 1:
FRESH MEATS, POULTRY AND COLD MEATS.

	Price.
Beef—Sirloin roast.....	per lb 30
Rump roast.....	per lb 30
Porterhouse.....	per lb 30
Rib-roast, short cut (not under 3 1/2 pounds).....	per lb 24
Rib-roast, second cut (not under 3 lbs).....	per lb 20
Chuck-roast.....	per lb 15
Soup.....	per lb 9
Stew.....	per lb 12
Corned.....	per lb 12, 11, 16
Suet.....	per lb 4
Steaks—Sirloin.....	per lb 30
Porterhouse.....	per lb 30
Rump.....	per lb 30
Tenderloin.....	per lb 30
Round.....	per lb 24
Veal—Cutt. ts.....	per lb 24
Short-cut chops.....	per lb 24
Loin.....	per lb 23
Entire forequarters (15 to 20 lbs).....	per lb 11
For stewing.....	per lb 11
Mutton—Entire forequarters, (not under 10 lbs).....	per lb 9
Short-cut chops.....	per lb 20
Leg (8 to 10 lbs).....	per lb 18
Lamb—For stewing.....	per lb 10
Entire forequarters.....	per lb 10
Chops.....	per lb 40
Leg (6 to 8 lbs).....	per lb 28
Pork—Cuts.....	per lb 20
Livers—Beef.....	per lb 11
Calif.....	each 60
Sausage—Pork.....	per lb 16
Bologna.....	per lb 15
Lieberwurst.....	per lb 15
Sweet bread—Veal.....	each 1.20
Beef.....	per lb 25
Pigs' tongues (stewed).....	per lb 15
Ox tongues.....	each 90
Chicken, dressed (milk-fed).....	each 1.40
Chickens, large.....	each 1.90
Fowls, medium and large.....	each \$1.00 and 1.25
Ducks, fatted (fancy).....	each 1.10
Suckling pigs.....	each 4.90
Turkeys.....	per lb 30
Squabs.....	each 45
Eggs (fresh).....	per dozen 32
Cheese.....	each 2.40
Macaroni.....	each 70
Macaroni—Strips.....	per lb 23
English, breakfast, sliced.....	per lb \$26
Ham—Sugar-cured, sliced.....	per lb \$25
One-half, for boiling.....	per lb \$20
Westphalia.....	per lb 45
Ferris.....	per lb 19
Beef, salt, family.....	per lb 16
Salt Pork.....	per lb 13

Butter, prints, prime quality.....	per lb 33
Cheese—Cream, Phila.....	each 22
Neufchatel.....	each 6
Swiss.....	per lb 33
Gouda.....	per lb 34
Edam.....	each 1.05
Camembert.....	per lb 28
McLaren's.....	per jar 15
Piuxter's.....	per tin 21.20
Buttermilk.....	bottle 15

Lemons.....	dozen 18
Oranges.....	dozen 18
Lettuce.....	per lb 20
White potatoes.....	per lb 3 1/2
Cabbage.....	per lb 4
Onions.....	per lb 3 1/2
Corn.....	dozen 25
Melons.....	each 35
Cucumbers.....	per lb 10
Sweet potatoes.....	per lb 2 1/2
Beets.....	per lb 6
Carrots.....	per lb 6
Squash (summer).....	per lb 7
Leeks.....	bunch 10
Okra.....	per lb 10
Alligator pears.....	each 5

\$ sold only from cold-storage and not from Commissaries.

	Price.
Cigarettes, Nestor, superfine, 10s.....	package 20
Cigarettes, Nestor, royal, 10s.....	package 15
Violet ammonia.....	bottle 20
Viscol shoe dressing.....	tin 12
Caps, bathing.....	each 60
Madras nets for curtaining.....	yard 30 and 56

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Lieut.-Col. Geo. W. Goethals, U. S. A., Culebra.
 Lieut.-Col. H. F. Hodges, U. S. A., (vice Jackson Smith, effective September 16, 1908), Culebra.
 Maj. D. D. Gaillard, U. S. A., Empire.
 Maj. Wm. L. Sibert, U. S. A., Gatun.
 Civil Engineer H. H. Rousseau, U. S. N., Culebra.
 Mr. Jo C. S. Blackburn, Ancon.
 Col. W. C. Gorgas, U. S. A., Ancon.
 Mr. Jackson Smith, (resigned, effective September 15, 1908).
 Mr. Joseph Bucklin Bishop, Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.
 Lieut.-Col. Geo. W. Goethals, Chairman and Chief Engineer.
 M. B. DePatron, Assistant to the Chairman.
 W. H. May, Secretary to the Chairman.
 C. A. McIvaine, Chief Clerk.
 A. B. Nichols, Office Engineer.
 Caleb M. Saville, Assistant Engineer.
 Lieut.-Col. H. F. Hodges, Assistant Chief Engineer.
 C. O. Carlson, Secretary.
 Edward Schildhauer, Electrical and Mechanical Engineer.
 L. D. Cornish, H. F. Tucker, Henry Goldmark and David Molitor, Designing Engineers.
 Civil Engineer H. H. Rousseau.
 J. C. Parsons, Secretary.

Central Division.

Headquarters, Empire.
 Maj. D. D. Gaillard, Division Engineer.
 A. E. Bronk, Chief Clerk.
 Louis K. Rourke, Assistant Division Engineer.
 A. S. Zinn, Resident Engineer.
 Mark W. Tenny, Assistant Engineer.
 R. W. Hehard, Assistant Engineer.
 W. L. Thompson, Assistant Engineer.
 Geo. H. Ruggles, Assistant Engineer.

Atlantic Division.

Headquarters, Gatun.
 Maj. Wm. L. Sibert, Division Engineer.
 R. M. Sands, Chief Clerk.
 Maj. Chester Harding, U. S. A., Assistant Division Engineer.
 Maj. Edgar Jadwin, U. S. A., Resident Engineer.
 Maj. J. P. Jervey, U. S. A., Assistant Engineer.
 Capt. G. M. Hoffman, U. S. A., Assistant Engineer.
 Capt. Horton W. Stickle, U. S. A., Assistant Engineer.
 R. B. Smith, Assistant Engineer.
 L. G. Thom, Assistant Engineer.
 F. C. Stanton, Assistant Engineer.

Pacific Division.

Headquarters, Corozal.
 S. B. Williamson, Acting Division Engineer.
 E. A. LeMay, Chief Clerk.
 W. G. Comber, Resident Engineer.
 G. B. Strickler, Resident Engineer.
 Wm. F. M. Acheson, Assistant Engineer.

Mechanical Division.

Headquarters, Culebra.
 Geo. D. Brooke, Superintendent of Motive Power and Machinery.
 F. W. Doty, Chief Clerk.
 Earl J. Banta, Mechanical Engineer.
 A. L. Robinson, Electrical Engineer.

Division of Meteorology & River Hydraulics

Headquarters, Ancon.
 R. M. Arango, Division Engineer.
 D. W. MacCormack, Chief Clerk.

Quartermaster's Department.

Headquarters, Culebra.
 Maj. C. A. Devol, U. S. A., Chief Quartermaster.
 C. H. Mann, Chief Clerk.
 Lieut. R. E. Wood, U. S. A., Assistant Chief Quartermaster.

Subsistence Department.

Headquarters, Culebra.
 Maj. Eugene T. Wilson, U. S. A., Subsistence Officer.
 W. F. Shipley, Chief Clerk.
 Maj. Wendell L. Simpson, U. S. A., Purchasing Agent, 24 State Street, N. Y. City

Civil Administration.

Headquarters, Ancon.
 Jo C. S. Blackburn, Head of the Department.
 H. D. Reed, Executive Secretary, Ancon.
 G. A. Ninas, Chief Clerk, Ancon.
 Tom M. Cooke, Chief, Division of Posts, Customs and Revenues, Ancon.
 Herman A. Gudger, Deputy Collector, Ancon.
 E. Lewis Baker, Deputy Collector, Cristobal.
 George M. Shontz, Prosecuting Attorney, Ancon.
 George R. Shanton, Chief of Police, Ancon.
 D. E. McDonald, Chief Clerk.
 C. E. Weidman, Chief, Fire Department, Cristobal.
 Geo. I. Campen, Superintendent of Public Works, Ancon.
 C. R. Sargent, Chief Clerk.
 J. J. Reidy, Assistant Superintendent of Public Works, Cristobal.
 David C. O'Connor, Superintendent of Schools, Ancon.

Canal Zone Judiciary.

Headquarters, Ancon.
 Supreme Court—Dr. F. Mutis Durán, Chief Justice.
 Walter Emery, Clerk, Ancon.
 H. A. Gudger, Associate Justice, Empire.
 Lorin C. Collins, Associate Justice, Cristobal.
 Circuit Court, First Circuit—Dr. F. Mutis Durán, Judge, Ancon.
 Walter Emery, Circuit Court Clerk, Ancon.
 Circuit Court, Second Circuit—H. A. Gudger, Judge, Empire.
 Elbert M. Goolsby, Circuit Court Clerk, Empire.
 Circuit Court, Third Circuit—Lorin C. Collins, Judge, Cristobal.
 Nelson R. Johnson, Circuit Court Clerk, Cristobal.
 M. C. Rerdell, Senior District Judge, Cristobal.
 S. E. Blackburn, District Judge, Ancon.
 Edgar S. Garrison, District Judge, Empire.
 J. B. March, District Judge, Gorgona.
 Thomas E. Brown, Jr., District Judge, Cristobal.

Department of Law.

Headquarters, Washington, D. C.
 Richard Reid Rogers, General Counsel, Washington, D. C.
 George M. Shontz, Attorney for Isthmian Canal Commission and Panama Railroad Company, Ancon.
 George H. Bartholomew, Attorney for Isthmian Canal Commission and Panama Railroad Company, Ancon.
 Inocencio Galindo, Legal Adviser to the Isthmian Canal Commission, Ancon.

Department of Sanitation.

Headquarters, Ancon.
 Col. W. C. Gorgas, Chief Sanitary Officer.
 Maj. C. C. McCulloch, Jr., U. S. A., Executive Officer.
 Harry E. Bovay, Chief Clerk.
 H. R. Carter, Director of Hospitals, Ancon.
 Surgeon, J. C. Perry, P. H. and M. H. S., Chief Quarantine Officer, Ancon.
 Maj. John L. Phillips, U. S. A., Superintendent Ancon Hospital, Ancon.
 Capt. Alexander Murray, U. S. A., Assistant to Superintendent.
 J. F. Leys, U. S. N., Superintendent, Colon Hospital, Colon.
 Capt. Robt. E. Noble, U. S. A., General Inspector, Ancon.
 Surgeon Claude C. Pierce, P. H. and M. H. S., Quarantine Officer, Colon.
 Dr. Fleetwood Gruver, P. H. and M. H. S., Quarantine Officer, Panama.
 Dr. John H. Purnell, Health Officer, Panama.
 Dr. M. E. Connor, Health Officer, Colon.
 Joseph A. LePrince, Chief Sanitary Inspector, Ancon.

Disbursements.

Headquarters, Empire.
 Edward J. Williams, Disbursing Officer.
 Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.
 W. W. Warwick, Examiner of Accounts.
 W. D. Mabry, Chief Clerk.

Panama Railroad Company.

Headquarters, Colon.
 H. J. Slifer, Assistant to the President, and General Manager, Colon.
 W. G. Tucker, Secretary, Colon.

Purchasing Department.

Headquarters, Washington, D. C.
 Capt. F. C. Boggs, U. S. A., General Purchasing Officer.
 C. E. Dole, Chief Clerk.
 F. C. Nordsick, Assistant Purchasing Agent, 24 State street, New York City.
 S. E. Redfern, Assistant Purchasing Agent, Custom House, New Orleans, La.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Allianca.....	P. R. R. Thursday.....	Aug. 27	
Prinz Joachim.....	H. A.....	Saturday.....	Aug. 29
Finance.....	P. R. R. Tuesday.....	Sept. 1	
Esperanza.....	P. R. R. Saturday.....	Sept. 5	
Magdalena.....	R. M.....	Saturday.....	Sept. 5
Colon.....	P. R. R. Thursday.....	Sept. 10	
Pr. Aug. Wilhelm.....	H. A.....	Saturday.....	Sept. 12
Advance.....	P. R. R. Tuesday.....	Sept. 15	
Orinoco.....	R. M.....	Saturday.....	Sept. 19
Allianca.....	P. R. R. Monday.....	Sept. 21	
Finance.....	P. R. R. Saturday.....	Sept. 26	
Prinz Joachim.....	H. A.....	Saturday.....	Sept. 26
Panama.....	P. R. R. Thursday.....	Oct. 1	
Atrato.....	R. M.....	Saturday.....	Oct. 3
Colon.....	P. R. R. Tuesday.....	Oct. 6	

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK.

Advance.....	P. R. R. Friday.....	Sept. 4	
Orinoco.....	R. M.....	Tuesday.....	Sept. 8
Allianca.....	P. R. R. Wednesday.....	Sept. 9	
Finance.....	P. R. R. Monday.....	Sept. 14	
Prinz Joachim.....	H. A.....	Tuesday.....	Sept. 15
Esperanza.....	P. R. R. Friday.....	Sept. 18	
Atrato.....	R. M.....	Tuesday.....	Sept. 22
Colon.....	P. R. R. Wednesday.....	Sept. 23	
Advance.....	P. R. R. Monday.....	Sept. 28	
Pr. Aug. Wilhelm.....	H. A.....	Tuesday.....	Sept. 29
Allianca.....	P. R. R. Saturday.....	Oct. 3	
Clyde.....	R. M.....	Tuesday.....	Oct. 6
Finance.....	P. R. R. Thursday.....	Oct. 8	
Panama.....	P. R. R. Tuesday.....	Oct. 13	
Prinz Joachim.....	H. A.....	Tuesday.....	Oct. 13
Colon.....	P. R. R. Monday.....	Oct. 19	
Tagus.....	R. M.....	Tuesday.....	Oct. 20

FROM NEW ORLEANS TO COLON.

Parismina.....	U. F. C. Saturday.....	Aug. 29
Ellis.....	U. F. C. Saturday.....	Sept. 5
Cartago.....	U. F. C. Saturday.....	Sept. 12
Harry T. Inge.....	U. F. C. Saturday.....	Sept. 19
Ellis.....	U. F. C. Saturday.....	Sept. 26

FROM COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Tuesday.....	Sept. 8
Ellis.....	U. F. C. Tuesday.....	Sept. 15
Cartago.....	U. F. C. Tuesday.....	Sept. 22
Harry T. Inge.....	U. F. C. Tuesday.....	Sept. 29

FROM COLON TO BARBADOS, CALLING AT TRINIDAD.

Magdalena.....	R. M.....	Tuesday.....	Sept. 15
Orinoco.....	R. M.....	Tuesday.....	Sept. 29

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 11 a. m., and from Colon at 1.30 p. m., via Port Limon, for New Orleans. In addition to the above, the United Fruit Company dispatches a steamer about every ten days from Colon, via Bocus del Toro, for New Orleans.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

Tug Service Porto Bello and Nombre de Dios.

Effective, August 6, 1908: The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Cristobal 6.30 p. m. for Porto Bello only; returning same day.

Monday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Tuesday: Leave Cristobal after Train 2 without tow, for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.

Wednesday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Friday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Saturday: Leave Cristobal after Train 2 for Porto Bello only; returning, leave Porto Bello 5.30 p. m.



The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

President Roosevelt on Canal Work.

The letter of President Roosevelt, dated Oyster Bay, August 21, 1903, acknowledging the receipt of a report of the Special Commission which visited the Isthmus on May last, as published in THE CANAL RECORD of August 26, was incomplete. Two paragraphs were omitted from the text of the letter as it appeared in the cable dispatches to the Panama Star & Herald, from which THE CANAL RECORD quoted it.

These paragraphs are appended:

Meanwhile the treatment of hygienic conditions on the Isthmus has been such as to make it literally the model for all work of the kind in tropical countries. Five years ago the Isthmus of Panama was a byword of unhealthiness of the most deadly kind. At present the Canal Zone is one of the healthiest places on the globe and the work which is being prosecuted with such tremendous energy is being prosecuted under conditions so favorable to the health and well being of the workers that the mortality among them is abnormally small.

Finally, in addition to the extreme efficiency of the work under Colonel Goethals and his associates, and the extraordinary hygienic success achieved under Dr. Gorgas, there is the further and exceedingly gratifying fact that on the Isthmus the United States Government has been able to show itself a model employer. There are matters to correct, of course, as your report shows, but on the whole it is true that the United States Government is looking after the welfare, health and comfort of those working for it as no other government has ever done in work of like character.

Conditions at Miraflores Locks' Site.

Work on the site of the Miraflores Locks and Dams has reached the point where the nature of the construction at this place when finished can be judged from the appearance of the excavation. Steam shovels and spoil trains are making rapid progress in taking out the earth that overlies the rock, and some rock is being excavated in and just below the forebay. On either side of the prism dykes are being built for the handling plant, and also to serve as a barrier behind which dredged material may be pumped. Excavation for the core for the Cocoli Dam is progressing satisfactorily.

The 20-inch suction dredge *Sandpiper*,

which began its trial at La Boca on August 25, was taken from that place the next day, and is now completing its trial in the Canal prism opposite Corozal. In about a month it will be taken up the Rio Grande, at high water, to the site of the locks at Miraflores. A dyke has been built across the southern end of the locks' site, where it is proposed to regulate the stage of the water within the basin where the dredge will work, thus keeping it as high as may be necessary.

The plan contemplates dredging about one million cubic yards from the locks' site, after which the basin will be unwatered and steam shovels set at work taking out the rock to the level required in each flight. About 500,000 cubic yards will be excavated from the north end of the locks' site by steam shovels during the time the dredging is in progress, after which approximately 1,250,000 cubic yards will remain to be excavated by steam shovels.

Between the locks' site and La Boca, clearing the prism is well advanced, and the steam shovel at work at Cardenas Hill is supplying material for the construction of the dyke between that point and the west dump of the abandoned Sosa-Corozal dam.

Power Plant at Gatun.

A site has been determined upon for the power house at Gatun, north of the unloading docks and near the east diversion. The steam shovel now at work on the site of the docks will be moved this week to the power house site, and excavation for the foundations will begin at once. The power house will have a concrete foundation and basement, and the superstructure will be corrugated iron over a wood frame. It will be 150 feet long and 84 feet wide.

In the boiler room will be six 400-horsepower water-tube boilers of the Keeler type, equipped with induced draught fans in duplicate. Oil will be used as fuel. The engine room will contain three General Electric, Curtis, 1500-k. w., three-phase 25-cycle, base-condenser turbines, and a substation equipment of two 500-k. w. and one 300-k. w. rotary converters with the necessary auxiliary apparatus. A 20-ton 3-motor crane will run the length of the engine room.

This power plant will furnish the current for unloading at the docks, for the motors on the lock cableways, and for the cable road. It should not be confused with the hydraulic power plant that will furnish the power to operate Gatun Locks, although it will probably be maintained as an emergency plant after the Canal is completed.

Quartermaster's Depot at Mount Hope.

It is estimated that the value of the stores turned over to the Quartermaster's Department by the old Division of Material and Supplies on September 1, is over \$3,000,000. A change in the method of handling supplies

is to be made by the Quartermaster's Department, to the extent that the Mount Hope storehouse will be made a Quartermaster's Depot. The machinery in the Lirio planing mill will be moved to Mount Hope, and the printing plant of the Isthmian Canal Commission, located in Panama, and that of the Panama Railroad Company, located at Cristobal, will be merged into one plant located at Mount Hope. All stationery supplies for the Commission and the railroad will be issued from the Mount Hope depot.

Captain Courtland Nixon, U. S. A., will be Depot Quartermaster at Mount Hope. He was born in Texas, July 10, 1874; was graduated from Princeton College in 1895, and commissioned a second lieutenant in the First Infantry in 1898. In 1899 he was promoted to first lieutenant, and in 1904 was made captain. He served two years in the Quartermaster's Department at San Francisco under Major Devol, and for the past two years has been stationed at the Philadelphia Depot.

More Locomotives and Cars.

A contract to furnish ten 40-ton 6-wheel connected, saddle-tank locomotives for the work at Porto Bello has been awarded to H. J. Porter & Co., of Pittsburg, the lowest bidder. These engines are to be 3-foot, 6-inch gauge, with wheels 40 inches in diameter, cylinders 15 inches by 20 inches, tractive force 15,000 pounds, and boilers carrying 160 pounds pressure. They will operate from the quarry at Porto Bello to the crushers on a 2½ to 3 per cent grade, will run on a 20-degree construction track, and will haul about 600 yards of stone, weighing 2,900 pounds to a yard. They will be constructed along the latest designs for this class of engine, including an air brake rigging which will meet the interstate commerce regulations. Locomotives of this type are in general service in the States in similar classes of work.

A contract has also been let for fifty 6-yard, all metal dump cars, the lowest bidder being Vermile & Powers, of New York city. These cars are to be similar in construction to the 12-yard Oliver and Western dump cars now in use. The cars will be 15 feet long, 8 feet wide, equipped with Tower M. C. B. couplers and Westinghouse automatic air brakes. They will be of exceedingly strong construction, in order to stand the hard usage given cars on the Isthmus.

Bids have been asked for 200 dump cars similar in construction to the 12-yard Oliver and Western dump cars, now in service on the Isthmus.

Galveston Cutter Made at Gorgona.

A Galveston cutter has been fitted on dredge No. 82, the 20-inch pipe-line suction dredge at work making the channel to

NOTES OF PROGRESS.

(Continued)

the Gatun receiving docks. The new cutter is working well. Similar cutters were ordered in the States some time ago, but delay in receiving them was attended with so much loss in the dredging, that the Atlantic Division designed a cutter, and Gorgona foundry cast it in phosphor-bronze.

A Month With the Dredges.

Of the total of 3,252,506 cubic yards of material excavated in August, the dredges in the Atlantic and Pacific Division took out 1,375,991 cubic yards. A table is appended showing the work done by each dredge. It will be noticed that the total does not agree with that given above. This is because the excavation by a 20-inch suction dredge in the channel leading to the receiving dock at Gatun Locks, and that done by a 16-inch suction dredge at work in Folks River, making a fill for a corral, were not included in the excavation returns for Canal work in August.

Local conditions affect the results on the Pacific and Atlantic sides. At the Pacific end of the Canal the three dredges are working in good material and so near to the marine shops at La Boca that little time is lost in making repairs and taking the crews to and from work. The dredges in Limon Bay are some distance from their base of supplies, and repairing is a matter of some time. On the Atlantic end the material in which the dredges are at work is not difficult to handle, although probably not so easily excavated as that at the Pacific terminus.

For the sea-going suction dredges *Culebra* and *Ancon*, the measurements are scow or bin measurements, but for all other dredges the measurements are made in place, by soundings and cross sections.

ATLANTIC DIVISION.

Name and class of Dredge.	Excavation, Cu. yds.	Material.
<i>Ancon</i> (sea-going suction).	335,846	Earth.
No. 1 (French ladder)...	135,610	Earth.
No. 6 (French ladder)...	130,210	Earth.
<i>Mindi</i> (dipper).....	18,620	Rock.
<i>Chagres</i> (dipper).....	17,931	Rock and earth.
16-inch Suction.....	9,943	Earth.
No. 82 (20-inch suction).	51,505	Earth.

PACIFIC DIVISION.

<i>Culebra</i> (sea-going suction).	431,296	Mud.
<i>Gopher</i> (sea-going ladder, French).	161,538	Mud and coral rock.
No. 82 (French ladder)...	144,890	Mud.

Machinery from Paraiso.

Paraiso shops were closed August 15 and the machinery was distributed among other shops of the Commission. To supplement the articles on Isthmian Mechanical Shops that have been published in THE CANAL RECORD since July 8, a list of the machines added to the various shops is appended:

Empire shops: One sawtable; one 12-inch lathe; one wood-boring machine, 24-inch; one 33-inch by 33-inch by 10-foot planer; two emery grinders; one 84-inch drill press; one 20-inch drill press; one Valley City grinder; one Manning, Maxwell and Moore tool grinder; one 18-inch engine lathe; one 8-inch LeBlonde engine lathe; one tool

grinder; one 24-inch shaper; one saw grinder, Higby; one twist drill grinder; one Oesterlein drill grinder; one grindstone, power; one 30-ton forcing press; one 16-inch horizontal boring machine; one pipe bending machine, 1/2-inch to 2-inch; one 6-inch pipe cutting and threading machine; one 12-inch pipe cutting and threading machine; one 60-inch Universal radial drill; one 26-inch sliding head drill press; one 4-inch turret lathe; one screw cutting lathe; one Schumacher, Boye and Emmes screw cutting lathe; one quick-change lathe; one tool-room engine lathe; one horizontal Higby machine cold saw; one 100-pound Bradley hammer, cushion helve; one vertical boring and turning mill.

Pacific Division: One sand dryer complete.

Central Division: One duplex pump, 12-inch by 8 1/4-inch by 10-inch.

Las Cascadas: One 46-inch sliding head drill press.

Gorgona Shops: One 18-inch LeBlonde engine lathe; one American type LeBlonde engine lathe; one triple gear lathe; one 48-inch rotary blower fan; one cross-compound air pump; one plate flanging clamp; one 48-inch splitting shears; one double punch and shear, 36-inch throat; one hand-power spurting shears, 36-inch; one double-head 2-inch bolt cutter; one Universal milling machine; one rotary beveling roll; one hand-power bending roll; one sheet folder, 3 feet 6 inches; one single frame drop steam hammer, Niles-Bement works; one engine, Marine upright 8-inch by 10-inch.

Walking on Railroad Tracks.

The following notice will be printed in English and several European languages and posted in labor camps, railroad stations and other places where it is likely to be read by people using the railroad tracks as a highway:

All persons are warned against walking on railroad tracks, except when it is necessary to do so in the discharge of their duties as employees of the Isthmian Canal Commission or Panama Railroad Company. When it is necessary for such persons to walk on tracks to perform their duties, they are urged to take the following precautions for their safety:

When walking on parallel double tracks take the track to your left, trains using the track will approach you from the front, whereas trains using the track to your right will approach you from behind and may run you down before you hear them.

When you see a train do not step from the track on which the train is approaching, to the other track, but step into the ditch at the side of the track. If you cross to the other track there is danger that you may be run down from behind by a train on that track, which you have not heard on account of the noise of the first train.

If the approaching train is a dirt train, stand as far back from the track as you can conveniently, to avoid injury by rock and earth falling from moving dirt trains.

A large proportion of the accidents occurring on the railroad tracks could be avoided if the persons who are obliged to walk on the tracks would adopt these simple precautions.

Steamer "Sanidad."

An old French steamer, known as water boat "No. 2," has been rebuilt at the La Boca shipways and, bearing the name *Sanidad*, is now ready for service. Unless the steamer *Riversdale*, which may be purchased by the Commission, is turned over to the Department of Sanitation, the *Sanidad* will be used in the service between Panama and Taboga sanitarium. The steamer is 90 feet long, 12 feet wide and draws 9 feet. Storage tanks in the hold have a capacity of 100

tons of water and the deck can accommodate 100 people. When the new boat is put in the Tabogo service the *Petite Louise* will go out of commission.

Fatal Wreck at Miraflores.

Two French engines on the work at Miraflores, coupled together, fell off the east trestle crossing the Cocoli river on September 3. Rejelio Castillo, Juan Sanchez, and Coementi Gonzales were killed. Rivio Arios was severely injured and died before he reached the hospital.

The accident occurred at 11.06 o'clock in the morning when the men were going to meet the labor train at the lunch hour. As the track approaching the trestle is laid on a new fill, it is apparent from the evidence thus far gathered that the head engine upon approaching the rigid trestle structure, was derailed with a heavy drift to the left. Upon leaving the deck this engine struck one of the bents, knocking it down and pulling the other engine through the breach thus produced. The trestle withstood the wreck with comparatively slight injury.

Village Improvements at Gatun.

Work on the road from Gatun to Mount Hope is making satisfactory progress, and about four miles of the six proposed have already been graded. The whole road will be graded before the beginning of the dry season. Between the old village of Gatun and the new village the work of macadamizing is in progress. The main road will not be macadamized until crushed stone is received from Porto Bello.

A commissary of the type of that at Culebra has been authorized for Gatun, and will be built near the present station on the west side of the Panama railroad tracks. It will be 99 feet and 4 inches long and 59 feet and 4 inches wide, and will be provided with cold storage facilities. Alongside of the commissary building the Panama Railroad Company is preparing to build a new station.

On the hill near the water tank in Gatun, at one of the highest points in the village, a type chapel and lodge room is in process of construction. A new post-office will be begun shortly, and it is probable that it will be located alongside the church, or across the road from it.

Rails for Gatun Handling Plant.

Twenty-five thousand feet of 90-pound rails will be required for the tracks on which the cableway towers will run at Gatun Locks and the material-handling docks. Requisition has been made for this amount of track.

Information Wanted.

Information is desired by his relatives as to the whereabouts of G. M. Eichhorn, who was at one time engaged in business at Ancon. Any intelligence concerning him that is sent to the office of THE CANAL RECORD will be forwarded to his family in the States.

A party composed of the Resident Engineer, assistant engineers, and superintendents of construction of the Central Division, numbering twenty in all, made an inspection of the work of the Atlantic Division on Labor Day. At Gatun the Division Engineer and his assistants conducted the Central Division men over the dam, spillway, and lock works, and later entertained them at luncheon.

HIGHEST STEAM SHOVEL RECORDS.

Work of Shovels 256 and 115—Other Good Records in August.

Steam shovel No. 256, at work at Matachin, surpassed all excavation records made since the beginning of American control, by taking out 55,419 cubic yards of material in 25 days in August. Shovel No. 263, working in Culebra Cut has the second high record for the month, having excavated 32,979 cubic yards in Culebra District, in 16 days and 12,786 cubic yards in Empire District, in 10 days a total of 45,765 cubic yards of material in the 26 days. Shovel No. 115 at work at San Pablo, broke all records for shovels in the 70-ton class, excavating 22,028 cubic yards of earth and 20,333 cubic yards of rock, a total of 42,361 cubic yards for the 26 days. Other high records follow:

ATLANTIC DIVISION.

MINDI.

Shovel No.	Earth. Cubic yds.	Rock. Cubic yds.	Total. Cubic yds.	No. of days at work.
133	10,552	5,757	16,309	25
113	1,114	204	1,318	5

GATUN LOCKS.

102	1,820	43,694	45,514	26
129	1,118	39,479	40,597	26

SPILLWAY—GATUN DAM.

251	6,084	16,396	22,480	26
135	17,360	1,450	18,810	26

CENTRAL DIVISION.

TABERNILLA DISTRICT.

115	22,028	20,333	42,361	26
114	17,439	16,098	33,537	26

GORGONA DISTRICT.

256	39,901	15,518	55,419	25
104	35,151	.....	35,151	26

BAS OBISPO DISTRICT.

215	17,494	26,242	43,736	25
252	.....	42,408	42,408	22

EMPIRE DISTRICT.

262	.....	41,248	41,248	26
204	.....	40,816	40,816	26

CULEBRA DISTRICT.

217	16,480	26,782	43,262	26
224	22,672	15,751	38,423	26

PEDRO MIGUEL.

209	31,949	31,949	24
264	13,869	15,030	28,899	24

OBISPO DIVERSION.

121	15,333	15,333	16
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PACIFIC DIVISION.

MIRAFLORES LOCKS' SITE.

258	37,341	4,149	41,490	26
151	22,840	22,840	25

PEDRO MIGUEL LOCKS.

130	19,590	.....	19,590	23
50	2,530	.....	2,530	6

High Daily Records.

ATLANTIC DIVISION.

Shovel No.	Location.	Date.	Character material.	Cubic yds.
133	Mindi	Aug. 1	Clay and rock..	1,488
113	Mindi	Aug. 1	Clay and rock..	480
134	Gatun locks	Aug. 29	Clay	2,543
102	Gatun locks	Aug. 6	Rock	2,304
251	Gatun spillway	Aug. 19	Rock	2,090
119	Gatun spillway	Aug. 1	Rock	1,350

CENTRAL DIVISION.

115	Tabernilla	Aug. 27	Rock and earth	2,070
253	Tabernilla	Aug. 12	Earth	1,990
256	Gorgona	Aug. 27	Soft rock	2,250
255	Gorgona	Aug. 31	Earth	1,980
215	Bas Obispo	Aug. 10	Rock and earth	2,460
252	Bas Obispo	Aug. 6	Earth	2,360
204	Empire	Aug. 21	Rock	2,880
225	Empire	Aug. 19	Rock and earth	2,240
224	Culebra	Aug. 7	Earth	2,540
263	Culebra	Aug. 12	Rock and earth	2,480
209	Pedro Miguel	Aug. 31	Rock and earth	1,780
257	Pedro Miguel	Aug. 29	Soft rock	1,420

PACIFIC DIVISION.

258	Miraflores locks	Aug. 20	Earth	2,50
151	Miraflores locks	Aug. 28	Earth and rock	1,800
130	Pedro Miguel locks	Aug. 22	Earth	1,330
50	Pedro Miguel locks	Aug. 28	Earth	590

NOTE—Shovels in the one-hundred class are 75-ton Bucyrus and Model 60 Marions with dippers of a capacity of 2½ cubic yards. Shovels in the two-hundred class are 95-ton Bucyrus and Model 91 Marions with dippers of a capacity of 5 cubic yards. Shovels in the fifty-class are 45-ton shovels with dippers of a capacity of 1½ cubic yards. These shovels are under steam for eight hours per day, but are not actually worked during this entire period, time being lost by the necessity of moving the shovel forward, blasting stone too big for the shovel to handle, keeping the shovel supplied with cars, etc.

IMPROVEMENTS ON FLAT CARS.

Conditions on the Isthmus Have Suggested Departures.

Nowhere is equipment subjected to harder usage than on the Isthmus, and as a result many improvements have been made in steam shovels, cars, and other equipment to meet the unusual conditions. Cars used with the unloading plows are an instance. The 40-ton wooden flat car is used for heavy rock transportation, and carries about 18 yards of material. Eight hundred of these cars were furnished the Commission by the American Car and Foundry Company. They were built up of two 5-inch by 9-inch center sills, four 5-inch by 9-inch intermediate sills, and two 5-inch by 14-inch side sills, each about 40 feet long and of yellow pine. These sills, were floored over with 2¾-inch planks running transversely. The car is mounted on two simplex trucks with 5-inch by 9-inch journals, with steel bolsters, and braced with six long truss rods.

The first order of cars was equipped with one 3-foot gondola side, and one 1-foot removable side; but before the cars were put in service the Chief Engineer approved a suggestion that the 1-foot removable side be displaced by a side extension. This extension was carried on cast iron brackets bolted to the side sill, and it extended the car floor 15 inches. The utility of this change was immediately noticed in the increased capacity of the car, and in the dumping of material farther away from the trucks.

One of the largest items of upkeep on cars was the cost of renewing and repairing "aprons." Each of the flat cars carries at one end an apron 117½ inches long and 44 inches wide, made of ¾-inch sheet steel, and so hinged to the car that one edge of it rests on the next car, thus covering the space between the cars in the train and making it possible to run the unloading plow the full length of the train. These aprons were continually being torn off by the plows during the unloading operations at the dumps. This trouble has been obviated by a design of apron hinge and support which brings the apron slightly below the level of the car floor and little beyond the end of the

car. One end of the apron is supported by the forward car and the other rests on cast iron bracket supports bolted to the end sill of the car to which the apron is attached. The hinges were so designed that they offer no obstruction to the moving plow.

As the plow gives considerable side thrust on the gondola side of the car, a special design of high stake-pocket has been made to take up this strain and keep the sides vertical. This stake-pocket runs up on the side stakes about one foot above the sill and the thrust on the pocket is taken up by a 1-inch "U" bolt running diagonally down from the top of the pocket to the first intermediate sill. Further bracing has been added to bring the thrust on the lower part of the side sill, due to the push on the high side, across the car to the other sill.

A recent improvement is the addition of a "bull nose" to the end of a high side of the car. This "bull nose" is made of ¼-inch steel plate and is so shaped that it surrounds the entire end of the side, and guides the plow from car to car in the train. Before this device was put on the sides of the car it was not unusual for the unloading plow to batter and break the end of a side so badly that the car would be taken out of service for repairs.

EXECUTIVE ORDER.

Under authority vested in me by law, it is ordered:

Section 344 of the Penal Code of the Canal Zone is amended to read as follows:

"Section 344. Grand larceny is punishable by imprisonment in the penitentiary not exceeding ten years."

THEODORE ROOSEVELT.

THE WHITE HOUSE,
Washington, D. C., Aug. 14, 1908.

OFFICIAL CIRCULARS.

Requests for Transfer of Employees.

CIRCULAR No. 199.

Effective September 1, 1908: Requests for the transfer of employes will be submitted to the Chairman for approval in the same manner as applications for increase of force or pay. All requests for transfers should show clearly to what vacancy in the authorized organization the employe transferred will be assigned.

GEO. W. GOETHALS,
Chairman.

Culebra, C. Z., August 31, 1908.

Acting Purchasing Agent.

CIRCULAR No. 200.

Pending the appointment of a Purchasing Agent for the Canal Zone on the Isthmus, Lieut. R. E. Wood, Assistant Chief Quartermaster will, effective September 1, 1908, act in that capacity.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Culebra, C. Z., September 1, 1908.

Designing Engineers.

TO ALL CONCERNED:

During the absence of Mr. L. D. Cornish, Mr. H. F. Tucker will be in charge of the force of Designing Engineers attached to the office of the Assistant Chief Engineer.

H. F. HODGES,
Assistant Chief Engineer.

Culebra, C. Z., September 4, 1908.

Division of Material and Supplies.

CIRCULAR.

Lieut. R. E. Wood, Assistant Chief Quartermaster, will assume temporary charge of the general office of the Material and Supplies Division.

All correspondence formerly handled by this division will be addressed to the Assistant Chief Quartermaster at Cristobal, until further orders.

C. A. DEVOL,
Chief Quartermaster.

Culebra, C. Z., September 1, 1908.

UTILIZING OLD DREDGES.

French Equipment to be Put in Service After Twenty Years of Idleness.

Two dredges that have been resting in the mud on the west bank of the Chagres River near Frijoles since the days of the old French Company are being floated, and in a few weeks will be at the Cristobal dry docks. Their machinery will be stripped and the parts put to use in repairing the French ladder dredges that are at work in the Canal prism in Limon Bay. The hulls will be patched up and used as barges in the service of the Atlantic Division.

These dredges are of the "ladder" type, and are twins. An endless chain of 19 buckets is drawn over a boom which projects from the bow and holds the buckets against the material to be excavated. The buckets dump the spoil into a hopper near the center of the hull, whence it runs out of a chute at the side into a tender. This chain of buckets, and the machinery to run it and to propel the dredge are mounted on a hull about 110 feet long by 28 feet wide, made of wrought iron, and fitted with coal bunkers, and quarters for a crew. Two large boilers and duplex, steeple compound engines furnish power for propelling the dredge and running the chain of buckets. A small boiler furnishes steam for the pumps and the winch engines. All the machinery is in good condition, because of careful oiling and painting before the dredges were abandoned. The cogs are little worn, the dipper lips still sharp, and in general the condition of the machinery indicates that the dredges were used but little by the French. On one of the castings of each engine is the legend:

FORGES ET CHANTIERS
DE LA
MEDITERRANEE
HAVRE, 1884.

There is a reasonably authentic story that these two barges were brought to the Isthmus in 1885 and set up at Chagrecito, whence they were floated to their operating ground in the Chagres river near Frijoles. After a few weeks of work it was decided not to continue their use at that time, and one of them was set at work excavating a bay in the river bank in which both dredges could be anchored free from the dangers of sudden rises in the Chagres. The dredge which made the bay has for years had her nose against the side of the bank as though only resting over night in her work. Into this little bay the second dredge and two tenders were run, all of them to wait until the old French Company should need their services again.

In the more than 20 years since the dredges and their tenders were put on waiting orders the bay silted up until the hulls rested above the normal stage of the river during the rainy season. A bank of sand six feet high or more closed up the mouth of the bay, and when the work of reclaiming the dredges began four weeks ago, a tree 40 feet high was growing in this sand bank, barring the way between the dredges and the river.

To bring these dredges from their berths of silt into the channel of the Chagres, whence they may be floated to Cristobal, is the work assigned to a gang of 40 men. A channel 40 feet wide is being dug from the river to the dredges. Back of the place where the dredges lie is a little stream and this has been diverted so that it will find the river by

way of the dredges and the 40-foot channel. A pump with a capacity of 160 gallons a minute is being rigged up and four jets of water will be thrown by it onto the silt bed on which the dredges rest. This hydraulic power will wash out the old bay and deepen the channel to the river so that the dredges may be floated into the stream.

The tenders are fitted with a hopper to catch the spoil from the dredges, and with pumps to force it through a pipe line to the dump. It required two boats and two sets of machinery under the old dredging system to accomplish what is now done by a suction dredge. In the old dredges each bucket has a capacity of one-half of a yard and the continuous movement gives a high excavating efficiency. Working in mud in Limon Bay, dredges similar to these have taken out nearly 150,000 cubic yards in 26 days, about half the capacity of the 20-inch suction dredges. Still the cost of excavation with the old style dredge is three times as great as with the suction dredge.

One of the tenders is fitted with a single boiler, an engine for propulsion, and a pump for forcing out the spoil, while the other has two boilers, an engine and a pump. Cast into the framework of each engine are the words:

Société Anonyme Franco-Belge
Pour la Construction
de Machines et de Matériels de Chemin de Fer
Paris
Ateliers de la Croyere, Belgique
Système Ch. Bourdon. Breveté S. C. D. C.
No 1885.

A camp has been established on one of the dredges where the laborers will mess and sleep until the work is done.

In much the same position as the dredges near Frijoles are a ladder dredge, two suction dredges, two tenders and a barge at Chagrecito. They too were run into a bay made in the bank, and have silted up until they are 15 feet above the normal stage of the river in the rainy season. A gang is at work digging a channel from the river to the first of these dredges, the ladder dredge. The sluicing plan in use at Frijoles will be adopted unless it is found more practicable to slide the dredge on skids into the river. It is proposed to use the hull as a barge. The machinery has already been stripped.

Behind the ladder dredge and broadside to the river, with jungle on three sides and some bushes in front, are the suction dredges. Both hulls and machinery are in good condition and, although of an old type, they could be made serviceable if their use were deemed economical. The intake is 16 inches in diameter and is equipped with the French type of side cutter or agitator. The pump on each is a 16-inch split suction pump, belt-driven by an old French cross-compound engine. The hoist or swinging gear is operated by a series of drums on deck, driven by a duplex vertical engine. The tenders are of the type at Frijoles.

It has not yet been decided whether the suction dredges and tenders at Chagrecito are worth taking to the shops at Cristobal.

The old French dredges at Chagrecito, and all north of that point, have been assigned to the Atlantic Division, while those in the territory south of Chagrecito have been turned over to the Pacific Division. At present four of the old ladder dredges, that have been lying idle, south of Chagrecito, are being put to use, and out of

them one thoroughly good dredge is to be built.

When the old French company abandoned its work on the Isthmus, it left at La Boca a large amount of floating equipment, among which was the hull of a ladder dredge. It was in good condition when the Americans took control, but its value was doubtful and it was in the way, so it was taken to an unused part of the harbor and sunk. Later developments showed that it was still in the way, so it was raised and sunk in a different part of the harbor. Here, too, it was in the way, and it was towed out beyond the harbor bar and sunk in deep water. Now, the French ladder dredges having proved to be so much more effective than was at first believed possible, the thrice sunk hull has been raised again and is at the shipways at La Boca, being prepared for work. It has no old machinery in it to be taken out, and only a few of the plates need to be renewed. To get machinery and install it is all that needs to be done.

At San Pablo, near Barbaecos Bridge, on the south bank of the Chagres, is a dredge that has silted up, just as those at Frijoles and Chagrecito have. At Juan Grande, just north of Gorgona, is another dredge high up on the bank. Both these dredges can be seen from the Panama railroad. Back of Gorgona are two old dredges, also high on the river bank. No effort will be made to float these dredges. The Pacific Division is taking out the machinery and other parts and bringing them to La Boca, to be used in fitting up the old hull already mentioned, and in supplying parts to the dredges now in use. The machinery and parts are in good condition and can be utilized without change.

Two boilers from the dredges at Gorgona and one from that at Juan Grande are to be installed in the old hull. Two steeple compound engines, a deck winch, and a ladder boom from the dredges at Gorgona will also be utilized, and the 32 buckets will be collected from the four stripped dredges, unless it be decided to fit the dredge with close-connected buckets. It will cost between \$35,000 and \$40,000 to make this ladder dredge as good as new, and capable of taking out 180,000 cubic yards of material a month at from 7 to 10 cents a yard.

UNCLAIMED PACKAGES.

The following is a list of packages that have been forwarded from New York to Isthmian Canal Commission and Panama railroad employes, and that are waiting to be claimed at the freight house at Colon. The owners of these packages will have to make application for free customs entry in connection with Circular No. 85, or in the alternative, pay duty to the Panama Government customs on the value of the contents of the packages, before delivery can be effected:

	<i>Charges to collect.</i>
Way-bill No. 165—Jas. Vaugher (or Vaughn). Culebra, 1 box, <i>ex Dunottar Castle</i> ; January 15, 1908.....	1.00
Way-bill No. 207—P. G. Baker, Colon, 1 case, <i>ex Panama</i> ; April 24, 1908.....	1.00
Way-bill No. 201—C. E. Weidman, Cristobal, 1 case hats, <i>ex Finance</i> ; April 9, 1908.....	1.00
Way-bill No. 111—S. G. M., Cristobal, 1 box hardware, <i>ex Advance</i> August 25, 1907.....	1.00
No. 7503—Jos. V. Sadler, Pedro Miguel, 1 parcel, <i>ex Finance</i> ; March 14, 1908..... prepaid	
No. 7321—J. M. Chumacero, Colon, 1 parcel, <i>ex Dunottar Castle</i> ; November 24, 1907..... prepaid	

ISTHMIAN MECHANICAL SHOPS.

VI.

Marine Shops at La Boca.

Under every plan suggested for the Panama Canal, La Boca has been made the Pacific terminus. The old French company dredged a channel from deep water to where the wharves are now located, and from the wharves two miles up the valley of the Rio Grande. To do such work required considerable floating equipment, and to keep that equipment in repair the marine shops at La Boca were built. On the failure of the first French company the Panama Railroad Company bought the channel and dock, and in April, 1900, it rented the machine shop and shipways for 1 per cent of 50 per cent of their original cost. It also rented one Scotch ladder dredge and two Scotch clapets with which to keep open the channel to the docks. The shipways were rebuilt at a cost of \$14,000, the ladder dredge was repaired at a cost of \$39,000 and the clapets at a cost of \$12,000 and \$14,000 respectively.

Considering the period and the work that they were designed to do, the old French shops were well equipped. Their machinery consisted of three 36-inch lathes, one 12-inch lathe, one 8-inch lathe, one 16-foot pit lathe, one 10-inch shaper, one 12-inch slotter, one 12-inch planer, one 500-pound power hammer, one 6-foot radial drill, and two drill presses. The machine shops, carpenter shop, and tool room were all in one building. No new machinery was added by the Panama Railroad Company and the shops were operated as they were left by the French, under the Panama Railroad Company, until January 16, 1905, when the Division of Material and Supplies of the Isthmian Canal Commission took charge of them. In June, 1905, they were turned over to the Department of Construction and Engineering, being run under the Division Engineer at La Boca, and they are now in the La Boca residency of the Pacific Division, under the immediate charge of Superintendent James MacFarlane, who has been superintendent since the Panama Railroad Company assumed control in 1900.

In June, 1905, work was begun on a 40-foot by 100-foot addition to the original French shop, making it 200 feet long by 104 feet wide, and later a blacksmith shop, 40 feet by 50 feet, was added to the machine shop. The old French machinery was gradually retired and the present equipment consists entirely of up-to-date American machines and tools. In the machine shop are one 12-inch planer, one 24-inch planer, two 36-inch by 24-foot lathes, two 32-inch by 12-foot lathes, two 14-inch by 8-foot lathes, two 10-inch by 8-foot lathes, one 10-inch by 6-foot lathes, one 72-inch boring mill, one No. 3 Universal milling machine, one 21-inch shaper, one 14-inch shaper, one 18-inch slotter, one 12-inch slotter, one 6-foot radial drill, 5 small drills. In addition there are sundry pipe-cutting and grinding machines. All this machinery was bought with a view of adapting it especially to marine work. In the blacksmith shop are 8 forges and one 1100-pound steam hammer. The pattern shop is equipped with 1 band saw, 1 circular saw, and 1 small planer. A small foundry is run in connection with the machine shop, merely for the purpose of making small castings promptly. The cupola

has a capacity of one ton, and there are two furnaces for brass crucibles capable of holding 100 pounds of metal.

The Ancon machine and wood working shops, formerly maintained by the Division of Building Construction, have been abolished and the machinery will presently be installed at the La Boca shops. It consists of two circular saws, one band saw, and one planer for the wood shop, and two lathes and three drill presses for the machine shop.

At present the machinery in the machine shop is belt driven by a French compound engine, which takes steam from four French boilers. Plans have been approved for driving by electric motors, and two 75-horse power motors will be installed in a few weeks. The current will be furnished by the new power plant at La Boca. A 15-ton overhead crane, now in use, is to be fitted with electric power.

The shipways consist of two ways on which ships up to 400 tons may be hauled out, and are equipped with one set of bending rolls 10 feet long, four powerful punches, one 10-foot counter-sinking machine, one 6-foot radial drill, one 50-ton steam riveter, one long reach pneumatic riveter for smoke stacks and other pipes, one 24-inch by 24-inch sill dresser for carpenters' use. As far as possible all work is done by pneumatic tools, and in fact there is very little hand work. At present from 12 to 14 gangs of riveters and 6 to 8 gangs of drillers are at work on the various hulls being built, or rebuilt. Power for the shipways is furnished by two steeple compound engines left by the French, fed by two Scotch marine boilers taken out of an old French dredge and five French steam-drill boilers. The air compressor has a capacity of 1,500 feet of free air per minute. In about three weeks it will be abandoned, when the air line from the new electric power and air compressing plant will be in operation.

A gridiron capable of taking vessels of 3,000 tons is under construction and will be finished in about six months. A wharf 540 feet long is being built behind the machine shops, and a storeroom for dredge parts 500 feet by 100 feet has been authorized.

The yard equipment consists of one 20-ton Brown hoist, two 8-ton Appleby cranes and two French locomotives.

Both manufacturing and repairing are done at these shops. Repairs must be kept up on the floating equipment in the harbor, which consists of one sea-going suction dredge, one sea-going ladder dredge, one pipe-line suction dredge, a ladder dredge, a dipper dredge, three tug boats, six self-propelling barges (clapets), half a dozen smaller craft, and a dozen barges and lighters. A record of the more important manufacturing work done in the last eight years is pertinent, because it has all entered largely into the work of building the Canal. In the fiscal year 1908, ladder dredge "A-2," the one which the Panama Railroad Company bought from the French, was rebuilt. It has worked continuously for five years, with only one lay-off, and that of only forty days' duration. It is on the ways now undergoing extensive repairing that amounts almost to rebuilding. Twenty thousand dollars will be spent on this work, and the dredge will then be as serviceable as when it was first put in commission. In the year in which dredge "A-2" was first rebuilt,

the shops also rebuilt clapets No. 5 and No. 8, and the tug *Bolívar*. The following year three new lighters were rebuilt and several were repaired, and in 1903 several more lighters were repaired.

An old French crane boat, the *Parisien*, was rebuilt for the Isthmian Canal Commission in 1904 and fitted with the Clayton apparatus for fumigating ships. She was renamed the *Waller Reed*. About the same time the merchant ships on the Pacific making calls at Panama ports installed similar fumigating plants, and on this account the *Waller Reed* has been little used. She is still in service, however, and is equipped to assist in the quarantine against plague, yellow fever, or cholera, in case the emergency arises. Clapets No. 10 and No. 11 were rebuilt the following year.

Two steam launches left at Culebra by the French were rebuilt in 1906. They are the *Birdena* and the *Governor* and are now in service. Steam launch No. 26 was also rebuilt, as were Clapets Nos. 6, 7, 9 and 1.

Ladder dredge No. 14 was rebuilt in the fiscal year 1907 at a cost of \$28,000. It has been at work since last October and has already justified the rebuilding. In 1908 the sea-going ladder dredge *Gopher* was rebuilt and was put in commission last May. Most of the work on the pipe-line suction dredge *Sandpiper*, a description of which appeared in THE CANAL RECORD of August 26, was done in the year 1908. There are now under construction at the machine shop and ways six sand barges, three hopper barges, one submarine rock breaking machine. An old French ladder dredge is being rebuilt. The rebuilding of the *Sandidad* was also done in the fiscal year 1908.

The force engaged at the machine shops and shipways consists of 150 gold men and 650 silver men, and the amount of wages paid in the fiscal year 1908 was about \$400,000. In the same year material to the value of about \$306,500 was used.

Examination for Clerk.

A local examination for the position of clerk in the service of the Isthmian Canal Commission will be held Sunday, September 13, 1908, in the hall of the Red Men at Culebra beginning at 9 a. m. Copies of the Manual of Examinations, containing all necessary information and sample questions, and copies of the prescribed application form, will be furnished upon written request by the Secretary of the Isthmian Civil Service Board, Office of the Chairman, Culebra, Canal Zone.

The examination is open to citizens of the United States between the ages of 20 and 45 years. Persons intending to enter the examination should file their applications at once, in order that requisition may be made for sufficient papers and other necessary arrangements completed by the Board of Examiners.

Examination for Physician.

A local examination for the position of physician in the service of the Isthmian Canal Commission, entrance salary \$1,800 per annum, will be held October 14, 1908, the exact hour and place of the examination to be announced later. The Manual of Examinations, containing all necessary information and Application Form, may be obtained from the Secretary of the Isthmian Civil Service Board, office of the Chairman, Culebra, Canal Zone.

LEVELING OF PRECISION.

Mean Sea-Level as Determined on Data Available at This Time.

That there is no material difference between mean sea-level in the Pacific and the Atlantic oceans is one of the interesting facts developed by the leveling of precision recently done on the Isthmus. W. G. Comber, Resident Engineer at La Boca, in his report under date of August 25, gives details of the work and results. The descriptions of bench-marks will be published in separate form for distribution among the engineers. In his letter submitting the report, Mr. Comber recommends that some official be placed in charge of the bench-marks and be held responsible for their care and maintenance, so that in case it is necessary at any time to move a bench-mark the work may be done under the direction of this official, who will see to it that the elevation is preserved. In accordance with the recommendation C. M. Saville, assistant engineer, has been charged with this duty. The report follows:

The precise levelers, Messrs. Thomas and Wolbrecht, reported to me on their arrival from New York on June 2, and after a consultation in regard to methods and scope of work it was decided to get the value of mean tides on each side from the Division of Meteorology and River Hydraulics and use these values as zeros, working from each side. Mr. Wolbrecht was assigned to the Cristobal end of the work and Mr. Thomas to the La Boca side. In addition to the standard bench-marks made and placed purposely for this survey the levelers were instructed to connect with every permanent bench-mark adjacent to their line.

Field work was begun on June 7 on the Atlantic side, and June 8 on the Pacific side, and finished July 31, on both sides, two days of this time being devoted to the determination of instrumental constants.

Each party consisted of an observer, recorder, two rodmen, negro cook and six negro laborers for propelling the handcar, cutting of trochas, etc. Kern precise levels, with Kern & Fauth level tubes, were used. The usual methods of keeping backsights and foresights equal, and checking all lines by going over them in opposite directions, were followed. The instruments were disturbed by passing trains and blasting so frequently that, in order to insure good results, each reading was checked by changing the height of instruments and recording the second set of readings—the means of the two sets were taken and the stretch was checked in the opposite direction by the same methods.

On the line, Cristobal to San Pablo, Mr. Wolbrecht reports his main line of level as 23.3 miles, with 16 miles of side line. Side lines were run to determine the elevation of bench-marks along the relocated Panama railroad and above the level of Gatun Lake. On the main line 55 circuits were run, varying in length from 225 meters to 1,700 meters; the average discrepancy between the direct and reverse runs of these circuits was 1.25 millimeters, the greatest difference being 3.8 millimeters. The probable error of the last bench-mark for the above line was 4.06 millimeters, and the probable error for the entire distance is 0.66 millimeters per kilometer.

On the stretch leveled by Mr. Thomas, San Pablo to La Boca, the length of main line was 24.1 miles, the length of side line 18.6 miles. The probable error of the last bench-mark is 2.7 millimeters and the probable error per kilometer is 0.45 millimeters. The largest discrepancy on the main line between successive bench-marks was 2.8 millimeters.

Over the whole distance run, Cristobal to La Boca, standard bench-marks have been set, consisting of a concrete slab, 18 inches by 18 inches by 6 inches, with rounded corners, suitably lettered, with a copper or brass bolt set in the center of the concrete block, forming the point of elevation; block is buried about three feet in the ground with a 4-inch galvanized iron pipe centered over the bolt in the slab and projecting about 18 inches from the ground; the pipe is surmounted by a cast brass cap, suitably inscribed, with a projection rising from the center of same.

It is intended that all ordinary level elevations shall be taken from the top of this projection on the center of the cap, and in case greater accuracy is required, or if the pipe has been disturbed, that the cap shall be taken off and rod placed on bolt in tile; two special pipe wrenches are necessary in taking off the cap. All of these bench-marks, except where

in an inclosure, are inclosed with a wire fence painted white, with a sign warning against disturbance.

These bench-marks are placed in pairs across the Isthmus, the front one usually being near the Canal and the Panama railroad, the back one at some distance from the front one, and over the country to be covered by the Gatun Lake, above the 85-foot level and near the new Panama railroad. The front bench-marks are numbered 1, 2, 3, 4, etc., consecutively from Cristobal, and the back bench-marks are numbered 1a, 2a, 3a, 4a, etc., the number showing to which front bench-mark it belongs, the letter "A" indicating that it is a back bench-mark. Front bench-marks are about one mile apart. Two back bench-marks at San Pablo are omitted on account of uncertainty of location of the new Panama railroad.

All lines were run in accordance with practice of the U. S. Coast and Geodetic Survey, and of the Mississippi River Commission.

On investigation of the tide-gage records at Cristobal as furnished by the Department of Meteorology and River Hydraulics, it was found that a period of fifteen months only was available for determining the mean sea-level on each side; and on the La Boca side the Naos Island tide-gage records were absolutely useless on account of the impossibility of connecting the levels with this gage. On the completion of the breakwater, however, these records will become available.

As tidal oscillation is so small on the Atlantic side, and the mean of hourly readings from May, 1907, to August, 1908, was found to be only 0.02 feet higher than the former zero, or mean sea-level, but as the present tide staff gage was slightly in error and no record of the status of former ones used was available, it was decided not to change the zero, or mean sea-level now in use, until records of longer duration and more authentic value could be secured.

The old value therefore of bench-mark Spike, which is near the tide-gage, 6.21 feet, was adopted as an initial point in tabulating results. This bench-mark was found to agree within 0.003 foot with Municipal bench-mark No. 36, which latter is the basis of the old levels run in the neighborhood of Cristobal.

From bench-mark Bridge 12 (the new value of which agrees very closely with the former value) to the succeeding old bench-marks southward, a discrepancy of about 0.17 feet was observed between the old and new values, and in order to eliminate any doubt that might arise from this sudden divergence, the circuit from bench-mark Bridge 12 to Panama railroad bench-mark No. 9 was re-run at the conclusion of the work, and the precise level values verified. The levels in the center of the Isthmus, as shown by Panama railroad values, are about 0.304 feet in error.

The mean of hourly readings on the La Boca tide-gage, from August 1, 1907, to August 1, 1908, equals 0.547 feet, and the elevation of the zero of the gage, as shown by precise levels from Cristobal equals 0.174 feet, making the elevation of mean tide at La Boca, as determined by the year's tide-gage records, 0.721 feet.

I do not think it possible to arrive at a true determination of mean tide at La Boca, when we compare results from the tide-gage here. I give the monthly mean of hourly gage readings from July 1, 1907, to July 31, 1908:

July, 1907.....	+91	January, 1908.....	+18
August, 1907.....	+82	February, 1908.....	-11
September, 1907.....	+78	March, 1908.....	-12
October, 1907.....	+87	April, 1908.....	+18
November, 1907.....	+93	May, 1908.....	+64
December, 1907.....	+86	June, 1908.....	+80
		July, 1908.....	+73

You will see by the above table that the low means on the La Boca gage correspond to the dry months and the trade-wind season, and how much of the high means of the wet season are attributable to the Rio Grande water and how much to the trade winds are unknown quantities, but it certainly would seem to indicate that the results from the La Boca gage are worthless, except for local use, and that we must fall back on the Naos record when we can connect with the Naos gage on the new breakwater.

Taking the results of the dry season months, viz: January, February, March, and April, for 1908, we get a mean reading on the La Boca gage of +.0325 feet instead of 0.547, the mean for the year; this would make the difference between the Atlantic and Pacific means, as determined by precise levels, 0.2065.

When we have arrived at an accurate mean for tidal elevations at this place I should consider that the proper method to treat the elevations would be to make an adjustment throughout the Isthmus, giving both elevations of mean sea-level the same value, viz: zero.

A table of descriptions and elevations, of both new and old bench-marks, connected with this survey is appended, and a tabulation of final results to date is filed in this office.

LETTERS FROM THE LINE.

Privations in the Early Days.

THE CANAL RECORD:

A number of former employes of the Commission chanced to read, in your issue of July 29, or thereabouts, a letter from a Mr. Norman Winnie, recounting some of the hardships endured by the "Old Timers" who came to the Isthmus when he did. Some of us over here arrived on the Isthmus in the summer of 1904, and one of us lived at Culebra from August, 1904, to May, 1905, leaving there for Empire. We all remember when the tents, all of which had floors, were erected in Culebra, and Mr. Winnie's statement that he was obliged to "sleep on the ground" will hardly hold water. The Isthmus in 1904 and the early part of 1905 was hardly a paradise, but there were cots enough to go around, even if we had to use powder boxes for morris chairs. If any employe of the Commission slept on the ground, it was from choice, or because he was physically unable to reach his quarters—unless he was on one of the upper Chagres topography parties. What do some of the real "Old Timers," who remember the Culebra morris chairs and the first days of the Chapman mess, have to say about this?

W. J. BAUCUS,
L. M. HUNTINGTON,
H. B. HOWLAND.

Santiago de Cuba, August 20, 1908.

Masonic Organizations.

THE CANAL RECORD:

I wish to call your attention to an inaccuracy under the heading of "Social Life of the Zone" in your issue of July 15, 1908, in which you speak of Masonic organizations on the Isthmus. Your statement that the longest established secret society on the Isthmus is the Sojourners' Lodge, A. F. and A. M. is correct so far as regular lodges existing at the present time is concerned. Your statement, however, that Masonic lodges and clubs have been organized since 1898 at Culebra, La Boca, Empire, and Paraiso, is incorrect, as no "lodge" of Masons exists at any of those places. Two "lodges," so called of Freemasons exist in the city of Panama, but Sojourners' Lodge has not received authority from the Grand Lodge, A. F. and A. M. of Scotland, from which it holds its charter, to recognize such bodies as regular lodges. We may, of course, receive such authority.

G. G. DEDGE.

Edinburgh, Scotland, August 10.

An Ohio Club.

THE CANAL RECORD:

It is the desire of the Ohio Club to get in touch with all employes of the Isthmian Canal Commission and Panama railroad, whose homes are in Ohio. To this end I would be glad to have all such send me their names and Canal Zone address, as well as their address in the States.

S. D. ROPER,
Secretary, Ohio Club.

Gorgona, C. Z., August 28.

Dr. J. Pelham Bates, of Ancon Hospital, left with his family for New Orleans on the *Parismina* September 8. They will take up permanent residence in Nashville, Tenn., where Dr. Bates has accepted a post in the medical department of Vanderbilt university.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

Preparations are in progress for the fall meeting of the Canal Zone Federation of Women's Clubs to be held at Gorgona on October 1. Nearly all the clubs along the line have elected their delegates, and the various committees are working on their reports. There will be but one session, in the afternoon, and that from a club point of view, promises to be a most interesting one. Reports of the delegates to the Boston biennial will be made, and the personal and close insight they will give into the work that other club women are doing will be most helpful. Although it has been organized only a few months, the Federation promises to be a strong factor during the coming year.

The Ancon Woman's Club held its regular meeting on Wednesday, September 2. Mrs. C. W. Boxer presided. The report of the educational department through Mrs. W. T. Dozier, acting chairman, shows that the interest in the meetings is well sustained. The department met at Mrs. Dozier's residence on Thursday, August 27, a large number being present. Readings from a work on early Isthmian history, music, and refreshments were features of the afternoon. The philanthropic department, under Mrs. R. W. Fenn, acting chairman, reported the new undertaking to be going on well. This is in connection with the night school for newsboys which is conducted by Mr. Ports of the Methodist church, Panama. One member of the department pledges herself to work one night in the week, the purpose being to provide games and other amusements for the boys. The boys are also being taught simple songs in English. A visit to the insane ward was arranged for this week.

The question of the library association was taken up for discussion, and the club pledges itself to furnish \$100 toward the fund. Committees were appointed for the purpose of personal solicitation for names for membership. All the members present expressed themselves greatly interested in the project, and every effort will be made to bring it to a successful issue. Nominations for officers were made.

St. Luke's Episcopal Sunday School, Ancon, held its annual excursion on Thursday, August 27. The party, which numbered about thirty-five, left La Boca on the *Bolivar* early in the morning for Taboga, where the day was spent on the beach and Morre Island. The summer residence of Mr. Peebles was placed at the disposal of the picnic-makers for the day, and the basket lunch was eaten there. A special train met the excursionists at La Boca and ran into Panama in time for the 5.30 train down the line.

Archdeacon Bryan is pending the week in Costa Rica, on business connected with his charge of that mission. Services at Ancon chapel were conducted on Sunday by Rev. Edward J. Cooper, rector of Christ Church, Colon.

The Culebra Woman's Club opened the season, on Thursday, September 3, the vice-president, Mrs. May Byran, presiding in the absence of the president. There was a small attendance, but the plans for work for the coming year were taken up with enthusiasm and interest. The plan for the study

of the Spanish countries will not be carried out, owing to the departure of the chairman who had the work in charge, but the club will take up a reading course which includes the study of England, Ireland, and Scotland. Books, papers, and all instructions regarding the course has been sent for. Many of the older members of the club have left the Isthmus, and efforts are now being made to interest newcomers.

The reciprocity committee of the Zone Federation held a meeting at the Hotel Tivoli, Ancon, on Monday, August 31. In the absence of the chairman, Mrs. C. Hanson, of Culebra, presided. Every effort is being made to make this one of the useful branches of federation work. Programs will be exchanged or outlined, papers and entertainments from other clubs will be provided as called for, and calendars for use as models for planning the work will be forwarded. A suggestion was made that study programs be exchanged among the clubs. Efforts will be made to secure the cooperation of the clubhouse libraries in this work. All letters of inquiry should be forwarded through the member of the local club representing the reciprocity committee.

The Las Cascadas club met on Thursday, September 3, at the residence of Mrs. E. J. Albrecht. The retiring president, Mrs. O. G. Randall, was in the chair. The resignation of the vice-president, Mrs. A. N. Naylor, was accepted, and Mrs. W. B. Green was elected to fill the vacancy. Mrs. W. D. Stanton, a former president, was reelected to that office in the place of Mrs. Randall. Delegates elected to the Federation meeting were: Mrs. F. W. Walraven, Mrs. W. B. Green, Mrs. E. J. Albrecht, and Mrs. W. D. Drysdale. The regular entertainment and visiting committees for the month were elected. The club will meet at the home of Mrs. J. E. Martin, September 10.

Owing to the illness in the family of the president, Mrs. F. R. Roberts, the Pedro Miguel club suspended its regular meeting last week.

The Paraiso club will resume its regular meeting this month.

The Gorgona Woman's Club gave an entertainment on Friday evening, September 4, about nineteen members, assisted by their friends, taking part. A parody on a woman's convention was given. Music was furnished by the Gorgona orchestra. The entertainment hall of the clubhouse was filled to its utmost capacity. This is the first entertainment that the Gorgona club has given for its own benefit, and the members greatly appreciate the efforts of all who assisted in the undertaking in any way. Several musical numbers were given during the latter part of the program.

The club met on Tuesday, September 8, for election of officers, this being an adjourned session of the meeting on Thursday, September 3. Regular meetings will be held on each alternate Thursday, beginning September 17. Although the club has been virtually in recess since the end of April, the summer has been a busy one. The committees appointed for the interim have worked without interruption; a large number of new members have been added. Called meetings have been frequent and well attended. Mrs. Guy Ament, of Texas, who has been the guest of her sister, Mrs. Frank Morrison, leaves for her home this month. Mrs. Ament

is a prominent club woman at home, and has done much to assist in furthering the welfare of the club during her short stay.

The Gorgona Dramatic Club gave its first performance, "A Fisherman's Luck," on Tuesday evening, September 1, at the club house. There was a large attendance, and the performance was greatly enjoyed. The company has been rehearsing the melodrama for the past month, under the direction of Mr. D. E. Hayes. The scenery and stage appointments were all that could be desired. At the close of the performance, the members of the company were entertained at supper by Mr. and Mrs. Arthur J. Sweet. It is possible that the play will be given at Empire later. The organization is to be a permanent one, and the members are looking forward to the preparation of new plays. All are much interested and enthusiastic about the work.

Labor Day was celebrated at Gorgona by a ball game in the morning between the married men and the bachelors.

The Tivoli Lawn Tennis Club has been organized by residents of Ancon. Permission has been asked to use the courts already laid out on the grounds of the Hotel Tivoli.

Friday, September 11, the Culebra Sunday school will entertain all the children of Culebra from 4 to 7 p. m., at the Commission chapel. Games will be played and a supper provided. Every boy and girl is invited.

Concert.

By the I. C. C. Band at Gorgona, C. Z., Sunday, September 13, 1908, at 6 p. m.:

PROGRAM.

- 1 March—*Waldmere*.....Losey
 - 2 Selection—*Merry Widow*.....Lenar
 - 3 Tone poem—*Apple Blossoms*.....Roberts
 - 4 Waltz—*Angel's Dream*.....Herman
 - 5 Duet for Clarinets—*Nanine*.....Marsal
- MESSERS. GRAY AND HALE.
- 6 Selection—*Maritana*.....Wallace
 - 7 Comic Tattoo—*The Musician's Strike*.....Fahrbach
 - a Characteristic—*Dance of the Bumblebees*.....Bagley
 - 8 Schottische—*Let Me Be Your Lemon Coo*.....Allen
 - 9 Overture—*Sunshine and Showers*.....Flath
 - 10 Galop—*On Horseback*.....Bendix
- CHAS. E. JENNINGS, Musical Director.

A concert will be given at Las Cascadas, C. Z., September 20.

Misdirected Letters.

Division of Dead Letters.

Ancon, C. Z., September 9, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- | | |
|------------------------|-----------------------|
| Anderson, Grant | Hopkins, Wm. Robert—6 |
| Barbon, Herbert | Hunsicker, G. C. |
| Barry, Daniel | Kanachis, Nicolaos K. |
| Bezara, C. A. | Knight, E. L. |
| Carmichael, Chas. | Lipsie, T. E. L. |
| Darrah, Mrs. John | Loos, Chas. H. |
| Dixon, Wm. | McKensie, Cyril B. |
| Ellison, Mrs. Laura D. | Meacham, Jerome F. B. |
| Fortune, Thaddeus | Moore, F. H.—2 |
| Francesco, Loccolami | St. John, S. W. |
| Gaynes, I. M. | Smith, Jess T. |
| Gervais, Max | Tobbs, Paul M. |
| Green, William | Weich, Elmer J. |
| Haufl, W. B. | Whitney, Mrs. G. A. |
| Hennesy, Walter | Wilber, Miss Ruth |
| Holmes, W. J. | |

LEGAL NOTICE.

United States }
of America } In the First Judicial Circuit.
Canal Zone. }

George Blake, Jamaican, died intestate July 15, 1907, leaving an estate, consisting of three houses in Pedro Miguel. The claimants for the estate have not proved that they are the legitimate heirs of the decedent, and the Collector of Revenues has filed a petition for escheat under Sections 779-781 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the court house in Ancon on October 5, 1908, at 9 o'clock a. m., to establish their claims to the said estate, or to show cause why the same should not escheat to the Canal Zone.

WALTER EMERY,
Circuit Court Clerk.

COMMISSARY DEPARTMENT.

COMMISSARY PRICES

For week beginning September 9:

FRESH MEATS, POULTRY AND COLD MEATS.

	Price.
Beef—Sirloin roast.....per lb	30
Rump roast.....per lb	30
Porterhouse.....per lb	30
Rib-roast, short cut (not under 3 1/2 pounds).....per lb	24
Rib-roast, second cut (not under 3 pounds).....per lb	20
Chuck-roast (not under 3 pounds).....per lb	15
Soup.....per lb	9
Stew.....per lb	12
Corned.....per lb, 12, 14, 16	
Suet.....per lb	4
Steaks—Sirloin.....per lb	30
Porterhouse.....per lb	30
Rump.....per lb	30
Tenderloin.....per lb	30
Round.....per lb	24
Veal—Cutlets.....per lb	24
Short-cut chops.....per lb	24
Loin.....per lb	23
Entire forequarter (15 to 20 lbs).....per lb	11
For stewing.....per lb	11
Mutton—Entire forequarter (not under 10 pounds).....per lb	9
Short-cut chops.....per lb	20
Leg (8 to 10 pounds).....per lb	18
Lamb—For stewing.....per lb	10
Entire forequarter.....per lb	10
Chops.....per lb	30
Leg (6 to 8 pounds).....per lb	28
Pork—Cuts.....per lb	20
Livers—Beef.....per lb	11
Sausage—Pork.....per lb	16
Sweet bread—Veal.....each	1.20
Beef.....per lb	25
Ox tongues.....each	90
Eggs, fresh.....dozen	34
Chickens—Dressed (milk-fed).....each	1.40
Large.....each	1.90
Capons.....each	2.40
Fowls, medium and large.....each, \$1.00 and	1.25
Ducks, fatted (fancy).....each	1.10
Suckling pigs.....each	4.90
Turkeys.....per lb	20
Squabs.....each	45
Bacon—Strips.....per lb	23
English, breakfast, sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$20
Westphalia.....per lb	45
Ferris.....per lb	19
Beef, salt, family.....per lb	16
Salt pork.....per lb	13
DAIRY PRODUCTS.	
Butter—Prints, prime quality.....per lb	33
Cheese—Neufchatel.....each	6
Young America.....per lb	22
Swiss.....per lb	33
Gouda.....per lb	34
Edam.....each	1.05
Camembert.....per lb	28
McLaren's.....jar	15
Pinxter's.....tin	22
Buttermilk.....quart	15
FRUITS AND VEGETABLES.	
Grapefruit.....each	4
Lemons.....dozen	18
Oranges.....dozen	18
Cantaloupes.....each	10
Tomatoes.....per lb	6
Lettuce.....per lb	14
Cauliflower.....per lb	20
White potatoes.....per lb	3 1/2
Cabbage.....per lb	4
Onions.....per lb	3 1/2
Corn.....dozen	25
Melons.....each	35
Cucumbers.....per lb	7
Sweet potatoes.....per lb	2 1/2
Turnips.....per lb	3
Beets.....per lb	3
Carrots.....per lb	3
Squash (summer).....per lb	7
Apples.....per lb	5
Peaches.....per lb	15
Celery.....bunch	18

§ Sold only from cold-storage and not from Commissaries.

NEW ARTICLES.

	Price.
Button, collar, Kremenz.....each	10
Ties, cotton, four-in-hand.....each	40
Chiffon.....yard	33
Kimonas, silk.....each	3.80

Zephyrs, Red Seal.....yard	11
French colienne.....yard	22
Underskirts.....each, \$1.00 and 1.60	
Flannel, Canton.....yard	12
Paper, linen, writing.....package	18
Envelopes.....package	8
Paste, library, Carter's, 2-oz.....bottle	5
Shoes, boys' vici, blu.....pair	3.00
Shoes, men's leather, extra high-cut.....pair	5.30
Stoves, alcohol, 2-hole, nickel, No. 475.....each	6.00
Coolers, water, U. C., 3-gallon.....each	6.00
Lifters, stove-cover.....each	8
Traps, rat.....each	10
Handles for Enterprise sad-iron.....each	10
Funnels, agate, No. 02.....each	12
Funnels, agate, No. 05.....each	20
Shakers, salt, pepper, china.....each	20
Plates, dessert, china.....each	21
Glasses, whisky, light.....each	4
Grape Juice, Meier's, pints.....bottle	35
Baskets, market, with handles and covers.....each	45
Dishes, soap, blue and white.....each	20
Pots, mustard, china.....each	15
Bowls, finger, plain.....each	20
Towels, Turkish, bleached.....each	50
Ticking.....yard	20
Suit cases, fitted, 24 inch.....each	26.50
Letter cases, leather, No. 36.....each	3.75
Shirts, full dressed.....each	2.00
Shirts, plain, negligee.....each	1.50
Parasols.....each	1.40
Mackerel, shore.....per lb	8 1/2
Hangers coat.....each	7
Cork screws.....each	25
Kettles, tea, agate, No. 40.....each	35
Collars, Arrow.....each	12
Collars, Chgett.....each	25
Supporters, collar.....pair	15
Card cases, leather.....each	2.75
Paper, writing.....box	10
Hats, straw.....each	1.20
Buttons, collar.....each, 8, 12 and 18	
Silk zephyrs.....yard	50
Soie Ninon.....yard	50
Buttons, pearl.....dozen	16

Rainfall, September 1 to 5, 1908. Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day.	Total.
<i>Atlantic Division—</i>		
Cristobal.....	.84	2.30
Brazos Brook.....	.67	1.45
Gatun.....	.98	2.25
Bohio.....	.59	1.18
<i>Central Division—</i>		
Tabernilla.....	1.30	2.12
San Pablo.....	.98	2.01
Bas Ohispo.....	.79	2.11
Gamboa.....	.55	1.70
Empire.....	.87	2.04
Camacho.....	.64	1.83
Culebra.....	.85	1.86
Rio Grande.....	.70	1.55
<i>Pacific Division—</i>		
Pedro Miguel.....	.45	1.10
La Boca.....	.42	.69
Ancon.....	.50	.92
<i>Upper Chagres.</i>		
Alhajuela.....	1.34	4.00

Tug Service Porto Bello and Nombre de Dios.

Effective, August 6, 1908: The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Cristobal 6.30 p. m. for Porto Bello only; returning same day.

Monday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Tuesday: Leave Cristobal after Train 2 without tow, for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.

Wednesday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Friday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Saturday: Leave Cristobal after Train 2 for Porto Bello only; returning, leave Porto Bello 5.30 p. m.

The following vessels arrived at or departed from the port of Ancon during the week ending September 4, 1908:

Arrivals—August 29, *Aysen*, from Valparaiso; August 30, *Newport* from San Francisco; August 30, *Santa Maria*, U. C. Co., from California.
Departures—August 25, *Mapocho*, to Valparaiso; August 31, *Peru*, to San Francisco; September 1, *Chile* to Valparaiso, September 2, *Santa Maria*, to California.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Esperanza.....P. R. R. Saturday.....	Sept. 5
Magdalena.....R. M.....Saturday.....	Sept. 5
Colon.....P. R. R. Thursday.....	Sept. 10
Pr. Aug. Wilhelm.....H. A.....Saturday.....	Sept. 12
Advance.....P. R. R. Tuesday.....	Sept. 15
Orinoco.....R. M.....Saturday.....	Sept. 19
Allianca.....P. R. R. Monday.....	Sept. 21
Finance.....P. R. R. Saturday.....	Sept. 26
Prinz Joachim.....H. A.....Saturday.....	Sept. 26
Panama.....P. R. R. Thursday.....	Oct. 1
Atrato.....R. M.....Saturday.....	Oct. 3
Colon.....P. R. R. Tuesday.....	Oct. 6

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK.

Allianca.....P. R. R. Wednesday.....	Sept. 9
Finance.....P. R. R. Monday.....	Sept. 14
Prinz Joachim.....H. A.....Tuesday.....	Sept. 15
Esperanza.....P. R. R. Friday.....	Sept. 18
Atrato.....R. M.....Tuesday.....	Sept. 22
Colon.....P. R. R. Wednesday.....	Sept. 23
Advance.....P. R. R. Monday.....	Sept. 28
Pr. Aug. Wilhelm.....H. A.....Tuesday.....	Sept. 29
Allianca.....P. R. R. Saturday.....	Oct. 3
Clyde.....R. M.....Tuesday.....	Oct. 6
Finance.....P. R. R. Thursday.....	Oct. 8
Panama.....P. R. R. Tuesday.....	Oct. 13
Prinz Joachim.....H. A.....Tuesday.....	Oct. 13
Colon.....P. R. R. Monday.....	Oct. 19
Tagus.....R. M.....Tuesday.....	Oct. 20

FROM NEW ORLEANS TO COLON.

Ellis.....U. F. C. Saturday.....	Sept. 5
Cartago.....U. F. C. Saturday.....	Sept. 12
Harry T. Inge.....U. F. C. Saturday.....	Sept. 19
Ellis.....U. F. C. Saturday.....	Sept. 26

FROM COLON TO NEW ORLEANS.

Ellis.....U. F. C. Tuesday.....	Sept. 15
Cartago.....U. F. C. Tuesday.....	Sept. 22
Harry T. Inge.....U. F. C. Tuesday.....	Sept. 29

FROM COLON TO BARRADOS, CALLING AT TRINIDAD.

Magdalena.....R. M.....Tuesday.....	Sept. 15
Orinoco.....R. M.....Tuesday.....	Sept. 29

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 11 a. m., and from Colon at 1.30 p. m., via Port Limon, for New Orleans. In addition to the above, the United Fruit Company dispatches a steamer about every ten days from Colon, via Bocas del Toro, for New Orleans.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 2d and 20th of each month.

Flood Stages in the Chagres.

Maximum height of Chagres above low water for the week ending midnight, September 5, 1908:

	STATIONS.				
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun.
Height of low water above mean sea level, feet.....	129	92	46	0	0
Maximum height above low water, feet:					
Sunday, Aug. 30.....	5.25	4.73	4.70	6.95	3.60
Monday, Aug. 31.....	2.70	2.84	3.45	9.40	3.15
Tuesday, Sept. 1.....	4.45	4.04	5.10	8.20	2.50
Wedn'sday, Sept. 2.....	3.80	3.76	6.05	8.20	2.60
Thursday, Sept. 3.....	3.35	3.33	6.30	11.10	3.68
Friday, Sept. 4.....	1.75	2.25	4.20	11.30	4.03
Saturday, Sept. 5.....	1.60	2.00	3.35	7.45	2.80
Maximum for week.....	5.25	4.73	6.30	11.30	4.08

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 16, 1908.

No. 3.

The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Four and a-Half Million Barrels of Cement

By circular No. 420, the Isthmian Canal Commission asked for bids for furnishing about 4,500,000 barrels of Portland cement, for use in the locks at Gatun, Pedro Miguel, and Miraflores. Of this amount, approximately one-half will be used at Gatun, one-sixth at Pedro Miguel, and one-third at Miraflores. Bids were opened on June 1. A large number of tenders were made, offering cement of American and foreign manufacture. The lowest bid was that of the Atlas Portland Cement Company. The prices were \$1.19 per barrel in wood, and \$1.60 per barrel in double bags of Osnaburg duck, these prices being for delivery at Jersey City or Hoboken, and a rebate of 8½ cents being allowed for each bag returned in good condition. The company also offered to deliver at the works at Northampton, Pa., the cement packed in bags or barrels, to be furnished by the Commission, at 65 cents per barrel. Award has been authorized to the Atlas Portland Cement Company, reserving to the Commission the right to elect the method of delivery under certain conditions to be specified in the contract. The delivery is to be at a minimum rate of 2,000 barrels and a maximum of 10,000 barrels per day, and will begin between May 1 and October 1, 1909, upon 90 days' notice to be given by the Commission.

The cement for the spillway in Gatun Dam will be furnished under this contract, but the delivery will begin December 1, 1908, and continue at the rate of 500 barrels per day, this date not affecting the date of beginning deliveries of the main amount under the contract. It is expected that about 80,000 barrels will be needed for the spillway.

Completing Obispo Diversion.

It is the intention to have the Obispo Diversion, which diverts water from the east side of Culebra Cut, completed by the end of

the next dry season. The last big cut that will allow the water to enter the ravine leading to the Chagres River, is about three-quarters of a mile east of Haut Obispo, and will require an excavation of over 300,000 cubic yards. It is one of the most difficult pieces of work that any one of the construction superintendents of the Central Division has yet encountered. The most practical and economical way of removing the material will be decided in a few days. It is not the amount of excavation that makes the problem interesting so much as the steep grade and sharp curvature encountered in getting trains up to the site. It may be necessary to do no small amount of hand work before the steam shovels can begin excavating.

Naos Island Breakwater.

In connection with the breakwater from East La Boca to Naos Island, at the Pacific entrance to the Canal, now in process of construction, it is interesting to record that a similar structure was provided for in the concessionary contract between the United States of Colombia and the Panama Railway Company made in 1867. Article 4 of that contract reads as follows:

The Company binds itself to extend the railroad on the Pacific side to the islands of Naos, Culebra, Perico and Flamingo, or other places in the bay where there may exist a permanent depth of water for large vessels.

In 1880 a new contract was formed by which the Panama Railway Company agreed to pay to the United States of Colombia the sum of \$10,000 a year for a period of thirty years as a penalty for not extending the road to the islands in the Pacific. In other words, the company agreed to pay \$300,000 for the abrogation of this contract during 30 years, at the expiration of which period the original contract was to be again in force. The penalty of \$10,000 a year was paid for 20 years or until 1900. In that year the Panama Railway Company, acting through Senor Don Jose Augustin Arango, as special representative, effected a new settlement with the Colombian Government, in accordance with which the original contract was abrogated for all time in consideration of the payment by the company of an additional sum of \$200,000, making the total amount which the company had paid for the non-completion of the railway to the islands in the Pacific \$400,000.

Quartermaster's and Subsistence Departments.

The clerical force of the old Division of Material and Supplies has been distributed among the offices of the Quartermaster's Department, the majority of the men being transferred to the office of the Chief Quartermaster in Culebra. The Culebra office will be maintained in the wing of the Administration building, formerly occupied by the

Department of Labor, Quarters and Subsistence.

The headquarters of the Subsistence Department were moved to Cristobal on September 15, and were established in the De Lesseps house, formerly occupied as offices by the Division of Material and Supplies.

Rain Interferes with Steam Shovels.

The steady downfall of rain at Culebra, September 12 and 13, caused some delay in the work in the Culebra Cut. Between noon on September 12, and noon September 14, 4.93-100 inches of rain fell. At Cucaracha slide the loose dirt was washed down into the Cut until it overflowed the construction tracks and buried the trucks of three steam shovels. Men were immediately set at work excavating the shovels, and, barring further heavy rains, they will resume work on September 16, or the day following.

Storage Magazines.

The final location for the 600,000-pound dynamite magazine about two miles up the Chagres River on the right bank, has been approved and over a mile of track leading to it is now completed. Work is being pushed rapidly to complete the track, so that the construction of the big magazine may be started by the middle of October. A magazine of like capacity is almost completed at Mindi, and work on the Cocoli magazine is making good progress. The opening of these magazines will relieve the situation in taking care of the great amount of dynamite which is being shipped to the Isthmus to aid in the excavation work.

A Dump at Santa Cruz.

A dump ground capable of holding 3,000,000 cubic yards of spoil has been located north of Santa Cruz on the new line of the Panama railroad. It has the triple advantage of being a short haul from Culebra Cut, of aiding the Panama railroad in making a cut-off from the line as at present relocated, and relieving the main line of many of the trains hauling material to the big dump at Tabernilla. Several Central Division engineers, the superintendent of transportation, and one of the superintendents of construction went over the ground last week. The windings of the Chagres River form a peninsula at Santa Cruz, known as Point 1, and another at Matachin known as Point 2. In going around Point 2, the relocated line makes almost a semi-circle and then cuts across Point 1, onto the new Gamboa bridge. At this point the new line is built on trestles in several places, the total length of high trestles being over a mile. These trestles will be strengthened by some additional bracing to make them perfectly safe for dumping, and the wasting of spoil over them will then begin.

Meanwhile excavation at Matachin peninsula, Point 2, is making rapid progress and as soon as the part of the work that is to be

NOTES OF PROGRESS.

(Continued)

done by steam shovels is completed, the Chagres will be turned through the new channel. This will leave all that part of the peninsula, around which the relocated line of the railroad runs, outside the course of the river. A cut-off line will then be built from a point about 1,000 feet north of Gamboa Bridge to connect with the long trestle on the other side of Point 2, forming a chord of what has been referred to as a semi-circle. The cut-off line will run over a trestle bridge, and as soon as the bridge is completed, dumping to make a fill will be begun. The trestle dump will be widened out making a regular dump ground. This plan for improving the alignment of the relocated railroad, relieving the main line of some of its traffic, and opening a short-haul dump for trains from the prism between Las Cascadas and Bas Obispo, was made by the old Chagres Division before the reorganization.

A Month's Work in the Shops.

August was a typical month in the shops on the Isthmus, and the returns from the plants at Gorgona and Empire give a fair idea of the amount and kind of work done.

At Gorgona the manufacturing work included the retubing of the boiler for the pumping station at Gatun, the construction of a track shifter, of one 5-ton derrick, one unloader plow, three wings for spreaders, and structural iron for the jail at Porto Bello, the lodge hall at Las Cascadas, and the powder magazine at Encaracha. Repairs were made on 27 locomotives, and on 2,099 wooden flat cars, most of the wood-car repairing being done at this shop. In the wood shop, 236,774 feet of lumber were ripped and dressed. The cost of labor was \$78,676.94, and of material \$76,452.10. In the iron foundry 385,235 pounds of iron castings were turned out, with a labor cost of \$8,600.29, and an expenditure for material of \$4,548.17. The brass foundry turned out 38,171 pounds of brass castings at a labor cost of \$1,386.42, and an expenditure for material of \$5,444.32. In the shop the cost for labor for manufacturing was \$11,909.30, and for material \$18,578.86. The remainder of the labor and material accounts is charged against repairing.

General repairs are made at the Empire shops to steam shovels, and to the greater number of steel cars, although a large amount of manufacturing and other repairing is also done there. General repairs were made on 13 steam shovels, and the installation of a 400-k. w. unit in the electric light plant was begun. The cost of labor at Empire was \$81,053.07, and of material \$45,248.06.

Keeping Public Order.

The August report of the Chief of Police shows that 488 people, representing forty-three countries, were arrested in the Canal Zone during that month. Seventy-five cases were tried in the courts, 15 of which were dismissed, 37 continued, and 23 in which convictions were procured. Of the 23 persons convicted, 11 were sentenced to the penitentiary, 3 to the common jail, and 9 to pay a fine. Seven of the penitentiary prisoners are serving sentences of a year, 3 sentences of 6 months, and 1 a sentence of 3 months, all at hard labor. Seven pris-

oners were discharged from the penitentiary. The prisoners in the penitentiary performed work valued at \$698.15, while those at the Gatun convict camp, who are working on the highway from Gatun to Mount Hope, performed service valued at \$1,125.10. The number of prisoners in the penitentiary on August 31 was 115.

Compared with June and July, there was a decided decrease in the number of arrests during August, the number during June having been 573, and during July 536. No cases of homicide or manslaughter occurred during August. A number of petty burglaries occurred, and the leader of the gang of burglars is now in custody. Six men were deported—two to Spain, and one each to Barbados, Chile and the United States.

There were 10 violent deaths requiring action by the coroner, 4 of which were due to drowning, 2 to railroad accidents, 1 to suicide, and 3 to accidental injuries.

Excavation Equipment.

The first order for 40-ton flat cars given by the Isthmian Canal Commission for use in the Canal work was, as stated in THE CANAL RECORD of September 9, for 800 cars. This number, however, does not comprise all the 40-ton flat cars in use on the work, as enough have been added since the first order was given to bring the total number up to 1,778. The present car equipment of the Isthmian Canal Commission, which does not include the Panama Railroad Company, is as follows:

Forty-ton flats.....	1,778
Fifty-ton steel flats.....	500
Western dumps.....	599
Oliver dumps.....	500
Ingoldsby dumps.....	12
Goodwin dumps.....	12
Total.....	3,401

The hard usage that this equipment receives on the Isthmus is shown by the fact that in August 6,250 40-ton flat cars were repaired in the shops, an average of 3½ trips to the shop for each car. Of the 500 50-ton steel flat cars, 105 were repaired during the month. Repairs were also made in the shops to 2,011 Western dump cars, 1,194 Oliver dump cars, 22 Ingoldsby cars, and 11 Goodwin cars. The cost of shop repairs to cars in August was \$49,797.22.

Repairs amounting to \$1,011.85 were made on the nine track shifters owned by the Commission, \$666.73 on the 35 cranes, \$302.47 on the 18 pile drivers, and \$331.18 on the labor cars. The Commission also owns 30 unloaders, repairs to which in August amounted to \$6,006.31, and 23 spreaders, which were repaired at a cost of \$3,567.53.

Seventeen steam shovels were in the shops for general repairs at a cost of \$28,815.05. This does not take into account the repairs made in the field. The steam shovels owned by the Commission are divided as follows:

Forty-five-ton Bucyrus.....	10
Seventy-ton Bucyrus.....	35
Ninety-five ton Bucyrus.....	32
Model 20, Marion.....	1
Model 60, Marion.....	7
Model 91, Marion.....	16
Total.....	101

The cost of repairs to 44 locomotives was \$34,509.55, of which \$10,498.37 was for running repairs. The locomotive equipment consists of the following:

French.....	124
D'cauville.....	9
Two-hundred class.....	100
Three-hundred class.....	40
Six-hundred class.....	20
Thirty-six-inch gauge.....	4
Total.....	297

LETTERS FROM THE LINE.

An Open Letter.

THE CANAL RECORD:

To the Former Employes of the Building Construction Division: As my connection with the Building Construction Division closes to-day, after three years of active service as head of the division, and as the business ties that have bound us together during this period are about to be severed, I desire, through the columns of the THE CANAL RECORD, to express to you, each one and all, my thanks for the uniform courtesy and respect with which you have treated me at all times.

To the former superintendents and general foremen on the work, I wish particularly to thank you for your promptness and efficiency in carrying out any orders or instructions I have given. The most of my life has been spent in associations and dealings with men of the class to which, I am proud to say, "you and I belong," and our service together has been uniformly pleasant and satisfactory.

To the clerical and office forces I wish to say, in addition to the above, in whatever station or position in life you or I may be in future, I can always refer with pleasure to the days and years we have spent together on the Isthmus.

Again, I thank you and wish you as large a measure of success as you justly merit and godspeed in whatever you undertake.

With best wishes for all, I am,
W. M. BELDING,
Master Builder.

Culebra, September 9, 1908.

Army and Navy Smoker.

THE CANAL RECORD:

The Gen. Henry W. Lawton Garrison, No. 40, and the Birt S. Sturtevant Garrison, No. 41, of the Regular Army and Navy Union of the U. S. A., will hold a smoker at the Imperial Hotel, Colon, Saturday, October 3, 1908, at 8.30 p. m.

A real "Army" meal will be served. Good speakers, singers, musicians and elocutionists will be present, and a good time is therefore promised. It is the desire of this organization to extend an invitation to all ex-soldiers, sailors, and marines on the Isthmus (who have served in the regulars) to be with us on this occasion, and in order that no one may be slighted, and that we may become better acquainted, it is requested that "all hands" send their names and addresses to William M. Ridpath, adjutant, Cristobal, C. Z., who will immediately forward invitations.

Very respectfully,
G. C. BRADFORD,
Commander, No. 40,

Cristobal, September 10, 1908.

Steam Shovel Men.

All members of the International Brotherhood of Steam Shovel and Dredge Men are requested to attend a meeting to be held in the clubrooms at Bas Obispo, at 2 o'clock Sunday afternoon, September 20.

G. G. MCNAMARA.

Louis Mickle died at Colon hospital September 8, from appendicitis. He was born in New York state 37 years ago, and had been on the Isthmus 2 years and 9 months, his place of residence being house No. 292, Cristobal. His wife survives him.

PERFORMANCE OF STEAM SHOVELS

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS

The subjoined tables show the monthly records of steam shovel work in Canal excavations since American occupation

ATLANTIC DIVISION

COLON DISTRICT						GATUN LOCKS.						GATUN SPILLWAY.					
Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
1907—						1907—						1907—					
July	1	13	56	731	11.12	July	3.70	27	784	21 176	16.37	July	1.33	26	423	10,998	11.12
August	2	27	283	7,629	16.37	August	4.12	24	884	21,219	8.03	August	2.00	27	498	13,433	16.37
September	2	24	601	14,419	8.03	September	5.00	27	1,013	27,355	19.27	September	2.00	24	757	18,158	8.03
October	2	27	761	20,539	19.27	October	5.00	24	1,014	24,327	14.27	October	2.00	27	745	20,118	19.27
November	2	24	833	20,002	14.27	November	5.00	25	1,286	32,159	5.53	November	2.00	24	854	20,494	14.27
December	2	25	939	23,473	5.53	December	5.00	24	1,431	37,218	15.88	December	2.00	25	1,395	34,878	5.53
1908—						1908—						1908—					
January	2	26	1,218	31,418	3.18	January	5.72	26	1,302	33,840	3.18	January	3.00	26	1,264	32,863	3.18
February	2	24	1,368	32,816	1.29	February	6.01	24	1,222	29,333	1.29	February	3.75	24	1,183	28,402	1.29
March	2	26	1,574	40,925	2.81	March	7.00	26	1,206	31,366	2.81	March	4.54	26	1,311	34,149	2.81
April	2	25	1,349	33,718	1.47	April	7.00	25	1,288	32,210	1.47	April	5.00	25	1,184	29,598	1.47
May	2	25	1,087	27,167	17.30	May	5.76	25	1,156	28,891	17.30	May	4.42	25	908	22,701	17.30
June	1.8	26	684	17,790	13.33	June	4.88	26	1,129	29,364	13.33	June	3.50	26	1,117	29,045	13.33
July	1.54	26	587	15,269	13.67	July	3.77	26	1,396	36,291	13.67	July	3.00	26	981	25,514	13.67
August					15.88	August	3.50	26	1,431	37,218	15.88	August	2.85	26	783	20,351	15.88

CENTRAL DIVISION

CULEBRA SECTION						CHAGRES SECTION							
Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cubic yards).		Rainfall (inches).		Maximum temperature in sun at Empire (degrees Fahrenheit).	Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
			Per day.	Per month.	Empire.	Culebra.							
1906—						1906—							
January	12.83	26	363	9,430	1.28	1.19	.....	January	0.15	27	716	19,333	12.20
February	12.43	23	587	13,494	0.57	0.64	.....	February	0.92	24	976	23,420	14.71
March	12.37	27	716	19,335	0.45	1.34	.....	March	2.22	27	428	11,544	13.62
April	12.33	24	720	17,289	11.42	8.43	.....	April	3.00	24	612	14,681	9.85
May	12.41	27	581	15,684	7.54	7.25	.....	May	6.12	25	630	15,756	2.26
June	14.81	26	539	14,026	6.92	8.94	.....	June	8.11	26	797	20,720	0.20
July	16.64	25	378	9,441	14.61	20.26	127	July	10.33	24	798	19,144	0.11
August	16.93	27	536	14,461	11.84	12.97	132	August	11.47	26	1,082	28,094	0.41
September	21.33	24	568	13,664	7.41	6.22	130	September	11.76	25	1,121	28,013	1.81
October	22.67	27	532	14,373	3.97	8.46	128	October	11.68	25	808	20,197	13.13
November	20.46	24	459	10,833	21.05	19.19	120	November	12.23	26	1,013	26,341	6.55
December	22.68	25	491	12,267	8.15	9.09	108	December					
1907—						1907—							
January	31.04	26	702	18,248	0.08	0.00	104	January					
February	39.87	23	674	15,966	0.13	0.49	108	February					
March	43.88	25	741	18,530	0.16	0.08	105	March					
April	44.12	26	765	19,884	0.09	0.04	110	April					
May	31.70	26	833	21,674	6.22	7.45	118	May					
June	38.28	25	651	16,266	13.53	14.74	118	June					
July	43.38	26	680	17,670	9.85	11.81	120	July					
August	39.70	27	729	19,680	11.28	11.38	123	August					
September	38.50	24	811	19,468	10.86	15.27	123	September					
October	37.63	27	813	21,963	15.44	15.27	123	October					
November	41.88	24	784	18,818	10.40	6.91	123	November					
December	42.72	25	965	24,113	1.47	2.30	124	December					
1908—						1908—							
January	43.42	26	1,084	28,177	0.75	0.91	125	January					
February	43.67	24	1,186	28,475	0.00	0.01	124	February					
March	42.19	26	1,171	30,451	0.41	0.13	125	March					
April	41.28	25	1,202	30,031	1.36	1.67	127	April					
May	41.56	25	918	22,948	12.91	12.63	129	May					
June	42.92	26	1,011	26,281	8.21	8.76	126	June					
July (old Chagres Division included)	52.57	26	1,071	27,848	11.79	13.23	121	July					
August do do	52.58	26	1,122	29,134	8.11	7.74		August					

*After July 1, 1908, the old Chagres and Culebra divisions were consolidated in the Central Division. No separate record for steam shovels in the old divisions has been kept since that date. Figures for July and August under "Culebra Section" include work done in the whole Central Division.

Summary for the month of July, 1908:
 Average number of shovels at work, 66.63.
 Average output per shovel per day, 887 cubic yards
 Average output per shovel per month, 23,053.
 The working day for steam shovels is eight hours.

PACIFIC DIVISION

PEDRO MIGUEL LOCKS						MIRAFLORES LOCKS, DAMS AND SPILLWAY						LA BOCA DISTRICT					
Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
1908—						1908—						1908—					
June	0.50	26	600	19,134	4.98	March	3.50	26	746	19,418	0.00	March	1.00	26	476	12,360	0.00
July	1.00	26	626	16,282	9.53	April	4.50	25	820	20,502	0.76	April	1.00	25	452	11,300	0.76
August	1.00	26	816	21,203	9.31	May	5.75	25	487	12,174	8.65	May	1.00	25	688	17,200	8.65
						June	3.80	26	695	18,077	4.98	June	1.00	26	562	14,630	4.97
						July	3.50	26	930	24,179	5.66	July	1.00	26	623	16,200	5.66
						August	3.70	26	947	24,612	9.31	August	0.92	26	739	19,214	10.48

EMPLOYEES INJURED ON ISTHMUS.

Decision of Comptroller of the Treasury in Reference to Their Compensation.

It is held by the Comptroller of the United States Treasury that by the Act of Congress, effective August 1, 1908, all Isthmian Canal Commission regulations, providing for allowance of injury or meritorious sick leave, are revoked.

This Act grants to certain employes injured in the performance of their duties compensation as long as disabled, not exceeding one year, provided they are disabled for more than fifteen working days; and prohibits the payment for injury leave to employes who are disabled fifteen working days or less, or who do not come under the Act.

Injured employes, disabled for more than fifteen working days, in order to obtain payment for the period of absence from duty, must submit a claim for compensation to the Department of Commerce and Labor at Washington, D. C. This claim for compensation will be prepared for them by the Claim Officer, Administration Building, Culebra.

Injured employes who have lost fifteen working days should call on the Claim Officer at Culebra, and surgeons by whom they are treated will furnish railroad transportation for that purpose. If they are not able to travel to Culebra they should notify the Claim Officer of that fact in writing, showing the name of the hospital in which they are being treated, and the Claim Officer will call on them for the purpose of preparing their claim for compensation.

It must be understood that absolutely no payment can be made for time lost on account of injuries until authorization is received from the Department of Commerce and Labor, Washington, D. C.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

TREASURY DEPARTMENT,
Washington, D. C., Sept. 1, 1908.
TO THE CHAIRMAN OF THE ISTHMIAN CANAL COMMISSION:

Sir—I am in receipt of your letter of the 20th ultimo, in which you request my advance decision of the questions therein submitted. It reads:

"I have the honor to request your decision upon the questions herein stated, as to the legality of payment by the Commission of compensation to its employes in certain cases during the time they are unable to work on account of injury incurred in the performance of duty.

"The regulations adopted at the 129th meeting of the Commission held June 11, 1907, which regulations became effective July 1, 1907, provide as to employes other than laborers as follows:

"An employe may be granted, in the discretion of the head of the department in which employed, with the approval of the Chairman, leave on account of injury incurred in the performance of duty, not exceeding thirty days in any current year, while such employe is incapacitated from duty by reason of such injury. The amount of compensation to be paid an employe to whom leave is granted on account of injury will be calculated as provided for in case of sick leave. Leave on account of injury may be granted to an employe in addition to the sick leave above provided. Leave on account of injury shall not be cumulative, and payment for same will be made on the first pay-roll following its authorization. All employes, in case of illness or injury, will receive free medical care and attendance at the hospitals."

"The same regulations provide, as to all laborers on the Isthmus as follows:

"Laborers may be granted, in the discretion of the head of the department in which employed, with the approval of the Chairman, leave on account of injury incurred in the performance of duty, not exceeding

thirty days in any current year, while incapacitated for duty by reason of such injury. The amount of compensation in such cases shall be calculated on the basis of an eight-hour day. In case of illness or injury, laborers shall receive free medical care and attendance at the hospitals."

"Attention is also invited to the Act of Congress approved May 30, 1908 (35 Stat., 556), granting to certain classes of employes of the United States compensation for injuries sustained in the course of their employment. Sections 1, 7 and 8 of that Act provide:

"That when, on or after August first, nineteen hundred and eight, any person employed by the United States as an artisan or laborer in any of its manufacturing establishments, arsenals, or navy-yards or in the construction of river and harbor or fortification work, or in hazardous employment on construction work in the reclamation of arid lands, or the management and control of the same, or in hazardous employment under the Isthmian Canal Commission, is injured in the course of such employment, such employe shall be entitled to receive for one year thereafter, unless such employe, in the opinion of the Secretary of Commerce and Labor, be sooner able to resume work, the same pay as if he continued to be employed, such payment to be made under such regulations as the Secretary of Commerce and Labor may prescribe: *Provided*, That no compensation shall be paid under this Act where the injury is due to the negligence or misconduct of the employe injured, nor unless such injury shall continue for more than fifteen days. All questions of negligence or misconduct shall be determined by the Secretary of Commerce and Labor.

"Sec. 7. That the United States shall not exempt itself from liability under this Act by any contract, agreement, rule, or regulation, and any such contract, agreement, rule, or regulation shall be pro tanto void.

"Sec. 8. That all Acts or parts of Acts in conflict herewith or providing a different scale of compensation or otherwise regulating its payment are hereby repealed."

"There may be some question whether a particular employe, or class of employes, of the Commission are within the terms of this act of Congress and entitled to its benefits. Without discussing that question, it is to be noticed that the Act does not cover any case of injury under any circumstances unless the injury continue for more than fifteen days; that Section 7 makes void pro tanto any contract, agreement, rule, or regulation that exempts the United States from liability under this Act; and that Section 8 is but an affirmative statement of the effect this Act has upon prior conflicting Acts or parts of Acts.

"The Act being a beneficial one it has not seemed to me that it was intended to take away from an employe any contract right which he had to payment for time lost through injury incurred in the performance of duty; and therefore, that an employe who would be entitled to the benefits of the Act if his injury lasted more than fifteen days is also entitled to receive the benefits conferred upon him by his contract or the regulations of the Commission for the period of injury if it continue for only fifteen days or less; in other words, an employe coming within the terms of the Act would receive, under the Act, pay if the injury lasted sixteen days or more; while, if it lasted but fifteen days or less, he would be entitled to pay under the terms of his contract with the Commission.

"This view of the meaning of the law would not place such an employe in a worse position as to an injury lasting fifteen days or less than he was before the passage of the Act, nor in a worse position as to compensation for such injury than that occupied by the employes of the Commission who are not entitled to the benefits of the Act.

"It is also to be noticed that the Act provides that no compensation shall be paid under it where the injury is due to the negligence or misconduct of the employe injured, while the regulations of the Commission and its contracts of employment contain no such restrictions.

"Your decision is requested upon the following questions:

"1. Is the Isthmian Canal Commission authorized to pay to an employe who is entitled to the benefits of the Act of May 30, 1908, the compensation provided in his contract or the regulations of the Commission during the time he is incapacitated for work on account of injury incurred in the performance of duty, if the period for which he is so incapacitated is fifteen days or less?

"2. Is the Commission authorized to pay to an employe who is entitled to the benefits of the Act but is injured through his own negligence or misconduct, the compensation provided in his contract or the regulations of the Commission for the time he is incapacitated on account of the injury, whether the duration be more or less than fifteen days?

"3. Does the Act affect in any way the payment

of compensation for injury leave to those classes of officers and employes of the Commission who are not entitled to the benefits of the Act of May 30, 1908?

"There are many injury cases now arising. In order that cases now pending and others may be speedily disposed of and the employes receive such pay as is due, it is requested that your decision be rendered at the earliest possible date, and that it be sent to the Washington office of the Commission, so that your conclusions may be cabled to me."

THE DECISION.

In the absence of Congressional enactment, the regulations of the Commission set out in your letter providing for leave with pay for thirty days or a fractional part thereof to employes of the Commission for injuries incurred in the line of duty; and thirty days leave or fractional part thereof with pay to laborers of the Commission for injuries incurred while in the performance of duty and while incapacitated for duty by reason of such injury not exceeding thirty days, were undoubtedly made with authority at the time they were made, considering the broad authority granted the President by the provisions of the original Spooner Act authorizing him to construct the Canal.

But when Congress stepped in and enacted, as it did, the Act of May 30, 1908 (35 Stat., 556), set out in your letter, providing just what kind of relief for personal injuries and exactly to whom and under what circumstances it should be given and included the employes of the Isthmian Canal Commission in such Act, I am forced to the conclusion that this enactment is exclusive, after it came into effect, and that it is no longer in the power of the Commission by regulations, past or present, to enlarge or diminish the provisions of that Act as to the relief extended to employes of this Commission for injuries received in the line of their said employment.

A different holding would be an attempt to broaden and modify an Act of Congress, and to make a discrimination in favor of a class, where Congress legislating concerning such class did not see fit to make such discrimination.

Congress has declared in unequivocal language that certain employes of the Canal Commission (and I think a broad and liberal construction should be given to the words defining the class embraced therein) injured in the course of their employment, shall be entitled to receive for one year thereafter, unless in the opinion of the Secretary of Commerce and Labor they shall be sooner able to resume work, the same pay as if they continued at work during such time, provided such compensation shall not be paid unless such injury is without the negligence or misconduct of such employe so injured, nor unless such injury shall continue for more than fifteen days, and that all questions of negligence or misconduct shall be determined by the Secretary of Commerce and Labor. It may be possible that Congress should have made an exception in favor of the employes of your Commission and granted them pay for less than fifteen days of injuries in line of duty, or when injured through their own fault or negligence, but it did not make such discrimination, but placed them on the same level with the artisans and laborers of other branches of the service engaged in hazardous undertakings.

If Congress made a mistake in this I can not correct its errors of omission by construction or interpretation. In my judg-

ment this Act of Congress suspended and made null all regulations giving to employes of the Government engaged in the service of the Canal Commission or elsewhere, other or different relief from that granted for injuries while in the line of duty. The regulations quoted by you do both and are, therefore, of no legal force or effect.

Entertaining the views I entertain as to the force and effect of the Act of Congress *supra*, I am constrained to answer your first two questions in the negative and your third in the affirmative.

Yours respectfully,
 R. J. TRACEWELL,
Comptroller.

Commission Action.

At a meeting of the Isthmian Canal Commission at Culebra on September 5, 1908, the following resolutions were adopted:

PAY OF ARMY, NAVY AND OTHER OFFICERS.

Resolved, That the resolution of the Commission, approved September 5, 1904, and embodied in Act No. 16 of the Laws of the Canal Zone, providing that officers of the Army and Navy, or of the Public Health and Marine Hospital Service, who may be assigned to duty under the Isthmian Canal Commission on the Isthmus, shall be paid from the Commission's appropriations additional compensation equal to 50% of their authorized pay and allowances, when on duty in the United States, be hereby revoked.

Resolved further, That, effective September 15, 1908, the compensation of officers of the Army and Navy, or of the Public Health and Marine Hospital Service, who are or may be ordered to duty under the Commission on the Isthmus, shall receive the compensation of the position to which they are assigned, the difference between their service pay, and such compensation to be paid from the Commission's appropriations, or they shall receive from such appropriations, in addition to their service pay, the increase authorized by law for service in the tropics.

MEDICAL TREATMENT OF EMPLOYES.

Resolved, That paragraph 2, section A, of the regulations governing the treatment of persons by the physicians and in the hospitals of the Department of Sanitation, as adopted at the 124th meeting of the Isthmian Canal Commission, held at Culebra, April 24, 1907, and amended at the 126th meeting of the Isthmian Canal Commission, held at Culebra, May 21, 1907, be further amended to read as follows:

"A charge of \$1 shall be made for each visit by a physician of the Health Department to an employe at his home or quarters: *Provided*, that if he is unable to go to the dispensary, no charge shall be made for the first visit to such employe. Employes living with their families in Commission quarters who, in the opinion of the visiting physician, can not safely, or conveniently, report at the dispensary for treatment, shall, if they so desire, be treated at their homes without charge."

Resolved, That paragraph 4 of section D of the same regulations be amended to read as follows: "For the use of a private room a charge of \$2.50 shall be made, and for other special attention the charges shall be same as for an employe."

Reduced Rate on Hamburg-American Line.

The Colon agent of the Hamburg-American Line has been authorized to grant a reduction of 25 per cent to employes of the Isthmian Canal Commission traveling on vessels in the Atlas service. This rate will be granted to employes only on presentation of a letter signed by the Chief Quartermaster. The Atlas service includes vessels plying between New York and Colon.

Mr. S. G. Baker has been appointed Assistant Chief Clerk of the Atlantic Division, and will have charge of all property and material. Mr. Ben Jenkins has been appointed Acting Chief Timekeeper of the Atlantic Division during the absence of Mr. C. P. Shea, Chief Timekeeper.

HEALTH REPORT FOR AUGUST.

Steady Improvement During Four Years.

ANCON, C. Z., September 10, 1908.

COL. GEO. W. GOETHALS,
Chairman Isthmian Canal Commission, Culebra.

Sir—The report for the month of August shows that the health conditions on the Isthmus are satisfactory.

In August, 1905, we had on our rolls 5,269 whites, among whom we had 8 deaths, giving us a rate of 18.22 per thousand. In August, 1907, these figures were, respectively, 11,733, 17 and 17.38; in August, 1908, 12,607, 10 and 9.52.

This shows a steady improvement in the three years in the death rates of the whites. Taking the negro employes, we have for the same period—and considering the same figures—1905, 24,286 employes, 145 deaths, with an average per thousand for the month of 71.60; 1907, 27,710 employes, 76 deaths, and a rate of 31.76 per thousand; 1908, 31,618, 32 and 12.14. This improvement in the death rate of our negro employes is the most noteworthy in the report. In the three years the death rate among the negroes has dropped from 71.60 per thousand to 12.14 per thousand. The exceptionally high rate for 1906 was due to the fact that during August of this year we were at the height of a severe epidemic of pneumonia among our negro employes. Of the 145 deaths which occurred that month among our negro employes, 60 deaths were caused by pneumonia; among the 32 deaths among our negro employes in 1908, only 4 were due to pneumonia. Taking our total working force, and considering the month of August for the past four years, we have the following figures:

	Total Force.	Deaths.	Annual Rate
1905.....	10,687	32	35.93
1906.....	29,555	153	62.12
1907.....	40,443	93	27.59
1908.....	44,225	42	11.39

showing a decrease in our death rate from 35.93 in August, 1905, to 11.39 in August, 1908. Considering individual diseases, we had in our working force in August, 1906, 29 deaths from malaria; in August, 1907, 21 deaths, and in August, 1908, 9 deaths. The deaths from malaria in a force of 29,000 men in August, 1906, were more than three times as numerous as in a force of 44,000 men August, 1908. Taking the cases of malaria admitted to our hospitals from employes, we had, in August, 1907, 2,181; in August, 1908, 1,525. Malaria is probably the best measure of the efficacy of the sanitary measures taken, considering, from a malarial point of view, that the climatic conditions on the isthmus are about the same from year to year, and any marked improvement in the number of deaths and the number of cases is probably due directly to the preventive measures taken. This might not be equally true of the general death rate or the general sick rate. For example, the general death rate in 1906 among employes was almost doubled on account of the epidemic of pneumonia which prevailed at that time, but I doubt if our sanitary measures had much effect in the decrease in pneumonia, which has taken place since that time.

Considering typhoid fever in 1905 among employes, we had 9 deaths; in 1907, 7 deaths, and in 1908, no deaths. Considering dysentery, in 1906 we had 10 deaths; in 1907, 6 deaths, and in 1908, 2 deaths. The

sick rate is the best measure of the average effectiveness of the force, so far as they are affected by the health conditions. In 1906 we had among every thousand of our employes sick every day 42.67 men; in 1907, 29.02, and in 1908, 25.24. Judging by past experience, our sick rate will steadily decrease from the present time until May next.

There have been no cases of yellow fever or plague originating on the Isthmus in the past two years.

Among the 8,175 white Americans connected with the Isthmian Canal Commission, 2,869 of whom were women and children, there were only two deaths, one due to drowning and the other to childbirth—that is, not a single case of death from disease.

Very respectfully,
 W. C. GORGAS,
Chief Sanitary Officer.

Yellow Fever and Plague Decreasing.

The Department of Sanitation reports that during August the quarantine imposed against ports in which yellow fever or plague prevail has been maintained, although improvement has occurred in a number of infected ports with which we have commercial relation. This has been noticeably so in Guayaquil, and for the first time since the commencement of plague in that port, no cases of death have been reported from this disease on the bills of health, for a period of two weeks. Very few cases of human plague are now occurring in that town, but rat infection still exists, so that it is too early to form a definite opinion as to whether the disease has been practically eradicated, or whether this is the quiescent stage, which is so common regarding this disease in infected ports.

An improvement has also taken place in Trinidad, and no human cases of plague have been reported for three or four weeks. However, rat infection presumably still exists, and as long as such remains the case, the protective measures are just as important as when human cases are occurring.

No new ports have been added to the list on account of the appearance of either yellow fever or plague.

Improving Transportation from the Cut.

Work will begin at once on new track construction at Pedro Miguel. The new inclined track leading from Culebra Cut, near the Panama railroad bridge over the Canal at Paraiso, is partly completed and will be extended to the main line of the railroad about 1,000 feet north of the depot at Pedro Miguel. Immediately south of this a cross-over will be put in, the north point of which will be the beginning of a double track to the southward, extending it about half a mile further north than at present. A signal tower will be put in west of the track on the cross-over, and an interlocking switch system will be installed by which trains at this point will be controlled. As soon as this system is in operation, all the loads going south out of the Cut will be handled over this line, leaving the lock site entirely under the control of the Pacific Division. South bound trains from Culebra Cut now go out through the lock site. The change will facilitate the handling of trains at this point.

Excavation for the material-handling docks at Gatun is practically finished and the construction of the docks will be begun as soon as piles can be secured for the foundation.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Empire Woman's Club held its weekly meeting on Tuesday afternoon at 3 o'clock, when a program was given under the musical and literary department. Miss Lewis, of Camp Elliott, gave an informal talk on Paris, and its points of historic interest. Piano selections were given by Miss Wade, and songs by Miss Moulton. Tea was served at the tastefully decorated tables in one of the smaller rooms, and the social hour was much enjoyed. A number of guests from out of town were present.

Throughout the clubs there is a strong disposition to take up serious study, and programs are being outlined and work for the winter is being earnestly discussed.

Labor Day, September 7, was observed at Empire by athletic sports and games, speeches, and a public demonstration arranged by the mechanics. The observance commenced with a street parade headed by the official band. In the evening a dance was given at Kangaroo hall, which was largely attended.

The women residents of Gatun have formed a sewing circle which meets every Wednesday at the residence of one of the members for the purpose of making useful and fancy articles for a sale to be held within a few weeks, the proceeds to be devoted to philanthropic purposes. A small initiation fee and nominal weekly dues are charged, the money being used for the purchase of materials for the work. The circle commenced a few weeks ago with a membership of 22.

The Fortnightly Club at Gatun continues its dances which are enjoyable features of the social life of the community. The monthly dance is always well attended. A new dancing club has recently been organized with membership open to all residents of the town. Dances are given every Wednesday evening. The Young People's Christian League is an active part of the social life of Gatun. Its socials and meetings are always well attended.

The Gatun Woman's Club will resume its regular meetings in October. The regular sessions will be preceded by an open evening meeting to which all the residents will be invited. It is hoped that in this way interest in the club will be increased.

The Gorgona Woman's Club held its meeting for election of officers for the next six months on Tuesday, September 8, with the following result: President, Mrs. E. S. Calvit, re-elected; vice-president, Mrs. A. C. Everest; secretary, Mrs. R. E. Phillipps; treasurer, Mrs. James Crockett. Mrs. L. F. La Rose was appointed press secretary. A committee was appointed to make arrangements for the coming Federation meeting, with Mrs. Frank Morrison as chairman.

The Gorgona Dramatic Company will give a performance of "A Fisherman's Luck" at the Empire clubhouse on Wednesday evening, September 16.

The Ancon Woman's Club will hold its regular meeting at the Tivoli hotel on Wednesday, September 16. Dr. Van Kueber will give an address on the San Blas Indians.

The Isthmian Dancing Club of Culebra gave its first dance at the clubhouse on Saturday evening, September 12. The club was organized September 8, with Mr. H. B.

Bains, Mr. F. B. Byram and Mr. L. Burns as officers. There is a membership of 45. A dance will be given monthly.

The Culebra Sunday school treat at the Commission Chapel on Friday, September 11, was the important event of the week to the juniors and their friends. The committee in charge of arrangements had decorated the rooms with giant ferns and tropical plants. Games began at 4 o'clock and continued until 6 when supper was served. The smaller children were conveyed to their homes in the Commission wagonette at 7 o'clock. Each child was presented with a souvenir of the occasion. About ninety were present.

The Culebra Sunday school was organized one year and a half ago and has a membership of over 100, including 15 teachers. The school holds its sessions at the Commission chapel every Sunday morning at 9.30 o'clock.

The Tivoli Club gave a dance in honor of President-elect Obaldia at the hotel on Saturday evening, September 12. The entrance hall was decorated with the Panamanian and American flags. Mr. and Mrs. Obaldia arrived at about 9 o'clock and dancing commenced shortly after. A supper was served at 10 o'clock. The official table, where the guests of honor and members of the Commission were seated was laid for 14. The table was banked with brilliant flowers and foliage from the hospital gardens.

The Commission Band.

The Commission Band, which contributes largely to the social life of the Zone, has been organized since September, 1905. It owes its inception to a few public spirited men, who realized the value of such an organization, both as recreation for the members and as a source of pleasure to the public. With the cooperation of the Commission, which appropriated \$600, instruments and necessary equipment were secured, and the band soon attained sufficient proficiency to appear in public. The first organization consisted of a president, vice-president, secretary and treasurer, and director, and thirty-seven members, all employes of the Commission or the Panama railroad. Although the interest and enthusiasm of the members was kept up, it was nevertheless difficult to hold them together, there being little inducement to travel across the Isthmus for the necessary rehearsals after a hard day's work. On March 27, 1907, the Commission authorized the employment of a director at \$2,000 per year, a librarian at \$1,500, and thirty-five men at \$25 per month each.

The business of the organization is directed by a board of managers, consisting of a chairman and two other members, and a musical director and a librarian devote all their time to the band's interests. The office is at Cristobal, where the weekly rehearsals are held. There are forty members at present, eighteen different classes of Canal work being represented. All of the members are uniformed in khaki. The present appropriation for the maintenance of the band includes besides the allotment for salaries, an amount for the purchase of instruments, uniforms, and music. The band has a library worth nearly \$1,000, to which additions are constantly being made.

Bandstands have been erected at Hotel Tivoli at Ancon, at Paraiso, Culebra, Las

Cascadas, Gorgona, Bas Opispo, and Cristobal, and concerts are given at these places at least once a month.

Besides the official band there are private orchestras at Culebra, Gorgona, and Las Cascadas. These orchestras, which were organized for the purpose of playing at dances and other social functions, draw their members largely from the official band.

PERSONAL.

Mr. W. G. Tubby, chief of the old Division of Material and Supplies, and Mrs. Tubby, left for the States on September 15, intending to visit Jamaica on the way. Mr. Tubby has been in the Canal service nearly three years without a vacation. He has 84 days' leave of absence, at the expiration of which his resignation will go into effect.

R. M. Arango, Division Engineer of the Division of Meteorology and River Hydraulics, has resigned his position on account of ill health, and at the expiration of 42 days' leave of absence will sever his connection with the service.

Mr. W. M. Belding, master builder, chief of the old division of building construction, went to Costa Rica for forty-two days on September 15, and on the expiration of his leave will submit his resignation.

Capt. Courtland Nixon, U. S. A., who is to be Depot Quartermaster at Mount Hope, sailed from New York on the *Colon*, September 10, and is due at Cristobal September 16.

Upon the recommendation of the American Consul General at Panama, Hon. Arnold Shanklin, Mr. C. E. Guyant has been appointed Deputy Consul General. Mr. Guyant was formerly employed in the division of municipal engineering.

Mrs. Geo. W. Goethals, accompanied by her son, Thomas Goethals, sailed for the States on September 14, on the *Finance*.

Among the arrivals on the *Esperanza*, which reached Colon September 11, were the wife, son and daughter of Maj. J. P. Jervy, of Gatun.

Mr. M. R. Currie has returned from his leave in the States, and has been appointed District Quartermaster at Bas Obispo.

St. Mary's Church at Empire.

A contract has been let for the construction of the new Protestant Episcopal church at Empire, to be known as St. Mary's, and work will be begun at once. The building will be 64 feet long and 26 feet wide, and will seat about 200 people. It will be in the general style of commission buildings, will be located near the court house, and will be paid for by a private fund already raised by subscription.

On Sunday next, at 9.30 a. m., Father Collins will deliver an address in Ancon chapel on the "Church of the Holy Redeemer, Culebra," and at 2.30 p. m., he will deliver an address on the same subject in the hall above the East La Boca mess.

Miss Ethel Lokey and Mr. William E. Roessner were married in the reception hall of the nurses' quarters at Ancon on the evening of September 8, by the Rev. John S. Calm.

PACIFIC ROCK EXCAVATION.

Preparations Under Way Between La Boca and Miraflores.

Preparations for the rock excavation in the Canal between Miraflores and La Boca are well under way, although the mud that overlies the rock must be excavated by dredges before work can be begun on the rock. Borings are being made to determine the quantity and nature of the rock, a Lobnitz rock crusher is on the ways in process of construction, and a contract has been let for a submarine rock drill barge.

Borings now being made are in continuation of the exploration begun some time ago. The prism of the Canal between Miraflores and La Boca includes the old French canal, which was excavated as far as Corozal. In the channel of the French canal the borings are made from platforms, and even the holes that are sunk on the bank are being put down under very trying conditions, as at high tide the ground is covered with two feet, or more, of water, so that such work as is not done in the water itself is done in soft mud. The drills are sunk 5 feet below the full depth of the proposed channel, i. e., 50 feet below mean sea-level. Present indications are that the amount of rock to be removed is not so great as was originally believed. The suction dredge *Sandpiper* is at work in the prism at Corozal, taking earth off the rock strata, and the old French ladder dredge 14-A is doing similar work opposite the La Boca wharf.

The contract for the rock drill barge has been let to the Maryland Steel Company, who will deliver the barge and machinery, knocked down, on the Isthmus before the 1st of January, 1909. It will be erected at the marine shops at La Boca. The hull on which the drills will be mounted will be 112 feet long, with a 6-foot rake on each end, 36 feet wide, and 8 feet deep, built of steel and of specially heavy construction, in order that rock may be blasted under the barge without doing it any damage. There will be six transverse solid bulkheads and 2 longitudinal bulkheads. Two of the compartments formed by the bulkheads will be used as water tanks, and they will have a capacity of 18,000 gallons. Oil will be used as fuel, and 6 fuel oil tanks will be installed, each with a capacity of 240 barrels. The boiler and pumps will be erected in the side of the hull opposite that on which the drills will operate, and the water and oil storage tanks will be amidship, thus trimming the barge. The capacity of the boiler will be sufficient to supply without forcing 30 per cent more steam than is needed for running three Ingersoll-Sargent drills 6½ inches in diameter, one 5-k. w. electric light plant, and an 8-horse power deck pump. Three drill frames will be mounted on the hull, each moving freely along one face of the barge, allowing a total horizontal distance of 85 feet between the first and last drill holes. Each frame will carry a rock drill on a moving slide, running in vertical guides on the face of the frame; after the manner of a pile-driver. The floor is projected outboard about 4 feet, so that the drilling will be done over the edge of the barge. Each of the drills can bore six holes from one position of the barge; the number of holes that can be bored without shifting the position of the barge thus being eighteen.

A vertical hydraulic ram, located immedi-

ately back of the drill frames, will raise and lower each drill. These rams will have a capacity of 5,000 pounds, and will make a total free lift of 10 feet. A duplex, double-acting, hydraulic pump will supply water for working each ram, the capacity to be sufficient to lift the drill, with its ordinary load of 2,500 pounds, 10 feet in not more than 15 seconds. A recess will be made near each corner of the hull for timber spuds, 24 inches square and 60 feet long. These spuds will be operated by a compact reversible engine, designed to lift each spud by two pinions, acting in racking on opposite faces.

By the aid of this machine holes will be drilled in the rock to a depth of 50 feet, which is 5 feet below the depth required on the Pacific level of the Canal, and the rock will then be broken by dynamite into pieces small enough to be handled by dipper or ladder dredges.

The Lobnitz subaqueous rock breaker, which is on the ways, was shipped knocked down, from Renfrew, Scotland. The barge is of steel, 100 by 28 by 8 feet, with a recess in one end through which the ram or rock breaker works. The method of operation is to raise the heavy ram a given distance above the surface of the rock to be crushed and let it fall, much as a pile driver works. The ram is raised and dropped until the rock on which it is operating is penetrated to the required depth when the barge is moved to another spot and the operation repeated. The rams are 50 feet long, made of forged steel, and weigh 15 tons. On the lower end is fitted a point made of specially hardened steel. In certain kinds of rock the breaker has proved very successful, pulverizing it so well that it has been handled by dredges more rapidly than rock broken by blasting. The Lobnitz machine will supplement the work done by the rock drill barge and blasting.

Empire Club House.

The duckpin tournament, that has been running for some six or eight weeks, closed on last Friday evening. The winners of the tournament will be published as soon as the committee turn in the report of the standings.

The Isthmian championship tenpin bowling tournament will be rolled on the Empire alleys Thanksgiving Day. Full particulars will be published later.

The Gorgona Dramatic Club will give the play "A Fisherman's Luck" in the Empire Y. M. C. A. hall on Wednesday evening, September 16. The Empire members welcome the club to Empire.

OFFICIAL CIRCULAR.

Lands Expropriated for Lakes.

CIRCULAR No. 47.

The following account is hereby created under General Account No. 1, "Classified Expenditures": 620. *Lands Expropriated for Lakes in Connection with Lock Canal.*

To this account will be charged all payments for lands acquired by the Commission which are to be flooded, including all expenses in connection with their purchase or expropriation.

EDWARD J. WILLIAMS,
Disbursing Officer.

Approved:

GEO. W. GOETHALS
Chairman.

Empire, C. Z., September 14, 1908.

Misdirected Letters.

Division of Dead Letters

Ancon, C. Z., September 16, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- | | |
|-------------------|-------------------------|
| Ackley, Norman C. | Harding, C. |
| Clark, W. D. | Mahon, John |
| Cummings, Leraime | Rundle, Edward |
| Dodge, Graham G. | Smallwood, W. P. |
| Drake, C. B. | Van Order, Capt. George |
| Fischer, Chas. J. | Valley, Alfred |
| Fitzgerald, James | Williams, Clarence |
| Hammer, H. H. | |

Concerts by the I. C. C. Band.

LAS CASCADAS

Sunday, September 20, 1908, at 2 30 p. m.:

PROGRAM.

- | | |
|--|------------|
| 1 March— <i>Our Republic</i> | Bagley |
| 2 Selection— <i>A Waltz Dream</i> | Strauss |
| 3 { a Intermezzo— <i>Merry Widows</i> | Lehar |
| { b Schottische— <i>Let Me Be Your Lenon</i> | |
| <i>Coon</i> | Allen |
| 4 Waltz— <i>My Lady Daughter</i> | Blake |
| 5 Barytone Solo— <i>Let All Obey</i> | Leach |
| D. E. NORCROSS. | |
| 6 Medley— <i>War Songs of the Boys in Blue</i> | Laurendeau |
| 7 Overture— <i>If I Were King</i> | Roberts |
| 8 { a Tone Poem— <i>Lilacs</i> | Levi |
| { b March— <i>Happy Days</i> | Bucalossi |
| 9 Descriptive— <i>A Hunting Scene</i> | Wagner |
| 10 March— <i>Under the Double Eagle</i> | |

CRISTOBAL.

On band stand near Clubhouse, Wednesday, September 23, 1908, at 8.15 p. m.:

PROGRAM.

- | | |
|--|------------|
| 1 March— <i>Salute the Flag</i> | Pierson |
| 2 Selection— <i>The Red Mill</i> | Herbert |
| 3 { a Polka— <i>Hornpipe</i> | Smith |
| { b March (by request)— <i>Honey Boy</i> | Von Tilzer |
| 4 Duet for Clarinets— <i>Nanine</i> | Marsal |
| MESSRS. GRAY AND HALE. | |
| 5 Selection— <i>Maritana</i> | Wallace |
| 6 Waltz— <i>Angel's Dream</i> | Herman |
| 7 Cornet Solo (by request)— <i>The Holy City</i> | Adams |
| CHAS. E. JENNINGS. | |
| 8 Overture— <i>Sunshine and Showers</i> | Flath |
| 9 Descriptive— <i>A Hunting Scene</i> | Bucalossi |
| 10 Galop— <i>On Horseback</i> | Bendix |
| CHAS. E. JENNINGS, Musical Director. | |

A concert will be given at the Hotel Tivoli, Sunday evening, October 4.

STATEMENT OF CLASSIFIED EXPENDITURES TO JULY 31, 1908.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1907. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Civil Administration.	Sanitation	Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.....	\$1,443,266.65	\$4,619,800.61	\$13,433,745.05	\$4,277,160.18	\$19,451,579.11	\$43,224,551.60
July.....	51,183.84	149,270.94	962,477.19	146,131.93	580,562.68	1,889,626.58
August.....	67,538.53	214,018.03	1,196,803.45	192,227.75	767,153.24	2,437,751.00
September.....	63,239.62	253,108.77	1,194,304.55	107,840.85	1,068,300.58	2,686,794.67
October.....	53,227.97	189,196.38	1,372,311.81	123,939.88	1,131,450.91	2,470,126.95
November.....	54,529.02	166,381.82	1,217,120.31	115,625.44	1,105,590.16	2,659,246.75
December.....	64,903.04	213,725.16	1,369,822.79	125,420.96	591,298.02	2,365,169.97
1908—						
January.....	66,802.92	221,866.30	1,468,021.44	156,956.22	1,584,821.98	3,498,468.86
February.....	72,514.14	174,076.77	1,523,011.72	190,700.40	889,405.82	2,759,708.85
March.....	63,653.60	165,311.77	1,460,229.91	110,232.15	1,307,321.82	3,106,749.25
April.....	74,046.55	178,041.65	1,580,416.19	138,115.21	797,137.63	2,767,757.23
May.....	73,340.26	184,381.35	1,580,369.11	69,824.83	955,405.12	2,863,320.67
June.....	379.34	200,833.07	1,755,771.69	107,940.79	905,767.19	2,969,933.40
July.....	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
Total.....	\$2,232,774.95	\$7,126,975.69	\$31,567,104.39	\$5,864,017.76	\$31,679,877.49	\$78,470,750.28

COMMISSARY DEPARTMENT.

COMMISSARY PRICES

For week beginning September 15:

FRESH MEATS, POULTRY AND COLD MEATS.

	Price.
Beef—Sirloin roast.....per lb	30
Rump roast.....per lb	30
Porterhouse.....per lb	30
Rib-roast, short cut (not under 3 1/2 pounds).....per lb	24
Rib-roast, second cut (not under 3 pounds).....per lb	20
Chuck-roast (not under 3 pounds).....per lb	15
Soup.....per lb	9
Stew.....per lb	12
Corned.....per lb.	12, 14, 16
Suet.....per lb	4
Steaks—Sirloin.....per lb	30
Porterhouse.....per lb	30
Rump.....per lb	30
Tenderloin.....per lb	30
Round.....per lb	24
Veal—Cutlets.....per lb	24
Short-cut chops.....per lb	24
Loin.....per lb	23
Entire forequarter (15 to 20 lbs).....per lb	11
For stewing.....per lb	11
Mutton—Entire forequarter (not under 10 pounds).....per lb	9
Short-cut chops.....per lb	20
Leg (8 to 10 pounds).....per lb	18
Lamb—For stewing.....per lb	10
Entire forequarter.....per lb	10
Chops.....per lb	30
Pork—Cuts.....per lb	20
Livers—Beef.....per lb	11
Sausage—Pork.....per lb	16
Sweet bread—Veal.....each	1.20
Beef.....per lb	25
Ox tongues.....each	90
Chicks, fresh.....dozen	34
Chickens—Dressed (milk-fed).....each	1.40
Large.....each	1.65
Capons.....each	2.40
Broilers.....each	60
Fowls, medium and large.....each, 80c. and 1.00	
Ducks, fatted (fancy).....each	1.10
Suckling pigs.....each	4.90
Turkeys.....per lb	30
Squabs.....each	45
Bacon—Strips.....per lb	23
English, breakfast sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$20
Westphalia.....per lb	45
Ferris.....per lb	19
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	33
Cheese—Roquefort.....per lb	45
Neufchatel.....each	6
Young America.....per lb	22
Swiss.....per lb	33
Gouda.....per lb	34
Edam.....each	1.05
Camembert.....per lb	28
McLaren's.....jar	15
Pinxter's.....tin	22
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....tin	20
Buttermilk.....quart	15

VEGETABLES AND FRUITS.

Tomatoes.....per lb	6
Lettuce.....per lb	14
Cauliflower.....per lb	10
White potatoes.....per lb	3 1/2
Sweet potatoes.....per lb	2 1/2
Cabbage.....per lb	4
Onions.....per lb	3 1/2
Cucumbers.....per lb	6
Turnips.....per lb	3
Beets.....per lb	3
Squash (summer).....per lb	3
Lima beans.....per lb	8
Celery.....bunch	15
Limes.....hundred	40
Lemons.....dozen	18
Oranges.....dozen	18
Grapefruit.....each	3
Cantaloupes.....each	10
Watermelons.....each	35
Grapes.....per lb	10
Apples.....per lb	5
Peaches.....per lb	15

§ Sold only from cold-storage and not from Commissaries.

Flood Stages in the Chagres.

Maximum height of Chagres above low water for the week ending midnight, September 12, 1908:

	STATIONS.				
	Victoria.	Alhajuela.	Camboa.	Bohio.	Gatun.
Height of low water above mean sea level, feet.....	129	92	46	0	0
Maximum height above low water, feet:					
Sunday, Sept. 6.....	4.20	3.88	5.70	10.30	3.50
Monday, Sept. 7.....	4.70	4.06	5.75	10.75	4.10
Tuesday, Sept. 8.....	2.95	3.94	5.40	10.30	4.20
Wednesday, Sept. 9.....	.95	1.58	2.50	5.75	3.15
Thursday, Sept. 10.....	.80	1.30	2.07	6.14	2.70
Friday, Sept. 11.....	3.00	2.05	2.65	7.23	2.34
Saturday, Sept. 12.....	2.95	2.96	5.00	7.75	2.90
Maximum for week.....	4.70	4.06	5.75	10.75	4.20

Rainfall, September 1 to 12, 1908, inclusive.

Stations.	Maximum in one day.	Total.
<i>Atlantic Division—</i>		
Cristobal.....	.84	4.38
Brazos Brook.....	1.03	4.59
Gatun.....	1.21	3.88
Bohio.....	1.65	3.61
<i>Central Division—</i>		
Tabernailla.....	2.00	6.79
San Pablo.....	1.84	4.81
Bas Obispo.....	.79	3.37
Gamboa.....	.56	3.07
Empire.....	.87	3.19
Camacho.....	.65	3.00
Culebra.....	2.27	4.66
Rio Grande.....	3.26	5.40
<i>Pacific Division—</i>		
Pedro Miguel.....	.57	1.86
La Boca.....	.43	.85
Ancon.....	.50	1.02
<i>Upper Chagres.</i>		
Alhajuela.....	2 16	7.34

Tug Service Porto Bello and Nombre de Dios.

Effective, August 6, 1908; The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Cristobal 6.30 p. m. for Porto Bello only; returning same day.
Monday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.
Tuesday: Leave Cristobal after Train 2 without tow, for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.
Wednesday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.
Friday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.
Saturday: Leave Cristobal after Train 2 for Porto Bello only; returning, leave Porto Bello 5.30 p. m.

Vessels arriving at and departing from the Port of Ancon during the week ending September 11 were: Arrivals—September 5, *Panama*, from Valparaiso; September 8, *San Jose*, from San Francisco; September 11, *Ecuador*, from Buenaventura. Departures—September 8, *Aysen*, to Valparaiso; September 8, *Newport*, to San Francisco.

LEGAL NOTICE.

United States of America } In the First Judicial Circuit.
Canal Zone. }
George Blake, Jaumican, died intestate July 15, 1907, leaving an estate, consisting of three houses in Pedro Miguel. The claimants for the estate have not proved that they are the legitimate heirs of the decedent, and the Collector of Revenues has filed a petition for escheat under Sections 779-781 of the Code of Civil Procedure.
Notice is hereby given to all concerned to appear at the court house in Ancon on October 5, 1908, at 9 o'clock a. m., to establish their claims to the said estate, or to show cause why the same should not escheat to the Canal Zone.

WALTER EMERY,
Circuit Court Clerk.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Pr. Aug. Wilhelm.....H-A.....Saturday.....Sept. 12
Advance.....P. R. R. Tuesday.....Sept. 15
Orinoco.....R-M.....Saturday.....Sept. 19
Allianca.....P. R. R. Monday.....Sept. 21
Finance.....P. R. R. Saturday.....Sept. 26
Prinz Joachim.....H-A.....Saturday.....Sept. 26
Panama.....P. R. R. Thursday.....Oct. 1
Atrato.....R-M.....Saturday.....Oct. 3
Colon.....P. R. R. Tuesday.....Oct. 6
Prinz Aug. Wilhelm.....H-A.....Saturday.....Oct. 10
Trent.....R-M.....Saturday.....Oct. 17
Prinz Joachim.....H-A.....Saturday.....Oct. 24
Tagus.....R-M.....Saturday.....Oct. 31
Prinz Aug. Wilhelm.....H-A.....Saturday.....Nov. 7
Magdalena.....R-M.....Saturday.....Nov. 14
Prinz Joachim.....H-A.....Saturday.....Nov. 21
Orinoco.....R-M.....Saturday.....Nov. 28
Atrato.....R-M.....Saturday.....Dec. 12
Trent.....R-M.....Saturday.....Dec. 26

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK.

Esperanza.....P. R. R. Friday.....Sept. 18
Atrato.....R-M.....Tuesday.....Sept. 22
Colon.....P. R. R. Wednesday.....Sept. 23
Advance.....P. R. R. Monday.....Sept. 28
Pr. Aug. Wilhelm.....H-A.....Tuesday.....Sept. 29
Prinz Aug. Wilhelm.....H-A.....Tuesday.....Sept. 29
Allianca.....P. R. R. Saturday.....Oct. 3
Clyde.....R-M.....Tuesday.....Oct. 6
Finance.....P. R. R. Thursday.....Oct. 8
Panama.....P. R. R. Tuesday.....Oct. 13
Prinz Joachim.....H-A.....Tuesday.....Oct. 13
Colon.....P. R. R. Monday.....Oct. 19
Tagus.....R-M.....Tuesday.....Oct. 20
Prinz Aug. Wilhelm.....H-A.....Tuesday.....Oct. 27
Magdalena.....R-M.....Tuesday.....Nov. 3
Prinz Joachim.....H-A.....Tuesday.....Nov. 10
Orinoco.....R-M.....Tuesday.....Nov. 17
Prinz Aug. Wilhelm.....H-A.....Tuesday.....Nov. 24
Atrato.....R-M.....Tuesday.....Dec. 1
Prinz Joachim.....H-A.....Tuesday.....Dec. 8
Trent.....R-M.....Tuesday.....Dec. 15

FROM NEW ORLEANS TO COLON.

Parismina.....U. F. C. Saturday.....Sept. 19
Heridia.....U. F. C. Saturday.....Sept. 26
Cartago.....U. F. C. Saturday.....Oct. 3
Parismina.....U. F. C. Saturday.....Oct. 10
Heridia.....U. F. C. Saturday.....Oct. 17
Cartago.....U. F. C. Saturday.....Oct. 24
Parismina.....U. F. C. Saturday.....Oct. 31
Heridia.....U. F. C. Saturday.....Nov. 7
Cartago.....U. F. C. Saturday.....Nov. 14
Parismina.....U. F. C. Saturday.....Nov. 21
Heridia.....U. F. C. Saturday.....Nov. 28

FROM COLON TO NEW ORLEANS.

Cartago.....U. F. C. Tuesday.....Sept. 22
Parismina.....U. F. C. Tuesday.....Sept. 29
Heridia.....U. F. C. Tuesday.....Oct. 6
Cartago.....U. F. C. Tuesday.....Oct. 13
Parismina.....U. F. C. Tuesday.....Oct. 20
Heridia.....U. F. C. Tuesday.....Oct. 27
Cartago.....U. F. C. Tuesday.....Nov. 3
Parismina.....U. F. C. Tuesday.....Nov. 10
Heridia.....U. F. C. Tuesday.....Nov. 17
Cartago.....U. F. C. Tuesday.....Nov. 24
Parismina.....U. F. C. Tuesday.....Dec. 1

FROM COLON TO BARBADOS, CALLING AT TRINIDAD.

Orinoco.....R-M.....Tuesday.....Sept. 29
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FROM COLON TO NEW ORLEANS VIA KINGSTON.

Tampican.....Leyland Line, Sunday.....Sept. 20
William Cliff.....Leyland Line, Tuesday.....Sept. 29
The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.
All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 11 a. m., and from Colon at 1.30 p. m., via Port Limon, for New Orleans. In addition to the above, the United Fruit Company dispatches a steamer about every ten days from Colon, via Bocas del Toro, for New Orleans.

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, SEPTEMBER 23, 1908.

No. 4.

The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Changes in Organization.

Official circulars published on other pages of this issue of THE CANAL RECORD, give the details of the assignment to duty of Commissioners Hodges and Rousseau, the appointment of Mr. S. B. Williamson, as Division Engineer of the Pacific Division, the division of work in the office of the Chairman and Chief Engineer, and the reorganization of property accounting.

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for August is published in other columns of this issue of THE CANAL RECORD. The work of reorganization was continued. A summary of the construction work done by the three construction divisions shows that the material excavated in August amounted to 3,318,691 cubic yards, of which 1,375,991 were taken from the Canal prism. Rock drilling to the amount of 312,326.60 feet was done; 19.58 miles of new track were laid, and 358.82 tons of explosives were used. The average number of laborers employed daily was 13,284. The rainfall in the Atlantic Division was 16.22 inches; Central Division 8.11 inches, and Pacific Division, 9.89 inches.

In the Atlantic Division there were removed on the Gatun Lock site and site of the Gatun Dam spillway 190,262 cubic yards; by dredges in Limon Bay, 638,217 cubic yards from the Canal prism; by a dredge at the site of the Gatun handling docks, 51,505 cubic yards, and by steam shovels at Mindi, 16,309 cubic yards. At Gatun Dam 26,953 cubic yards of material from the Locks' site were dumped in the Dam, 35,100 cubic yards of Bas Obispo rock were placed on the south toe, and 41,060 cubic yards of excavation from the spillway were dumped on the north toe.

The excavation in the Central Division amounted to 1,540,610 cubic yards, 1,010,457

cubic yards of which were rock. In the same territory in August, 1907, 783,173 cubic yards were removed. In August, 1907, however, the average number of steam shovels at work during the month was 39.90, while in August, 1908, the average number at work was 52.58. The rainfall in August, 1907, was about 3.13 inches greater than in the same month in 1908. The output per shovel per day was nearly 54 per cent greater than in the corresponding month in 1907.

In the Pacific Division, on the lock site at Pedro Miguel 22,217 cubic yards of material were excavated, and from the lock site at Miraflores 91,440 cubic yards. The excavation from the site of the Miraflores Dam amounted to 2,808 cubic yards, and from the prism at Cardenas Hill 17,667 cubic yards.

The dredging at La Boca amounted to 737,774 cubic yards. A force was engaged in cleaning the line of the Canal between La Boca and Miraflores. Borings are in progress to determine accurately the amount and character of the excavation between Miraflores and La Boca. A survey of the dredged channel was completed, and shows that the monthly estimates for dredging have been about 7.3 per cent greater than the amount determined by the survey. This difference is believed to be due largely to a refilling of the channel by cross currents.

In the Mechanical Division the work of installing fuel oil burning apparatus made satisfactory progress.

On the relocation of the Panama railroad 32,315 cubic yards of earth were excavated, and 75,462 cubic yards were placed in embankments. One thousand four hundred and thirty-three linear feet of permanent track were laid, making the total to date 40,745 feet.

Health conditions continued satisfactory during August.

Miraflores Tunnel.

A retaining wall ten feet wide at the bottom and running down to four feet below the lowest point excavated has been built at the south portal of the Miraflores tunnel for the purpose of stopping the slide which has been threatening to close up the south entrance. The wall is 100 feet long and so located that it will become one side of the tunnel, which will thus be lengthened 100 feet. It is built of concrete reinforced with Ransom bars.

The slide, which was described in THE CANAL RECORD of August 12, has been moving southward from one-fourth inch to one-half inch every day during the last two weeks. It is believed that the retaining wall will check it sufficiently to prevent serious rupture of the timber lining in the earth section until the dry season, when the slide will probably stop of its own accord. The tunnel through the earth section will

then be enlarged to permit the construction of a sufficiently heavy concrete lining.

The work of putting concrete lining in the rock section, which is the northern two-thirds of the tunnel, is progressing rapidly, 125 linear feet having been completed up to September 12.

Sending Money Home.

More money was sent to the United States from the Canal Zone in the form of money orders during August than in any month since the American occupation, the amount being \$328,786.38. The total amount of orders issued was \$448,218.75, of which orders payable in the Canal Zone amounted to \$119,432.37.

The largest previous month's business in money orders was in April, 1908, when \$445,981.26 worth was issued, of which \$320,750.36 was payable in the United States. All the orders payable in the United States were not destined for that country, because the European business is transacted through the New York post-office, but by far the greater amount of money sent in this way remains in the United States. The number of orders issued was 14,126, and the average value of each order was thus \$31.73. The fees collected amounted to \$1,822.06. The amount paid and repaid was \$116,932.43, and the total volume of the money order business was \$566,937.24.

In Cristobal, with a population of 3,558, there were issued 2,682 orders, amounting to \$87,698.49, an average of \$24.65 for each person. Of the total issued in Cristobal all but \$8,987.80 was payable in the United States. At Empire orders to the amount of \$59,209.34 were issued, all but \$16,534.62 of which were payable in the United States, the average amount per person being \$11.52. From Culebra orders amounting to \$40,301.36 were sent, the average per person being \$7.31. At Gorgona the orders amounted to \$49,482.58, the average per person being \$17.99. The average for the Zone was \$8.96 per person.

Records for 70-ton Shovels.

The highest record yet made by a shovel in the 70-ton class was made in the month of August by shovel 102, which excavated 43,694 cubic yards of rock and 1,820 cubic yards of earth, a total of 45,514 cubic yards, from the Lock site at Gatun. The best record in the Central Division for shovels of this class was made in August by shovel 115, working at San Pablo, which took out 22,028 cubic yards of earth and 20,333 cubic yards of rock, a total of 42,361 cubic yards. Both of these shovels worked 26 days.

Trial by Jury.

A reprieve of ninety days has been granted Joaquin Segrera, who was sentenced to be hanged on September 18, for the murder of

NOTES OF PROGRESS.

(Continued)

Enrique Vega, near Matachin, on December 13, 1907. The reprieve is based entirely on the fact that Segrera was tried under section 171 of the Code of Criminal Procedure of the Canal Zone, by three judges, after motion for a jury trial had been denied him. The case of Adolphus Coulson, who was tried in the same way and sentenced to death, is now before the Supreme Court of the United States, on a writ of error involving the right to trial by jury of persons in the Canal Zone, who are charged with murder. Pending decision on this point, execution has been suspended. This point of trial by jury, it should be understood, is raised only with regard to capital crimes committed prior to February 6, 1908, on which date the President issued an order granting a trial by jury in all such cases.

Draining Black Swamp.

Although the Black Swamp, where the Panama railroad crosses it at Ahorca Lagarto, is only 1,500 feet from the Chagres River by a direct line, the swamp is prevented from being drained directly by a ridge which rises abruptly between it and the river to a height of from fifteen to twenty feet.

Formerly the water which collects in this swamp flowed eastward under the railroad tracks to a shallow lake of large area, and finally drained back under the track and ran into the Chagres river at Bridges 26 and 27. From the point where Bridge 29 crosses the swamp to where the water flowed out at Bridge 26 it is four and one-half miles by

the water course, although only two miles by the railroad. At Bridge 29 the elevation of the swamp is 20 feet above sea-level, and at Bridge 28, one mile south of Lion Hill and three-quarters of a mile from Bridge 29, the elevation is 16 feet.

In order to shorten the distance and to facilitate the movement of the water a drainage ditch has been dug from Bridge 29 to Bridge 28 by a circuitous route, which makes the length of the ditch one and three-quarter miles. The water thus has three miles less distance than formerly to flow in order to reach the Chagres River. The channel was completed on September 8, and already the surface of the water has been lowered one and one-half feet. This relieves the swamp of an immense weight of water and will give greater security to the Panama railroad tracks. It is thought that by keeping the new ditch free of vegetation the flow will not be impeded, and the water may be lowered one foot more. To this end a flatboat is kept plying through the ditch, removing such obstructions as grow there, or float into it.

In digging this ditch two parties were sent out in flatboats, six men in a boat, one party beginning its work at Bridge 29 and the other at Bridge 28. It was necessary to cut through several ridges and to skirt the foot of one hill. The work included not only the excavation of a channel, but also the cutting of a way through the thick swamp growth. As it was impossible to run a line, the route was determined largely by the parties keeping in touch by shooting, and by shouting to one another. Each party aver-

aged 100 feet a day throughout the mile and a quarter of machete work and excavating.

The railway track through the swamp has always caused trouble in the wet season by settling, but on July 30, 1907, under the increased number of trains, and the additional weight of the fill for the second track, the settlement was the worst on record. Three hundred feet of double track embankment, with both tracks, sinking about twelve feet. Two pile drivers were used to drive a trestle across the break, and traffic was resumed on the morning of August 1, forty-two hours after the trouble occurred. On September 20 following, two hundred feet more of the track settled in the same manner immediately south of the first break, and was replaced with trestle after forty hour's interruption of traffic. This trestle, 500 feet long, known as Bridge 28½, has held up well, and has given no sign of weakness, but during the early part of the present wet season the embankment carrying the second main track settled considerably, farther south, for about 500 feet each side of Bridge 29. It was decided that, rather than to impose additional weight upon the swamp by placing ballast to raise this track, it would be advisable to operate a gauntlet over this stretch similar to that operated across Barboas Bridge, trains being controlled by automatic electric signals. This gauntlet track was completed and put into service on September 3.

While it is thought prudent to limit the speed of the trains to very slow movement across the Black Swamp, there is no danger to the safety of passengers.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, September 19, 1908:

	STATIONS.				
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun.
Height of low water above mean sea level, feet.....	129	92	46	0	0
Maximum height above low water, feet.					
Sunday, Sept. 13.....	3.00	2.70	6.20	10.72	4.10
Monday, Sept. 14.....	6.75	5.57	7.70	11.36	4.40
Tuesday, Sept. 15.....	4.50	3.00	5.25	8.95	4.00
Wednesday, Sept. 16.....	2.00	3.12	5.40	8.68	2.99
Thursday, Sept. 17.....	6.50	5.37	7.10	10.18	3.28
Friday, Sept. 18.....	7.30	5.85	7.90	10.82	3.90
Saturday, Sept. 19.....	2.90	3.35	5.80	9.80	3.80
Maximum for week.....	7.50	5.85	7.90	11.36	4.40

Rainfall, September 1 to 19, 1908, Inclusive.

Stations.	(MIDNIGHT TO MIDNIGHT.)	
	Maximum in one day.	Total
<i>Atlantic Division—</i>		
Cristobal.....	.84	5.65
Brazos Brook.....	1.03	5.68
Gatun.....	1.21	5.04
Bohio.....	1.65	4.56
<i>Central Division—</i>		
Tabernilla.....	2.00	7.80
San Pablo.....	1.84	5.57
San Obispo.....	.79	4.73
Gamboa.....	.56	4.35
Empire.....	1.10	5.68
Canaocho.....	1.85	7.02
Culebra.....	2.27	8.41
Rio Grande.....	3.26	10.48
<i>Pacific Division—</i>		
Pedro Miguel.....	.58	3.90
La Boca.....	.90	3.56
Ancon.....	.63	3.12
<i>Upper Chagres.</i>		
Alhajuela.....	2.16	8.46

LABOR FORCE AND QUARTERS.

The report of the Chief Quartermaster shows that there was a surplus of labor during the month of August, and that it became very difficult to place the incoming laborers. All recruiting has been suspended until further notice, and the services of one of the two labor agents, who have been operating in the West Indies, have been dispensed with, leaving only three labor agents in the employ of the Commission; one in the United States, one in Europe, and one in the West Indies. The total gold force at the end of August was 4,396, as compared with 4,477 at the end of July; there were 252 additions to the gold roll and 330 separations. The silver force increased in August, from 21,049 to 21,486; 616 contract laborers were received during the month, of whom 296 were West Indians and 320 were Europeans.

Commission quarters to the number of 1,296 were occupied by families of gold employes, while 3,433 gold employes occupied bachelor quarters. One thousand and thirty nine married quarters were occupied by West Indian laborers, while 7,363 West Indians occupied bachelor quarters. European laborers and their families occupied 318 married quarters, and bachelor quarters were occupied by 5,561 European laborers. At the end of August applications for family quarters for employes who entered the service after January 1, 1908, were on file, as follows: Cristobal, 60; Gatun, 21; Tabernilla, 1; Gorgona, 53; San Pablo, 8; Bas Obispo, 3; Las Cascadas, 14; Empire, 33; Culebra, none, all assigned; Paraiso, 6; Pedro Miguel, 11; Corozal, 13; Ancon, 15; La Boca, 20.

A statement of the force actually at work on August 31, 1908, follows:

DEPARTMENT.	SILVER MEN.										Total Gold and Silver.
	Gold Men.	Monthly.	Artisans.		European Laborers.		West Indian Laborers.		Total Silver.		
			32c. and over.	26c.	40c.	32c.	26c.	20c.			
Construction and Engineering.....	3,395	2,251	4,460	1,065	4,245	384	1,351	3,254	17,010	20,405	
Quartermaster's Department.....	120	596	256	11	245	27	18	495	1,648	1,768	
Subsistence Department.....	70	787							787	857	
Department of Civil Administration.....	278	143	22						165	443	
Department of Sanitation.....	396	850	182		15		5	807	1,859	2,255	
Disbursements.....	84	16							16	100	
Examiner of Accounts.....	53	1							1	54	
Totals.....	4,396	4,644	4,920	1,076	4,505	411	1,374	4,556	21,486	25,882	

OFFICIAL CIRCULARS.

Acting Chairman and Chief Engineer.

CIRCULAR No. 208.

Lieut.-Col. H. F. Hodges will be in charge of the work as Acting Chairman and Chief Engineer during my absence. Effective September 22, 1908.

GEO. W. GOETHALS,
Chairman and Chief Engineer.
Culebra, September 21, 1908.

Assignments to Duty.

CIRCULAR No. 183 I.

Lieut.-Col. H. F. Hodges, Corps of Engineers, U. S. Army, is assigned to duty as Assistant Chief Engineer.

Civil Engineer H. H. Rousseau, U. S. Navy, is assigned to duty as Assistant to the Chief Engineer.

Mr. S. B. Williamson is appointed Division Engineer of the Pacific Division.

GEO. W. GOETHALS,
Chairman and Chief Engineer.
Culebra, C. Z., September 16, 1908.

Division of Work—Office of the Chairman and Chief Engineer.

CIRCULAR No. 183 J.

For the transaction of business in the Department of Construction and Engineering, the following divisions of the office are designated:

First Division, under Lieut.-Col. H. F. Hodges, U. S. Army, Assistant Chief Engineer: He will have charge of the design of locks, dams, regulating works and their accessories; and the forces engaged on such designs, including the mechanical and electrical engineer, will report to him direct. All papers relating to those works, including projects from division engineers, requisitions, specifications, bids, etc., for plant and material to be used in construction, will be referred to him for consideration and comment. He will exercise general supervision over the engineering work, and over the forces engaged thereon, with a view to securing uniform rates of pay for similar duties in the various construction divisions.

Second Division, under Civil Engineer H. H. Rousseau, U. S. Navy, Assistant to the Chief Engineer: He will exercise supervision over the Division of Motive Power and Machinery, and will have charge of—

1. Office drafting force, including the office engineer and the architect.
2. The preparation of estimates, of allotments of appropriated funds, and of statements of funds available.
3. The preparation and compilation of cost keeping and technical data.

All papers relating to the various machine shops of the Commission, including manufacturing orders, requisitions, specifications, bids, etc., to Building Construction and to Municipal Engineering will be referred to him for consideration and comment. In order to secure a uniform wage scale, all applications for authority for promotions and employments in the various machine shops will be referred to him for action.

Third Division, under Mr. C. M. Saville, Assistant Engineer: He will have charge of all matters referring to general surveys not properly belonging to any one division; of the collection and compilation of all data connected with meteorology and river hydraulics, and of such investigations, tests and experiments as may be assigned to him.

Fourth Division, under Mr. M. B. DePatron, Assistant to the Chairman: In addition to his other duties, he will have charge of the personnel records of the Commission and the Panama Railroad Commissary, and will act on all applications for leave of absence, sick leave, etc., and, except as designated elsewhere, on all applications for promotions and appointments, to see that such comply with the authorized positions and rates of pay. He will also exercise supervision over the clerical organizations on the Isthmus, with a view to securing uniformity in pay for similar clerical work.

All communications will be addressed to the Chief Engineer. The Chief Clerk, in addition to his other duties, will receive all official mail and, after having it recorded, will distribute it to the various assistants as outlined above.

The assistants will send direct to the Chief Engineer for final action all papers referred to them for consideration and comment.

GEO. W. GOETHALS,
Chairman and Chief Engineer.
Culebra, C. Z., September 18, 1908.

Division of Meteorology and River Hydraulics.

CIRCULAR No. 204.

During the absence on leave of Mr. Ricardo M. Arango, and until further notice, Civil Engineer H.

H. Rousseau, Assistant to the Chief Engineer, will perform the duties of Division Engineer of the Division of Meteorology and River Hydraulics.

GEO. W. GOETHALS,
Chairman and Chief Engineer.
Culebra, September 17, 1908.

Headquarters of Subsistence Department.

CIRCULAR No. 201.

The headquarters of the Subsistence Department of the Isthmian Canal Commission will, on September 16, 1908, be moved from Culebra, C. Z., to Cristobal, C. Z.

Hereafter all bills receivable, bills payable, and other correspondence pertaining to the Commissary Department, Panama Railroad, will be sent direct to the Subsistence Officer, Cristobal, Canal Zone.

GEO. W. GOETHALS,
Chairman and Chief Engineer.
Culebra, C. Z., September 15, 1908.

Acting Division Engineer, Atlantic Division.

CIRCULAR No. 207.

Maj. Chester Harding will, on his return from leave of absence, perform the duties of Acting Division Engineer of the Atlantic Division during the absence on leave of Maj. Wm. L. Sibert.

GEO. W. GOETHALS,
Chairman and Chief Engineer.
Culebra, September 21, 1908.

CIRCULAR.

During my absence on leave in the States Maj. J. P. Jervey will act as Division Engineer until the return of Maj. Chester Harding, Assistant Division Engineer, who, upon reporting for duty, will assume the duties and title of Acting Division Engineer.

WM. L. SIBERT,
Division Engineer.
Gatun, C. Z., September 17, 1908.

Purchasing Agent on the Isthmus.

CIRCULAR No. 205.

Effective this date: Capt. Conrland Nixon is appointed Purchasing Agent on the Isthmus, in addition to the other duties assigned him by the Chief Quartermaster.

GEO. W. GOETHALS,
Chairman.
Culebra, September 19, 1908.

Acting Claim Officer.

CIRCULAR No. 209.

During the absence on leave of Mr. Benj. L. Jacobson, effective September 23, 1908, Mr. Frank X. Ward will perform the duties of Claim Officer.

GEO. W. GOETHALS,
Chairman.
Culebra, September 21, 1908.

Manufacture in Shops to Be Reduced.

CIRCULAR No. 206.

For reasons of economy it is desired to reduce the manufacture of repair parts, castings, and other similar material, in the Commission shops on the Isthmus, to a minimum, and to make purchases in the United States whenever the necessities of the work will permit, exception being made only in cases where the circumstances clearly indicate the economy of doing the work on the Isthmus. Future needs should be anticipated as much as possible, and requests should be made on the Quartermaster's Department to keep up the stock of all articles regularly needed, the aim being to secure the greatest economy practicable.

Each department and division should exercise close supervision over its own manufacturing work in order to see whether same can be reduced. For manufacturing requests between departments and divisions, on Form No. 159, it shall be the duty of the department or division receiving such manufacturing request to make comparison of estimate of cost of manufacture on the Isthmus with cost of purchase in the United States, and, in cases where there is a material difference in favor of the latter procedure, to notify the department or division requesting the work of the results of this comparison, sending a copy of same to the Chief Engineer's office. Upon receipt of this information such action on the lines of economy will be taken by the department or division issuing the request as the circumstances indicate.

GEO. W. GOETHALS,
Chairman and Chief Engineer.
Culebra, September 18, 1908.

Acting Surveying Officer.

CIRCULAR No. 202.

Mr. H. S. Farish is appointed acting surveying officer, effective this date.

GEO. W. GOETHALS,
Chairman.
Culebra, C. Z., September 15, 1908.

Local Purchases by Subsistence Officer
CIRCULAR No. 203.

Subject to the approval of the Commission, Maj. Eugene T. Wilson, Subsistence Officer, is authorized to make daily local purchases for the hotels and mess houses in the open market without advertising, such purchases, singly, or in any one day, in no instance to exceed \$500 in value.

GEO. W. GOETHALS,
Chairman.
Culebra, C. Z., September 17, 1908.

Acting Executive Secretary.

CIRCULAR No. 80.

During the absence on leave of Mr. H. D. Reed, Executive Secretary, Mr. George A. Ninas is designated as Acting Executive Secretary.

JO C. S. BLACKBURN,
Head of Department of Civil Administration.
Ancon, September 18, 1908.

Approved:
GEO. W. GOETHALS,
Chairman of the Commission.

Mail for Quartermaster's Department

HEADS OF DEPARTMENTS AND DIVISIONS:

Effective September 16: Please send all mail formerly addressed to the Chief of Division of Material and Supplies, and latterly to the Assistant Chief Quartermaster, Cristobal, as follows:

Address all general correspondence relative to material to the Chief Quartermaster, Culebra.

All inquiries regarding material on order in the United States should be addressed to the Chief Quartermaster, Culebra.

Send all accomplished inspection calls and correspondence relating thereto to the Chief Quartermaster, Culebra.

Send all States' requisitions to Chief Quartermaster, Culebra.

Send all requisitions to be filled from stock at Mount Hope to the Depot Quartermaster, Mount Hope, and address all inquiries concerning such deliveries to the same place.

Return store invoices issued by the office of the Assistant Chief Quartermaster, Cristobal, to the Depot Quartermaster, Mount Hope, and so address all correspondence pertaining thereto.

Storekeepers will return all accomplished store invoices to the Depot Quartermaster, Cristobal.

Respectfully,
C. A. DEVOL,
Chief Quartermaster.

Culebra, C. Z., September 15, 1908.

Personal.

Lieut.-Col. Geo. W. Goethals sailed on the United Fruit steamer *Cartago* for New Orleans on Tuesday, September 22, for a visit of six weeks to the States.

Commissioner William L. Sibert sailed for the States on the *Esperanza*, September 18, on his regular leave of absence.

Steamship Colon.

The steamship *Colon* of the Panama Railway Steamship Line, arrived at Cristobal on Friday, September 18, two days late. She encountered a hurricane north of Watlings Island on Sunday, September 12, which continued for 30 hours. She lost one of her smokestacks, three life boats, and suffered other damage to her superstructure. Three seamen were asphyxiated by ammonia gas while making repairs to the cold storage plant. All necessary repairs were made in time for her to sail for the States on her scheduled time to-day.

Rev. Henry Collins, Commission chaplain, will speak in the Roman Catholic church at Gorgona at 9.30 o'clock Sunday morning, September 27, in the interest of the church of the Holy Redeemer, Culebra.

The regular dance of the Tivoli Club will be held at the Hotel Tivoli September 26.

CANAL WORK FOR AUGUST.

Monthly Report of the Chairman to the Secretary of War.
Culebra, September 17, 1908.

The Honorable,
The Secretary of War,
Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of August, 1908:

The work of reorganization, as outlined in my report for July was continued. Effective August 1, the Division of Building Construction and the Division of Municipal Engineering were abolished, and the duties formerly performed by the divisions were assigned to the Atlantic, Central and Pacific Divisions in their respective territories. Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
Steam shovel excavation— In prism.	cubic yards	204,571	1,499,963	129,945	1,834,479
Auxiliary.	cubic yards	3,318	40,647	2,808	46,773
Total.	cubic yards	207,889	1,540,610	132,753	1,881,252
Dredge excavation— In prism.	cubic yards	638,217		737,774	1,375,991
Auxiliary.	cubic yards	61,448			61,448
Total.	cubic yards	699,665	1,540,610	737,774	1,437,439
Total excavation.	cubic yards	907,554	1,540,610	870,527	3,318,691
Explosives used.	tons (2,240 lbs.)	30.61	322.21	6.00	358.82
Drilling.	feet	57,931.	247,079.	7,316.60	312,326.60
Track removed.	miles		7.07		7.07
New track laid.	miles	1.53	13.75		19.58
Material placed in dams.	cubic yards	64,109.	16,321.		80,430
Rock crushed.	cubic yards			4.3	4.3
Cement used.	barrels		16,321.	950.	17,271.
Concrete placed.	cubic yards			97.	97.
New roads built.	cubic yards		4,241.	25	4,266
Water mains laid.	feet		4,241.	286.	4,527.
Open drains and ditches dug.	feet		1,513.	8,000.	9,513.
Sewers laid.	feet		8,110.	362.	8,472.
Daily average number of laborers.		2,378.	1,110.	2,796.	6,284.
Rainfall.	inches	16.22	8.11	9.89	34.22

**Atlantic Division.
GATUN LOCKS.**

Four steam shovels were at work on the Lock site during the month, and a total of 132,263 cubic yards of material were excavated. Of this material, 26,953 cubic yards were dumped in the Dam and 105,213 cubic yards outside of the Dam.

The position of the power house has been staked out, and the necessary triangulation work has been completed for locating the cement house dock.

GATUN DAM.

Dredge No. 82 removed during the month from the channel way to the handling plant docks, 51,505 cubic yards. Thirty-five thousand one hundred cubic yards of Bas Obispo rock were placed on the south toe of the

Dam, and 41,060 cubic yards of material from the spillway were dumped on the north toe of the Dam.

SPILLWAY.

Three steam shovels worked throughout the month on the spillway, and a total of 57,999 cubic yards was excavated.

MINDI.

A total of 16,309 cubic yards was excavated from the Canal prism by the one steam shovel working there.

Five hundred and nineteen Oliver dump cars and 563 Western dump cars of material excavated from Mindi were dumped on the south toe of the Dam.

PORTO BELLO.

Work was actively and satisfactorily carried on in preparation for the installation of the rock crushing and shipping plant.

NOMBRE DE DIOS.

The investigations and surveys of sand deposits were completed and camp broken August 21.

DREDGES.

Five dredges were at work during the month and excavated a total of 638,217 cubic yards.

CRISTOBAL.

At the machine shop and drydock the usual general work was accomplished, including miscellaneous repairs to dredges, tugs and clapets. The installation of machinery in 20-inch pipe-line dredge No. 85 was 95 per cent completed at the end of the month. Work was completed riveting the hull of the stern wheel towboat, and all of the material on hand was erected.

The parties engaged in dismantling the old French dredges near Frijoles progressed rapidly during the month and the dredges are prepared to come out at the first high water.

MUNICIPAL ENGINEERING.

One thousand four hundred feet of the Mount Hope-Gatun road, from the fire station at Gatun toward New Gatun, were macadamized during the month.

Other work, consisting of the maintenance of roads, installation of sewers and water pipes, was accomplished during the month.

BUILDING CONSTRUCTION.

Twenty-one houses at Gatun, including the hotel, were screened during the month.

One type 14 house was completed, two more are 90 per cent completed, and three are 30 per cent completed.

The powder house at Mindi was completed, and work on the storage magazine at Mindi Hills was about 70 per cent completed. Work on this magazine is expected to be finished by September 25.

At Cristobal, six washhouses and closets at Folks River were completed. House No. 3 at Cristobal was demolished preparatory to the erection of a new house. Two type 14 houses are 85 per cent completed.

The storehouse for the Quartermaster's Department is 90 per cent completed, and the Cristobal jail is 85 per cent completed.

Central Division.

During the month of August, the total amount of material excavated in the Central Division was 1,540,610 cubic yards, of which 530,153 cubic yards were classified as earth and 1,010,457 cubic yards as rock.

Of this quantity 1,534,498 cubic yards were

removed by steam shovels and 6,112 cubic yards from the quarry at the Bas Obispo rock crusher by hand.

The quantity of material removed from the Canal prism was 1,499,963 cubic yards, and in addition 38,774 cubic yards were removed from the Obispo Diversion and 1,873 cubic yards from new incline in Gorgona district.

The daily average number of steam shovels at work during the month was the same as for the month of July. The average number of steam shovels days was also the same.

For comparison with work done during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels	Classification of material		Av. No. of steam shovels working during month	Wkg days in month	Av. amount excavated per steam shovel per 8-h d y	Rainfall during month
		Rock	Earth				
1907, August.	cu. yds. 783,173	% 62	% 38	39.90	27	cu. yds. 726	ins. 11.24
1908, August.	1,534,498	66	34	52.58	26	1,123	8.11

From this table it will be noted that the amount of material excavated by steam shovels in the Central Division in August, 1908, was nearly double that removed from the same section of the Canal in August, 1907, but it should be remembered that at the latter date excavation had just been commenced in what is now the Chagres section of the Central Division, 1875 cubic yards having been excavated by steam shovels.

The average output per shovel per day was nearly 54 per cent greater in August, 1908, than in the corresponding month of the preceding year.

During the month the following drilling was accomplished.

By steam and air drills.....	142,769 feet
By well or churn drills:....	92,953 feet
By hand drills.....	11,348 feet

A total of..... 247,070 feet or 47.76 miles.

No channelers were in operation during the month.

The output of the Bas Obispo rock crusher for the month was 9,482 cubic yards, and of the Rio Grande crusher, 6,839 cubic yards.

During the month 13.75 miles of new track were laid and 7.07 miles of old track removed.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

Excavation—During the month 134,142 cubic yards of material were excavated, as follows: 22,217 cubic yards from the Pedro Miguel Lock site, 91,440 cubic yards from the Miraflores Lock site, 2,808 cubic yards from the west dam at Miraflores, and 17,666 cubic yards from the Canal prism at Cardenas Hill.

General Remarks—The dump west of the Pedro Miguel Lock site was extended so as to divert the Rio Grande from its natural bed through the Lock site to a channel about 800 feet west, originally excavated by the French. A dyke was also completed at the south end, in which a culvert was placed for drainage. The site is, therefore, fully protected from flood water.

Spur tracks from the main line into the Lock prism were begun and are well under

way. The object of these is to cut in two additional steam shovels.

At Miraflores, the greater portion of the material excavated was used in building embankments on both sides of the Lock site for the erection plant, forming toes for the west dam between which material will be pumped, and in building basins on the east side of the site into which the suction dredge will pump a portion of the material to be excavated.

Surveys and examinations, consisting of borings and test pits, were made at the proposed site for the power house, and the site for fuel oil tanks located and prepared.

The setting of machinery at the Cocoli shop and the erection of the power transmission line are in progress.

With the material excavated from the Canal prism at Cardenas Hill, a dyke is being built on the east side of the prism which will extend from Cardenas to Diablo, a distance of approximately 15,000 feet, and behind which the material dredged from the channel will be pumped.

DISTRICT NO. 2—DREDGING AND LA BOCA SHIPWAY.

Dredging—Three dredges have been operated during the month as follows:

Dredge	Type.	Cubic yards.		Remarks.
		In prim	Auxil'y	
Culebra	Suction	431,296	.....	Scow measurement
Gopher	Ladder	161,588	.....	Place measurement
No. 14.	Ladder	144,890	.....	Place measurement
Total	.....	737,774	.....

Extensive general and minor repairs were made to dredges, clapets, barges, tugs, and other plant and equipment.

A force has been employed in clearing the line of the Canal over which the dredges will operate between La Boca and Miraflores. The amount of work accomplished during the past month is as follows: Clearing, piling, and burning brush over an area of 4,347,850 square feet; grubbing, piling and burning stumps over an area of 1,047,000 square feet; and blasting 17,100 stumps.

Borings are in progress to determine accurately the character and amount of excavation in the channel between Miraflores and La Boca.

A survey of the dredged channel was completed and the areas computed to obtain a check on the monthly progress reports. Following are the results obtained:

Summation of monthly estimates	
June 1, 1907, to September 1, 1908,	
(15 months)	6,548,600 cu. yds.
Estimates made from results of survey	6,067,752 cu. yds.

Shortage of place measurement, September 1, 1908..... 480,848 cu. yds.

The discrepancy is about 7.3 per cent, and is thought to be largely due to the refilling of the channel from cross currents, which has been previously estimated at from 600,000 to 1,000,000 cubic yards per annum. The discrepancy shown above amounts to 384,672 cubic yards per annum.

DISTRICT NO. 3—MUNICIPAL ENGINEERING AND BUILDINGS.

Panama Improvements—Work on avenue B extension was continued. The sewer and water installation and concrete curbs and gutters have been completed. At present this street is about 70 per cent completed.

The maintenance of roads, streets and sewers was continued during the month, and a number of minor items of construction

accomplished at the different stations in this division.

Building Section—A large amount of building work was accomplished during the month in the Pacific Division, including office buildings, quarters, mess halls, shops, and other buildings. Necessary repairs and maintenance of existing buildings were attended to.

MECHANICAL DIVISION.

The usual work was performed in this division in connection with the maintenance and operation of equipment, electrical work and manufacture of repair parts.

The following shows the progress made in the installation of tanks for the storage of fuel oil.

Rio Grande, 2500-bbl. tank.....	completed
Las Cascadas, secondary tank.....	33 per cent completed
Empire, 4000-bbl. tank.....	95 per cent completed
Empire, secondary tank.....	40 per cent completed
Bowling Green (Empire), 1000-bbl. tank.....	80 per cent completed
Gorgona, secondary tank.....	100 per cent completed
Miraflores, 4000-bbl. tank.....	5 per cent completed

The boiler plant at Las Cascadas air compressor is now burning fuel oil instead of coal.

Division of Meteorology and River Hydraulics.

The usual observations and measurements were continued during the month and no unusual meteorological conditions occurred.

Relocation of Panama Railroad.

CONNECTING TRACKS FROM OPERATED LINES.

Twelve hundred and seventy-eight linear feet of temporary track were recovered from Spur No. 2, at Gatun.

Seven hundred and forty-six linear feet of track were laid on Spur No. 7, at Caimito.

Five hundred and forty-eight linear feet of temporary track were recovered from Spur No. 15, at Gatun.

One hundred and twenty-five linear feet of trestle and 180 linear feet of temporary track were laid on Spur No 16, at south end of Miraflores tunnel.

GRADING.

<i>Excavation</i> —		Total current month—	
Total to date—		Cu. yds.	
Cu. yds.		22,781 earth	
375,963 earth		5,760 loose rock	
69,990 loose rock		3,774 solid rock	
82,745 solid rock			
528,698 total		32,315 total	

<i>Embankment</i> —		Total current month—	
Total to date—		Cu. yds.	
Cu. yds.		36,666 from excavation	
595,974 from excavation		38,796 from Canal	
1,693,470 from Canal			
2,289,444 total		75,462 total	

TRESTLES FOR FILLING.

Six hundred and ninety-five linear feet of trestle were driven from the relocated line near station 1090 opposite Mamei.

Seven hundred linear feet of trestle were driven on the relocated line near station 1190 opposite Juan Grande.

BRIDGES AND CULVERTS.

A 16-inch vetrified clay pipe culvert 195 feet long was placed at station 1086—35 opposite Mamei, 18 cubic yards of concrete being used in foundation.

Thirty-two feet of galvanized iron pipe were placed at station 1195 and 142 feet of 36-inch galvanized iron pipe at station 1141—47 opposite Juan Grande, 50 cubic yards of concrete being used in foundation.

A 2 by 3 standard rail top box culvert was

placed at station 1091 opposite Mamei, 41.5 cubic yards of concrete being used.

MIRAFLORES TUNNEL.

One hundred and thirty cubic yards of concrete was placed in lining at north end of tunnel and 475 cubic yards of concrete at south end.

The hill has broken about 50 feet north of the crest and has moved to the south about three feet. The movement along the east side has been considerably more marked than along the west side, but the arch centers have moved more at the top than they have at either the east or west end. The movement has been more about 130 feet in from the south end than at any other place—for a stretch of 25 feet at this place the tunnel lining has moved enough to practically upset the arch centers, and the roof is supported by longitudinal pieces 12 by 12 under the key pieces of the arch, the longitudinal pieces being supported by posts. The break that shows on top is about 150 feet farther north than where the first disturbance is shown inside, indicating that the side hill is slipping on a rock surface which has a dip of about 45 degrees.

A concrete retaining wall 10 feet wide at the base and 100 feet long has been built and Bas Obispo rock back filling placed at the south end of the tunnel, at the toe of the slide, to check same. This wall is so located that it will become the east side of the tunnel lining, the tunnel being lengthened 100 feet by the building of this wall.

PERMANENT TRACKS.

Fourteen hundred and thirty-three linear feet of permanent track were laid this month, making a total of 40,745 feet to date.

GENERAL.

The force of laborers during the month averaged 894.

Quartermaster's Department.

There were received during the month 320 European laborers and 296 West Indians. There was a surplus of labor during the month, so that it became very difficult to place incoming laborers, and all recruiting has been ordered suspended until further notice.

The total additions to the gold force during the month were 252, and the total separations 330, so that the net separations were 78. The total gold force of the Commission at the end of August was 4,396, as compared with 4,447 at the end of July. There was a slight increase in the silver force, the total at the end of August having been 21,486, as compared with 21,049 at the end of July.

During the month of August preparations went forward for the taking over by the Quartermaster's Department of the Division of Material and Supplies, of certain work heretofore performed by the Sanitary Department, and for inaugurating a system of correct accounting for Commission property on the Isthmus. It is believed that by the end of September a practical and economical working basis will have been reached.

Subsistence Department.

The net profit in August for the operation of hotels and mess houses, not including the Tivoli Hotel, was \$3,889.55 as compared with a net loss in July of \$2,559.47, making a net gain over the previous month of \$6,449.02.

The operation expenses of the Hotel Tivoli

were \$19,157.21, and the revenue amounted to \$18,119.18, making a net loss of \$1,038.03.

Department of Civil Administration.

COURTS.

The Supreme Court was in session twice during the month. No criminal cases were filed. One was disposed of, and three criminal cases were pending at the end of the month.

In the circuit courts, eight civil cases and thirty-two criminal cases were heard and disposed of, and in the district courts twenty-three civil and four hundred and seventy-seven criminal cases were disposed of.

DIVISION OF REVENUES.

The general revenues of the Canal Zone for the month collected by this division amounted to \$11,047.11.

Thirteen vessels entered at and twelve cleared from the port of Ancon, and twenty-two vessels entered at and twenty-one cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

During the month 488 arrests were made, as compared with 536 for July. No disturbances of a serious nature occurred during the month.

As Coroner of the Canal Zone, the Chief of Police investigated ten deaths; four of which were due to accidental drowning, two to railroad accidents and one to suicide.

DIVISION OF PUBLIC WORKS.

The usual business of this division was conducted during the month, including the installation of new connections, the issuance of permits for the installation of plumbing, the collection of water rents, and inspection of plumbing and sewers.

During the month 28,714,000 gallons of water were used in the city of Panama, and 27,335,671 gallons in the city of Colon.

DIVISION OF FIRE PROTECTION.

Seven fires were reported in the Canal Zone during the month, endangering property valued approximately \$110,500, the estimated actual loss being \$205.

DIVISION OF SCHOOLS.

No schools were opened during the month

Department of Sanitation.

[The report in full of the Chief Sanitary Officer was published in THE CANAL RECORD of September 16.]

Respectfully,

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Examination for Physician.

A local examination for the position of physician in the service of the Isthmian Canal Commission, entrance salary \$1,800 per annum, will be held October 14, 1908, at 9 a. m. in the office of the Chairman, Culebra. The Manual of Examinations, containing all necessary information and Application Form, may be obtained from the Secretary of the Isthmian Civil Service Board, office of the Chairman, Culebra, Canal Zone.

The burglar, who has been entering buildings in the Zone by cutting his way through the floors from underneath, was captured by the Canal Zone police on September 2, and on September 14 pleaded guilty in the circuit court at Ancon and was sentenced to one year in Culebra penitentiary.

All mail for the Acting Surveying Officer should be addressed in care of the Chief Quartermaster, Culebra, C. Z.

PROPERTY ACCOUNTING.

New Method Instituted by Quartermaster's Department.

OFFICE OF THE CHIEF QUARTERMASTER,
ISTHMIAN CANAL COMMISSION,
CULEBRA, CANAL ZONE, September 15, 1908.
CIRCULAR NO. 1.

AUTHORITY.

Under authority of the Secretary of War, dated August 26, 1908, and in compliance with Circular No. 1834, of the Chairman of the Isthmian Canal Commission, dated August 27, 1908, the following instructions are published for the information and guidance of all concerned.

GENERAL INSTRUCTIONS.

1. Accountability and responsibility devolve upon any person to whom public property is entrusted and who is required to make returns therefor. Responsibility without accountability devolves upon one to whom such property is entrusted, but who is not required to make returns therefor. An accountable official is relieved from responsibility for property for which he holds a proper memorandum receipt. A responsible official is not relieved from responsibility for public property for which he has given a memorandum receipt until he has returned the property to the accountable official, or has secured memorandum receipt from his successor.

2. A transfer of public property involves a change of possession and accountability.

3. In ordinary cases of transfer, the transferring official will furnish the receiving official with combination form, invoices and receipts, which will be prepared in quintuplicate. Two invoices and two receipts will be forwarded to the receiving official, and one invoice retained by the invoicing official as a reference pending the return of receipts. The accountable official upon receipt and verification of the property will sign two receipts and return to the invoicing official, which will be his authority for dropping the property. The invoices will be retained by the official receiving the property, and will be disposed of as follows: one copy to accompany return at end of period, the other to be retained to support the official's retained papers. The receipt will be handled in a like manner by the official transferring the property. Invoice must invariably accompany property, and be forwarded the same day as property is shipped. In cases where complete transfer of property accountability occurs, and one accountable official is relieved by another, invoices and receipts will be required, but the official assuming charge will certify on his predecessor's final return that the property shown as remaining on hand has been received by him, and the transferring official will certify that all such property was actually turned over by him. In a case of this kind, the property shown as remaining on hand on the return of the official being relieved, will be taken up on the return of his successor as voucher number one to his return.

4. When an official to whom property has been forwarded believes same to have miscarried he will promptly inform the shipper. If an official to whom public property has been transferred fails to report for it within a reasonable time, the invoicing official will report the fact to the head of his department or division. Should the matter not be adjusted prior to the semi-annual period, the invoicing official will take credit on his return and forward certified copies of all papers relating to the transaction, in support of the entry.

5. On receipt of public property by an official he will make a careful examination to ascertain its quality and condition. Should he discover defect or shortage he will apply for a survey to determine it and fix the responsibility. Should he consider the property unfit for use, he will submit a list of the property, in triplicate, on the prescribed form and request the action of a surveying official. The same rule will be observed in regard to property damaged or missing while in store.

6. The giving or taking of receipts in blank for public property is prohibited.

7. Public property will not be used, under any circumstances, for any private purpose whatsoever, unless so authorized by special authority from the Chairman and Chief Engineer.

8. Public property condemned and ordered sold will be disposed of for cash at auction, or to the highest bidder on sealed proposals, on due public notice, and in such market as the public interest may require. The official making the sale will suspend it when in his opinion better prices may be obtained. The auctioneer's certified detailed account of the sale, and the vouchers for the expenses attending it, will be reported on proper forms to the head of the department or division to which the property pertains, who will transmit the same to the Disbursing Officer. Two copies of the detailed account of the sale will be retained by the official accountable for the property sold; one copy will be forwarded with his return at the end of the period, the other will be filed with his retained return. All funds accruing from such sales will be immediately forwarded to the Disbursing Officer, accompanied by a statement showing date of the sale.

9. Public property which has been condemned, or the sale price of which has been reduced as the result of a survey or inspection, will not be purchased by any official who was responsible therefor at the time of the condemnation or reduction of price, nor by an official who bore any part in any such condemnation or reduction.

10. If any article of public property be lost or damaged by the neglect or fault of any employee, he shall

pay the value thereof, or the cost of repairs at such rates as may be determined by a survey of the property. If articles of public property are embezzled, or lost, or damaged through neglect, by an employee, the value of the damage as ascertained (and by a survey if necessary) shall be charged to him and set against any pay or money due him.

11. When information is received that property of the Isthmian Canal Commission is unlawfully in the possession of any person whomsoever, the Quartermaster or other proper official will promptly cause proceedings to be instituted and diligently prosecuted in the courts of the Canal Zone for the recovery of the property, and if the same has been stolen, for the arrest, trial, conviction and due punishment of the offender and his accomplices. Upon satisfactory information that such Isthmian Canal Commission property is unlawfully in the possession of any parties, is likely to be taken away, concealed, or otherwise disposed of before the necessary proceedings can be had in the courts of the Canal Zone for its recovery, any accountable official having knowledge of the same will at once cause the same to be seized and will hold it subject to any legal proceedings that may be instituted by other parties. Persons caught in the act of stealing public property will be summarily arrested by any employee of the Isthmian Canal Commission, and turned over to the proper authorities for trial.

12. All public property, whether paid for or not, must be accounted for on the proper returns. All public property unaccounted for when discovered by an accountable official will be taken up and the usual returns rendered therefor. Such property will be listed on the proper form, which will accompany the return.

13. An accountable official will have credit for an expenditure of property made in compliance with instructions from the head of his department or division, or other competent authority. If the expenditure is disallowed, it will be charged to the official who ordered the expenditure. Public property expended in the service of the Isthmian Canal Commission will be accounted for by the certificate of the responsible official. That is, the expenditure voucher will be signed by the official expending the supplies.

14. Should an accountable official of the Isthmian Canal Commission charged with public property fail to render the prescribed returns therefor within a reasonable time, or settlement of his accounts will be made by the Chief Quartermaster and the money value of the property with which he is charged will be reported against him to the Disbursing Officer for stoppage. In case there is not sufficient pay due him, action will be taken against his official bond to recover the amount charged in excess of pay due.

15. As soon as possible after the receipt of a return by the Chief Quartermaster, it will be examined in his office, and the official making the return will be notified of all errors and irregularities found therein and granted one month in which to make correction. Suspensions and disallowances will not be made on account of slight informalities which do not affect the validity of a voucher, but the official's attention may be called to them. Whenever the errors have been corrected or compensation has been made for deficient articles, and the action of the Chief Quartermaster is sustained or modified by the Chairman and Chief Engineer, the return will be regarded as settled and the official who rendered it will be notified accordingly.

SURVEYS ON PROPERTY.

Public property which has been damaged, or is unsuitable for the service, or evidence of property which has been lost, will be surveyed by a disinterested official appointed by the Chairman. The surveying official must fully investigate matters submitted to him. He will call for all evidence obtainable, and will not limit his inquiries to proofs or statements presented by parties in interest. He will rigidly scrutinize the evidence, especially in cases of alleged theft or embezzlement, and will not recommend the relief of officials or employees from responsibility unless fully satisfied that those charged with the care of property have performed their whole duty in regard to it. He should hear in person or by deposition all persons concerned in the subject matter before him.

The person responsible for public property to be surveyed will, in all cases, furnish the original certificates or affidavits, upon which he relies to be relieved from responsibility, together with the duly attested copies of such certificates or affidavits that are to accompany the report of survey. Whenever loss or destruction of, or damage to, public property, requiring the action of the surveying official, occurs, such action will be requested by the responsible official as soon as practicable, and in every case within thirty days after discovery of the loss, destruction, or damage, unless exceptional circumstances, which will be explained by the official's certificates, prevent such action within that period.

The surveying official can not condemn public property, his action being purely advisory. He will ascertain and report facts, submitting opinions and making recommendations upon questions of responsibility which may arise through accident, mistake, or neglect. This will include questions involving the character, amount and cause of damage or deficiency; also inventories of property ordered to be abandoned. He will also verify discrepancies between invoices and the actual property transferred from one official to another, ascertaining definitely amounts received, for which receiving official must receipt and, as far as possible, where and how the discrepancy occurred.

The following classes of property may be destroyed by the surveying officer:

(a) Stores which have become so deteriorated as to endanger health or injure other stores.

(b) Unserviceable property of no salable value. Decision of the surveying officer will be final as to whether such property has salable value.

In case the invoice value of any article exceeds \$500, the approval of the Chairman will be obtained before the destruction of the property.

The surveying officer will certify that property has been destroyed in his presence. The certificate of the witnessing official that the property has been destroyed will be appended to the original report of the surveying officer.

The report of the surveying official will be prepared in triplicate, and will then be submitted to the Chief Quartermaster for the approval or disapproval of the Chairman. When approved by the Chairman, report of the surveying official becomes a proper voucher for the relief of an official for property accountability.

INVENTORIES OF PROPERTY.

All officials accountable or responsible for public property shall, prior to October 1, 1908, take such inventories of the property under their control as will insure the correct amount for a physical accounting being entered on their return of public property on October 1. Immediately after October 1, an official or officials as may be designated by the Chief Quartermaster and approved by the Chairman, will proceed to inventory various articles at random pertaining to accountability of public property on the Canal Zone. Wherever a test inventory of certain articles gives evidence of any improper record of initial accountability as of October 1 and subsequent transactions, the entire stock of property pertaining to the official in question will be inventoried.

EXPENDITURE OF PROPERTY.

A list of expendable property will be approved by the Chairman and published for the information of all concerned. Property so listed may be expended and dropped from the returns on certificate of the responsible official that the property has been expended in general work pertaining to the construction of the Isthmian Canal. (Segregated charge under proper account numbers pertains to the cost-keeping report.) All property expendable as well as non-expendable will be properly accounted for and carried on returns, while it remains in regularly organized storehouses, and until it has passed into the execution of the work.

PROPERTY RETURNS.

A property return on form as described under "Forms" will be rendered for all property on June 30 and December 31, of each year. A carbon will be inserted between original and duplicate, and one writing will cover both original and retained copy of this return. Entries will be made in indelible pencil, and not with typewriter, the latter process being slow and defeating the simplicity of the process. All entries appearing on this return to be covered by a voucher, unless otherwise provided, and such vouchers will be numbered consecutively throughout the period which the return covers. It is understood that these vouchers are to be numbered consecutively, regardless of whether they are invoices, receipts or expenditures. The return will be rendered to the Chief Quartermaster within twenty days after the period has expired for which it is rendered.

PRICE LIST.

An annual price list will be prepared by the Chief Quartermaster, printed, and issued to accountable officers prior to October 1, 1908. This price list will govern in the cost keeping account for all property for one year, or until such time as fluctuations in prices render corrections necessary. The prices of certain articles of very large consumption will be corrected as often as proper cost-keeping requires such action, and in all cases due notice will be sent to accountable officials. This price list, and amendments, will govern absolutely in all financial accounting pertaining to cost-keeping, surcharges, etc., and no prices will be shown on invoices.

INVOICES AND RECEIPTS.

All invoices and receipts will be sent from the invoicing official direct to the receiving official, no copy being furnished any other official. The combination blank, invoice and receipt, Form QMD 4, will be used in the transfer of all supplies.

REQUISITIONS.

Forms will be prepared in triplicate for all supplies required to be purchased in the United States or outside of the Canal Zone, articles to be arranged thereon alphabetically, the distinctive noun to appear first. One copy will be retained by the official preparing requisitions; two copies will be forwarded to the Chief Quartermaster, who will make proper deduction for stock on hand, and present them to the Chairman for approval. Upon approval, the Chief Quartermaster will prepare what is known as United States requisition, and forward to the General Purchasing Officer, Washington, D. C., for purchase; one copy of the requisition approved by the Chairman to remain in the office of the Chief Quartermaster, and one copy to be forwarded to the Mount Hope Depot for the information of the Depot Quartermaster.

What are known as local requisitions, or requisitions for supplies already on the Isthmus, will be sent direct from storehouses, District Quartermasters, or Division Engineers, to the Depot Quartermaster at Mount Hope, and filled without reference to the Chief Quartermaster.

Requisitions for subsistence stores will be sent direct to the Cristobal Commissary by Division Engineers and the Sanitary Department

INSTRUCTIONS TO APPLY LOCALLY.
STOREHOUSES.

Mount Hope Storehouse—To be under the direction of the Depot Quartermaster, as directed by the Chief Quartermaster; to provide an initial accountability of all property received on the Isthmus, and to show in its records a physical accounting and initial value of all such property. Invoices from Mount Hope for property to fill requisitions will invariably be forwarded on the same date the property is shipped, or, in other words, accompany the property. Property arriving on the Isthmus consigned to the Depot Quartermaster, and which, from its nature or economy in transportation, requires inspection at points other than Mount Hope, will be forwarded to destination with inspection call, which will be issued from the office of the Chief Quartermaster. This property will then be promptly inspected by proper inspectors at destination, and the result of such inspection will be recorded on the inspection call, which will be returned to Chief Quartermaster. The Depot Quartermaster, Mount Hope, will be furnished with two copies of the bill and copy of the complete inspection call. He will then take up the bill on his property return, making proper pink slips for the Purchasing Officer, and invoice to the accountable official, who will have already rendered certificate of inspection.

This will also apply to medical stores and supplies for the Colon Medical Storehouse, where economy in transportation suggests delivery direct instead of through Mount Hope.

The Depot Quartermaster, Mount Hope, will be the Purchasing Officer of the Isthmian Canal Commission on the Isthmus, and all purchases of supplies will be made by him upon requisitions approved by the Chief Quartermaster.

All supplies purchased in the United States and received on the Isthmus, whether paid for or not, will be taken up by the Depot Quartermaster and accounted for on his property returns. All stores such as coal, sand, and miscellaneous supplies, purchased from the Panama railroad, will be covered by one blanket award at the end of the month to cover bill from Panama railroad to the Isthmian Canal Commission. Subsistence supplies will be billed direct to Division Engineers and Chief Sanitary Officer. This to apply in place of Disbursing office circular No. 8 and Material and Supplies circular No. 177.

In addition to the original and duplicate sheets on his returns, the Depot Quartermaster at Mount Hope will insert two pink slips in said returns, on which all articles purchased will be entered, separate sheets to be kept covering purchases in the United States and those made on the Isthmus. At the end of each month, these pink slips will be extracted, numbered serially at place arranged for on blank, and will be forwarded to the Chief Quartermaster, one copy for file in his office and one copy to be transmitted by the Chief Quartermaster to the Disbursing Officer, Washington, for purchases made in the United States, and one copy for transmittal to the Disbursing Officer, Canal Zone, for purchases made on the Isthmus. In connection with bills covering purchases, either those made in the United States or on the Isthmus, the following information will be stated on the bills:

Date received, By whom,
Date inspected, By whom,

Serial number on which this property was accounted for on property return for period ending, Also certificate as to quantity and quality.

The Mount Hope storehouse will ultimately control the Lirio Planing mill, now located at Culebra, and the Stationer and Printer's plant, now located at Ancon. Both of these plants will be moved to the vicinity of Mount Hope Depot. All stationery will be carried in stock at Mount Hope Depot, and will be distributed for use with statement of cost for cost-keeping report, but will be expended at Mount Hope, and will not be taken up on the returns of any official. Blank forms will also be distributed in the same manner.

Stock report recorded on stock cards and closed every 15 days will be kept at Mount Hope Depot.

Gorgona and Empire Storehouses—Gorgona and Empire storehouses will be operated under the direction of the Chief Quartermaster. They will carry a stock adequate for the wants of the Division of Motive Power and Machinery, and also for the local District Quartermasters and the Division Engineer. Issues on foreman's requisitions will continue as at present. Names of foreman authorized to sign such requisitions will be forwarded to the Chief Quartermaster by the responsible officials. A duplicate slip or carbon copy of each foreman's requisition as it is filled will be sent to the official responsible for the foreman's order. This will take the place of an abstract of each day's business previously furnished same official. Stock cards will be kept in these storehouses and closed every two weeks. On the 15th and last day of each month, a consolidated Expenditure Form, QMD-5, showing totals of all expendable stores furnished various officials, will be rendered. This will be a total consolidation of the slips already furnished, and will be signed by the responsible official, and returned to the storehouse. When so signed, it will be authority for dropping from the storehouse concerned all the property enumerated on the list. This form to be rendered in triplicate separately for each official, one copy to be retained by the official, one by the storehouse, and one copy forwarded to the Chief Quartermaster. Non-expendable property is-

sued on foreman's requisitions will be invoiced to the accountable official.

Other Storehouses—Storehouses will be taken over and operated by the District Quartermasters at Gatun, San Pablo, Bas Obispo, Las Cascadas, Culebra, Paraiso, Pedro Miguel and Ancon. These storehouses will be operated under the same rules that apply at the Gorgona and Empire storehouses, supplying the wants of other officials as well as those of the District Quartermasters by whom they are maintained. In a few instances, where there is no regular storehouse in charge of the District Quartermaster, he will maintain a small storehouse for his own necessities, the accountability to be carried on his own return.

DIVISION ENGINEERS.

Each Division Engineer will render a return for all property for which he is accountable in his division. The return will be rendered on the form supplied by the Quartermaster's Department. The division engineers will arrange to keep such distribution record in their respective divisions as will give them adequate information as to the distribution of their accountability; it being understood that such a record is obtainable at all times upon which to check, by inventory, the Division Engineer's accountability at all points. This will be accomplished by a system of stock cards, the totals of which are transcribed to the return proper.

SUBSISTENCE DEPARTMENT.

One return on the prescribed form will be rendered by the Subsistence Officer for the entire property accountability in the Subsistence Department.

DIVISION OF MOTIVE POWER AND MACHINERY.

One return on the prescribed form will be rendered by the Superintendent for the entire property accountability in the Division of Motive Power and Machinery.

DEPARTMENT OF SANITATION.

One return on the prescribed form will be rendered by the Chief Sanitary Officer for the entire property accountability in the Department of Sanitation.

DEPARTMENT OF CIVIL ADMINISTRATION.

One return on the prescribed form will be rendered by the Head of the Department of Civil Administration for the entire property accountability in the Department of Civil Administration, except that contained in the Court Houses and in the new and old Administration Buildings, which will be rendered by District Quartermasters.

DISTRICT QUARTERMASTERS.

District Quartermasters, with the exceptions as noted herein, will be accountable and responsible for all property in their respective districts. All property not in their immediate possession, including that in public buildings, offices, houses, etc., will be carried on memorandum receipts. These memorandum receipts, when signed by the occupants, relieve the District Quartermaster from responsibility, but not from accountability. The District Quartermaster, when any chance necessitates a transfer of memorandum receipts from one responsible official or person to another, will at once have the memorandum receipt checked up, and the responsibility verified. This will be strictly enforced especially with regard to the occupants of all married quarters, and any shortage or damage therein, unless voluntarily paid for by the occupant, will be presented to the survey official.

The District Quartermaster's accountability in the respective districts is as follows:

Cristobal—All furniture and I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment. Property of the I. C. C. band. Property in pay office, Cristobal. Property in Y. M. C. A. clubhouse. All property carried by clerks of circuit court, District Judge and Associate Judge.

Gatun—All furniture and other I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment.

Tabernilla—All furniture and other I. C. C. property in quarters and in Q. M. storehouses.

San Pablo—All furniture and other I. C. C. property in quarters and in Q. M. storehouses.

Gorgona—All furniture and other I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment. Property in Y. M. C. A. clubhouse. Property carried by the District Judge.

Bas Obispo—All furniture and other I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment.

Las Cascadas—All furniture and other I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment.

Empire—All furniture and other I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment. All property carried by Associate Justice, Judge circuit court, clerk circuit court, and by District Judge, Y. M. C. A. clubhouse property, Furniture and office equipment in Disbursing office, Furniture and office equipment in office Examiner of Accounts. Property in use in truck garden.

Culebra—All furniture and other I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment, Y. M. C. A. clubhouse property. All furniture and office equipment in general offices.

Paraiso—All furniture and other I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment.

Pedro Miguel—All furniture and other I. C. C. property in quarters and in Q. M. storehouses, Q. M. corral and equipment. Property in use in truck garden.

Corozal—All furniture and other I. C. C. property

in quarters and in Q. M. storehouses. Q. M. corral and equipment. Property in use in truck garden.

Ancon—All furniture and other I. C. C. property in quarters and in Q. M. storehouses. This to include furniture in married and bachelor quarters in Aucon Hospital grounds. Q. M. corral and equipment. Property in use in truck garden. The furniture and office equipment of the general offices in the new and old Administration Buildings, Aucon and Panama. The furniture and office equipment of the offices and courts of the Circuit Judges, Clerk of the Circuit Court, Associate Justice, Clerk of the Associate Justice, and District Judge.

La Boca—All furniture and other I. C. C. property in quarters and in Q. M. storehouses.

Porto Bello—All furniture and other I. C. C. property in quarters and in Q. M. storehouses

COST KEEPING.

On and after October 1, 1908, the material account current, now prepared monthly and furnished the Disbursing Officer, will be discontinued. In lieu thereof there will be furnished by the head of each division or department report on Form 132-CE, Abstract of Expenditures, showing the total cost of the operation, divided and separated into such account number as the Examiner of Accounts may from time to time require. One copy of this form to be sent to the Chairman, Isthmian Canal Commission, and one copy to the Examiner of Accounts.

This report will include all services and materials rendered or furnished the division or department submitting the report, and also the cost of the labor required in the operation of that division or department.

Manufactured articles, as at the Gorgona shops, Empire shops, Lirio planing mill, etc., will, upon completion, be disposed of as follows: At Gorgona and Empire, articles when completed, will be turned over to the storekeeper at Gorgona and Empire, respectively, with a bill showing cost, including surcharge. The article so manufactured will be taken up by the storekeeper, and its accountability on the Canal Zone initiated at that point. The storekeeper will then proceed to invoice it to the consignee, showing price on the invoice. Other products will be similarly treated at the Mount Hope Depot.

BLANK FORMS.

Blank forms are as follows:

- QMD-1—Requisition.
QMD-2—United States Order.
QMD-3—Inspection Call.
QMD-4—Combination Invoice and Receipt.
QMD-5—Abstract of Supplies Issued.
QMD-6—Statement of Forage and Straw Issued.
QMD-7—Front Cover to Property Return.
QMD-7a—Back Cover to Property Return.
QMD-7b—Original White Inside Sheet.
QMD-7c—Duplicate Blue Inside Sheet.
QMD-8—Front and Cover, Report of Purchases.
QMD-8a—Back Cover, Report of Purchases.
QMD-8b—Pink Slip, Purchase Voucher.

C. A. DEVOL, Chief Quartermaster.

Approved:

GEO. W. GOETHALS, Chairman.

Misdirected Letters.

Division of Dead Letters.

Ancon, C. Z., September 23, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

- Armish, L. D. McArdle, Ellen S.
Barber, Lou Neri, Louis
Coyne, R. J. Peters, Calude
Daley, Joseph F. Phelan, Joseph
Dodge, A. H. Rice, H. N.
Hamlin, Harold E. Richards, H. C.
Harwood, Robert Rnedy, W. T.
Holbrook, F. W. Sheridan, P. L.
Keeling, Mrs. James R. Spence, Thos. H.
Lee, Daniel Teran, Oscar
Melgord, J. Wing, Joseph A.
Mills, J. S. Woodrome, J. E.

The revenue collected by the Division of Posts, Customs and Revenues in the Canal Zone in August amounted to \$13,655.50. Of this amount the fees from money orders were \$1,822.06; distillation licenses, \$120.25; miscellaneous bills, \$1,358.18; district licenses, taxes, rents, etc., \$8,643.46; fines, costs, etc., in the district courts, \$1,711.55.

Mr. William H. Wagner, injured by a Panama railroad train near Gatun, died in the Gatun Hospital September 12. He was 38 years old and had lived on the Isthmus three years. He is survived by his wife.

Arrivals and departures at the port of Aucon during the week ending September 18, 1908:

Arrivals—September 12, Limari, from Valparaiso; September 17, Acapulco, from San Francisco.

Departures—September 14, Panama, to Valparaiso; September 16, San Jose, to San Francisco.

COMMISSARY DEPARTMENT.

COMMISSARY PRICES

For week beginning September 21:

FRESH MEATS, POULTRY AND COLD MEATS.

Table listing prices for various meats and poultry. Includes items like Beef—Sirloin roast, Rump roast, Porterhouse, Rib-roast, etc., with prices per lb or dozen.

DAIRY PRODUCTS.

Table listing prices for dairy products. Includes items like Butter—Prints, Cheese—Roquefort, Neufchatel, etc., with prices per lb or quart.

VEGETABLES AND FRUITS.

Table listing prices for vegetables and fruits. Includes items like Tomatoes, Lettuce, White potatoes, Cabbage, etc., with prices per lb or dozen.

§ Sold only from cold-storage and not from Commissaries

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Table listing ship names, companies, and departure dates from New York to Colon. Includes Orinoco, Allianca, Finance, Prinz Joachim, etc.

FROM COLON TO NEW YORK.

Table listing ship names, companies, and departure dates from Colon to New York. Includes Colon, Advance, Prinz Aug. Wilhelm, etc.

FROM NEW ORLEANS TO COLON.

Table listing ship names, companies, and departure dates from New Orleans to Colon. Includes Parismina, Heridia, Cartago, etc.

FROM COLON TO NEW ORLEANS.

Table listing ship names, companies, and departure dates from Colon to New Orleans. Includes Parismina, Heridia, Cartago, etc.

FROM COLON TO BARBADOS, CALLING AT TRINIDAD. Orinoco, R-M., Tuesday, Sept. 29

FROM COLON TO NEW ORLEANS VIA KINGSTON. Tampican, Leyland Line, Sunday, Sept. 20

William Cliff, Leyland Line, Tuesday, Sept. 29

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 11 a. m., and from Colon at 1.30 p. m., via Port Limon, for New Orleans. In addition to the above, the United Fruit Company dispatches a steamer about every ten days from Colon, via Bocas del Toro, for New Orleans.

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The steamship Eastfields, from Gulfport, is due on September 24 with 974 piles for use in the relocation of the Panama railroad, and 327 pieces of white oak lumber for the Mechanical Division



The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies can be obtained from the news stands of the Panama Railroad Company for five cents each

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

A Correction.

In the summary of the Chairman's report for the month of August, which appeared in THE CANAL RECORD of September 23, an error was made in giving the amount of excavation from the Canal prism. The amount given, 1,375,991 cubic yards, is the amount excavated by dredges, and to this should be added 1,834,479 cubic yards taken out by steam shovels, the total excavation from the prism being 3,210,470 cubic yards.

Supplies for the Commissary.

Bids will be opened in New York within the next few days for food supplies for the Commissary up to January 1, 1909. The articles have been separated into classes; and on canned fruits and vegetables delivery is called for either at La Boca or at Colon, cost, insurance and freight to be paid by the contractor, with inspection at the point of origin. It is thought that low prices will be secured on the Pacific coast for canned fruits and vegetables, to be delivered at La Boca.

Washington has been eliminated as a point for opening bids for Commissary supplies on account of the lack of jobbers, and Chicago and St. Paul have been added, these being the milling and packing centers of the United States. The contracts call for delivery of packing-house products in car-load lots, cost, insurance and freight paid at Colon. It is thought that this arrangement will give cheaper prices on all packing-house products, as the manufacturer will be able to obtain the through export car-load rate from the point of origin.

On some other articles, which are semi-perishable, such as beans, peas, rice, etc., the contracts will provide for either La Boca or Colon delivery, with inspection as to quality, at the point of origin, and inspection on the Isthmus as to condition on arrival.

Proprietary articles handled by the Commissary have been taken out of the general classification and placed in a class by themselves, to be delivered at either New York or New Orleans. The lack of a fast express refrigerator service on the Pacific coast makes it impossible to procure fresh fruits and vegetables from California.

Family Quarters at Camp Diablo.

Camp Diablo, on the line of the Panama railroad between Corozal and Panama, will become a family settlement of gold employes as soon as the remodeling can be done which will convert the nine laborers' barracks at that place into family quarters. The barracks are one-story buildings, 68 feet by 35 feet, and two apartments will be partitioned off in each. These apartments will be 35 feet by 34 feet, and will be divided into a living room, dining room, two bedrooms, kitchen, pantry, clothes closet, toilet, and bath. Each apartment will have a screened porch, the porches running across opposite ends of the building.

Ancon Hill Reservoir.

The site selected for the million-gallon concrete reservoir on Ancon Hill is on that portion of the hill now occupied by the high pressure water tank. The primary purpose of the reservoir is as reserve fire protection for La Boca, Ancon, and Panama, but the plan which contemplates its construction also includes the installation of a new unit in the filter plant, which will give filtered water to the quarters at Ancon. Work will be begun as soon as reinforcing bars arrive on the Isthmus.

Miraflores Tunnel.

Work will be discontinued on the earth section of Miraflores tunnel until the dry season. On the night of September 21 the section of the tunnel where the earth joins the rock, about 130 feet from the original south portal, and 230 feet from the portal as extended, caved in and approximately 3,000 cubic yards of earth now block that part of the tunnel. The heavy rains of the past two weeks have both loosened and added weight to the earth, and the side of the hill is cracking in a dozen places as the slide progresses.

In the rock section of the tunnel the concrete lining is about completed. The north portal will be extended 50 feet before the retaining wall for the approach is begun.

Quartermaster's Price List.

The Chief Quartermaster wishes to announce that the publication of the price list for all stores and supplies in the Canal Zone has been delayed, owing to the lack of material in the printing offices at Panama and Cristobal. Every effort has been made to produce this price list on time, but it is now apparent that it will not be out by Oc-

tober 1. Therefore, the Depot Quartermaster at Mount Hope has been instructed to insert prices on invoices of all materials and supplies issued from that depot until the price list is finished.

Dispensing With Paper Work.

In an effort to lessen the amount of clerical work involved in the promotion of employes of his department, the Chief Quartermaster, with the approval of the Chairman, has established a salary rating for the fifteen districts under his control. This rating provides for all employes under the district quartermasters, and is in effect an authorization to each district quartermaster, the total of which constitutes a flat rate for the monthly service in his district, beyond which the expenses of his district must not go. Changes in the salaries paid men on the gold roll will be referred, as heretofore, to the Chief Quartermaster for the approval of the Chairman, but all wages on the silver rolls, within the ratings prescribed, are subject to change by the district quartermasters.

Subject to the approval of the Chairman, an agreement has been made between the Chief Quartermaster and the Subsistence Officer by which a flat rate will be paid monthly by the Subsistence Department for all services rendered it under the headings of commissary, subsistence, and transportation. This will avoid the clerical work heretofore necessary in the monthly rendering of itemized bills and adjustment of accounts.

Hotels and Messes.

On the recommendation of the Subsistence Officer, the Chairman has decided that Commission hotels shall hereafter be furnished by the Commission with fuel, light, fixtures, cookstoves, etc., which heretofore have been a charge against the meals. Fuel, light, and kitchen fixtures have been furnished with married quarters for some time past, and the new ruling is made to place the bachelors on an equal footing with the married men.

The European laborers' mess in process of construction at Pedro Miguel is being extended so that it will easily accommodate 450 men. It will be the largest mess on the Isthmus. The building will be one story in height, with ventilated roof, and of the type and construction of the Commission mess houses. A screened veranda will run across the front. It will be 121 feet long, 71 feet deep on one side where an extension is being made in the shape of an L, and 55 feet 4 inches deep on the other side. The dining room will extend across the front and will be 121 feet long and 30 feet 6 inches wide, and will also include the L, which will be 30 feet 6 inches by 34 feet. There will be 20 long tables, each accommodating twenty-four men without crowding. The back part of the building will be divided into a

NOTES OF PROGRESS.

(Continued)

kitchen 56 feet by 18 feet, a cold storage space of 385 cubic feet, a storeroom, and a room and bath for the steward. The kitchen will be equipped with steam boilers and power-cooking machinery.

The mess hall for European laborers at Miraflores is to be refitted and used as a Commission hotel, and the hotel now used will be turned over to the Quartermaster's Department. A new mess hall for European laborers has been authorized.

In the messes for common laborers the rice and sugar components of the rations will be increased. Some temporary mess houses, under canvas, for a few of the common laborers' mess kitchens will be put up, and if they prove popular with the men it is possible that some permanent form of shelter will be provided. At present the common laborers take their food from the mess kitchen to their quarters, or elsewhere, no common mess hall being provided.

Rain Causes Slides.

Recent rains have caused several small land slides along the line of the Panama railroad. At Whitehouse yard the roadbed has shown a tendency to slide into the Camacho diversion, and the two 200-foot stretches of the embankment at this place will be ripped. A stretch 64 feet long has slipped so close to the northbound track that it has been deemed unsafe to use the track on this section of the road. A trestle will be built at this point under the northbound track, and will be reinforced by French rails, joining it with piles to be driven on the west side of the southbound track. At Empire and Paraiso small slides are being ripped.

Old French Dynamite.

A steam shovel at work digging rock in Peninsula 2, between Matachin and Gorgona, a few weeks ago lifted out a quantity of dynamite, which is described as having been "a bushel." The explosive was in sticks 3/4 of an inch in diameter, and 5 inches long, and the cartridges bore the trademark of a French manufacturer of dynamite, and a date, which appeared to be November 29, 1887. Unquestionably the dynamite was put in by the French and either failed to explode or was abandoned when the work ceased on that part of the old French canal. Although apparently in perfect condition, the dynamite could not be exploded.

Hardwood Ties for Panama Railroad.

A contract has been awarded to E. Clare & E. Clare, jr., of Panama, for \$54,995 worth of cross ties for use on the relocated Panama railroad. The ties must comply with the specifications published in recent issues of THE CANAL RECORD. They will be of black, or yellow guaiacum, commonly called guayacan or lignum vitæ. The successful bidders offered to deliver ties of the first-class for \$1.10 a piece, and ties of the second-class for \$1. The next lowest bidder offered ties at \$1.25 a piece.

The initial cost of these hardwood ties, as compared with the cost of ties purchased in the United States, is from 25 to 50 per cent greater, and for temporary work they might not be economical, but for use on the per-

manent line of the Panama railroad their economy is apparent when it is known they will last from four to five times as long as the ordinary tie. It is more expensive to lay a track with hardwood ties, because each tie must be bored in order that the spikes may be driven, but this added expense is also overcome by the greater length of time that the hardwood ties can be used.

New Superintendent of Schools.

Prof. Henry Lester Smith, the new Superintendent of Schools, arrived on the Isthmus on September 22, and has assumed charge of the Division of Schools.

Mr. Smith is a graduate of the Indiana State University, holding the degrees of A. B. and A. M. from that institution. He has been engaged in the teaching profession for the past ten years, and just prior to his coming to the Isthmus was Supervising Principal of one of the public school districts in the city of Indianapolis.

Forage Requisition.

Requisition has been made for 750 tons of hay and 450 tons of oats for use in the Isthmian Canal Commission corrals, this being the amount of forage required for a six months' period. The bids will be asked for six months in advance of the time of award, and timothy, wheat, or oat hay will be accepted. The long period given for submitting bids, and the option with regard to the kind of hay offered are an inducement to Pacific coast forage men to enter the competition. Delivery will be accepted either at Colon or La Boca.

New Commissaries.

New commissaries have been authorized for Pedro Miguel, Porto Bello, and Gatun. Those at Pedro Miguel and Gatun will be of standard type, but the Porto Bello commissary will be smaller. On account of the distance of Porto Bello from the cold storage plant and the bakery at Cristobal, a small refrigerator plant and bakery will be run in connection with the commissary.

Cargo of Foodstuffs Condemned.

Because of some doubt as to the extent to which the cargo of foodstuffs, carried by the steamship *Colon* on her recent stormy voyage, was rendered unfit for use, the whole cargo has been condemned, and none of it will be delivered. This action was taken immediately, and it has recently been confirmed by a report of one of the Commission chemists.

Opening of Schools.

H. L. Smith, Superintendent of Schools, has issued the following:

The schools of the Canal Zone will be opened at the places named below on Thursday, October 1, at 8 a. m. It is essential that all children be present on the first day, bringing with them the report cards issued to them at the close of school last June.

Schools for white children will be opened at the following places, in the buildings used for white schools last year: Ancon, Pedro Miguel, Paraiso, Culebra, Empire, Las Cascadas, Gorgona, Gatun, Cristobal, and Colon Beach.

Colored schools will be opened at the following places: La Boca, Las Sabannas, Paraiso, Culebra, Empire, Matachin, Cruces,

Gorgona, San Pablo, Tabernilla, Bohio, Mount Hope, Cristobal, and Pleya del Flor.

White children of school age living in towns in which no white schools are as yet established will be provided with free transportation to the most convenient white school already established. Responsibility, however, for the transportation of pupils on the trains of the Panama railroad will rest entirely with the parents. Parents to whom this paragraph applies should make request for transportation for their children to the Superintendent of Schools, Ancon, C. Z.

Colon Arrives at New York.

The steamship *Colon* which sailed from Cristobal on Wednesday, September 23, after undergoing temporary repairs of the damage she sustained in the hurricane on September 12, arrived safely at New York on the morning of September 29.

The electrical engineering department of the Panama railroad will be consolidated with the telephone and telegraph department on October 1. This change is made because the electric light plant on the beach at Colon has been consolidated with the plant run by the Subsistence Department at Cristobal.

A contract for 60,000 pounds of charcoal has been let to Marcio Blanco, of Panama, at \$1.25 per hundred pounds. This charcoal is made on the Isthmus, and must be from mangle wood or some wood of equal value in making charcoal.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, September 26, 1908:

	STATIONS.				
	Vigin.	Alhajuela.	Gamboa.	Bohio.	G. tun.
Height of low water above mean sea level, feet.....	129	92	46	0	0
Maximum height above low water, feet:					
Sunday, Sept. 20....	3.80	3.63	4.30	7.75	3.10
Monday, Sept. 21....	3.85	3.65	5.20	8.40	2.71
Tuesday, Sept. 22....	4.90	4.30	5.60	8.58	2.80
Wednesday, Sept. 23	2.70	3.11	5.45	8.95	2.91
Thursday, Sept. 24.	8.30	6.50	7.70	8.55	2.98
Friday, Sept. 25....	4.80	5.69	9.00	12.15	4.50
Saturday, Sept. 26.	3.00	3.41	5.90	9.10	3.40
Maximum for week..	8.30	6.50	9.00	12.15	4.50

Rainfall, September 1 to 26, 1908, Inclusive.

Stations.	(MIDNIGHT TO MIDNIGHT.)	
	Maximum in one day.	Total
<i>Atlantic Division—</i>		
Cristobal.....	2.41	9.69
Brazos Brook.....	1.10	8.10
Gatun.....	1.26	7.88
Bohio.....	1.65	8.15
<i>Central Division—</i>		
Tabernilla.....	2.00	12.06
San Pablo.....	1.84	9.27
Bas Obispo.....	.96	6.59
Gamboa.....	.80	6.13
Empire.....	1.52	9.43
Camacho.....	2.37	10.72
Culebra.....	2.27	13.33
Rio Grande.....	3.26	14.76
<i>Pacific Division—</i>		
Pedro Miguel.....	2.46	7.07
La Boca.....	1.18	5.48
Ancon.....	1.39	5.59
<i>Upper Chagres.</i>		
Alhajuela.....	2.16	11.04

SAND FOR PACIFIC LOCKS.

Deposits at Chamé—Methods for Handling and Transporting.

A million cubic yards of sand will be required for the concrete work at Miraflores Locks and Dams, and the locks at Pedro Miguel. Good sand is not found in many places on the Isthmus. The Atlantic Division will bring its supply for the work at Gatun from Nombre de Dios, a harbor thirty miles east of Colon, where a large deposit exists. To carry the amount needed at Miraflores and Pedro Miguel across the Isthmus would be more expensive than handling it by water on the Pacific side, and on this account it has been decided to tow it in barges from Chamé to La Boca and ship it from that point by railroad to Miraflores and Pedro Miguel. The sand deposits at Chorera, eighteen miles east of La Boca, were first considered, but an investigation showed that not enough could be supplied from that place, while the harbor, which is entered by a long narrow channel, made the problem of handling barges a very annoying one. In August, 1907, a preliminary investigation was made at Chamé, where the sand is abundant, sharp, clean, and of good quality, although not uniform. Three weeks ago a drill party was sent up from La Boca for the purpose of further investigation in order that all preliminary work may be done by the time the Pacific Division is ready to have material delivered.

Chamé is the name of a native village and a little bay, in Panamanian territory, about twenty miles west of La Boca. At this place a bar of sand projects from the mountainous coast forming a peninsula about five miles long and tapering from the shoreline, where it is half a mile wide, to a point, where it ends in Panama Bay. Chamé bay is well sheltered on two sides by the shore and the peninsula, and opposite the entrance, only a few miles to the eastward, is the island of Taboga. In the dry season the trade winds sweep over the bay, but leave the water in the lee of the peninsula little disturbed. The latest hydrographic survey was made over half a century ago by British hydrographers. Soundings made recently give a depth of from two to six fathoms of water within two hundred yards of the shore. The native village is situated near the hills, and there is a hamlet of twenty bamboo huts about a mile from the point. Close to this hamlet the Commission boring party has pitched its camp.

The whole peninsula is a sand spit overlying a bed of blue clay. In the report on the investigation made last year it was said:

At a distance of 9,000 feet from the point there is a mangrove swamp which extends over a mile beyond the 9000-foot point and is of very irregular outline. In this swamp, and where its tidal inlets join the bay, the blue clay underlying the sand comes to the surface. There is no trace of coral or any other rock. The formation seems to be simply a blanket of sand resting on blue clay. The surface of this clay dips as you proceed from the swamp towards the point and after one is within 6,000 feet of the point, borings 15 feet deep into the sand at both high and low tide, failed to reach the underlying clay.

It is estimated that between the point and the swamp there are approximately four million cubic yards of sand. The coarsest and better grade is that found on the beach, between high and low water. From this tidal belt, which is 200 yards wide, the sand for the Pacific locks and dams will be taken. Borings are being made along about

two miles of beach. Private land titles in Panama run only to the high water line and as the sand to be taken out is on land owned by the Panamanian Government no remuneration need be made for it.

It is proposed to take the sea-going ladder dredge *Gopher* off the work in the Canal prism at La Boca and send it up to Chamé, where it can work on the ocean side of the peninsula in the trade wind season, and inside in the rainy season. In this way the best sand from both sides of the peninsula can be obtained. This dredge can operate to a depth of 30 feet, and take out and dump on barges 2,500 cubic yards of sand a day. After the sand excavation is begun it is estimated that the *Gopher* will spend about one-third of its time at Chamé and two-thirds in the Canal prism near La Boca. In order that the excavation may not suffer by the withdrawal of the sea-going dredge, the old French ladder dredge, No. 21, is being rebuilt for the La Boca service.

The single screw tug *Katherine Moran*, now known as *Cocoli*, was purchased for use in this service, and the tug *La Boca* can also be used if necessary.

To act as a tender to the dredge at Chamé, in carrying supplies from La Boca and in hauling the barges from the dredge to a point where the tugs will take them in tow, the steam trawler *Riversdale* has been purchased.

Ten barges of 500 yards capacity each have been ordered, six of them are already on the Isthmus, and two of them are on the ways at La Boca.

A dock 800 feet long will be constructed at La Boca for the purpose of handling the sand. It will be taken from the barges and loaded on cars for delivery at the Locks' sites, where it will be stored until needed. The storage capacity at the Locks' sites is about 250,000 cubic yards.

THE TOWING FLEETS.

Tugs and Steamers for Service in Atlantic and Pacific Divisions.

The tug *M. E. Scully*, with a tow of two barges of coal, arrived at Cristobal a few weeks ago. The addition of this tug completes the Atlantic towing fleet, so far as present plans go. The fleet now consists of five tugs, and one stern-wheel steamboat on the ways. The tugs are in use in the Porto Bello and Nombre de Dios service and with the dredges in Limon Bay. On the Pacific side are two tugs and the steam trawler *Riversdale*, for use in the sand service and in towing at La Boca. A few facts about each boat follow:

ATLANTIC DIVISION.

The *Galun*, formerly the *H. B. Chamberlain*; purchased from Dailey & Ivins, delivered at New York on June 1, 1906. Length over all, 102 feet; beam, 22 feet; depth of hold, 10 feet; draft, 9 feet; speed, 13 knots; bunker capacity, 90 tons; engines, 1500-horse power.

The *Porto Bello*, formerly the *Robert H. Smith*, purchased at Baltimore in September, 1907; built in 1906. Length over all, 126 feet, beam 23.5 feet; depth of hold, 18 feet; draft, 14 feet; speed, 10.5 knots.

The *Mariner*, purchased in United States, arrived at Cristobal April 2, 1908. Length over all, 113 feet; beam, 25.5 feet; depth of hold, 13.5 feet; draft, 12 feet.

The *Bohio*, formerly the *Jack Twohy*, pur-

chased of Lamberts Point Towboat Company, June 8, 1908. Length over all, 104 feet; beam, 21.5 feet; depth, 11.2 feet; draft, 11 feet.

The *M. E. Scully* was built in 1906 by John H. Dialogue & Co., Camden, N. J., and purchased by the Isthmian Canal Commission at Newport News, in July, 1908. It has a steel hull; gross tonnage, 272; one triple expansion engine, cylinders 14 by 24 by 40; stroke, 2 feet 6 inches; one boiler, 10 feet long, 180 inches diameter; steam, 187 pounds; length over all, 134 feet; beam, 25 feet; draft, 13 feet 6 inches.

The stern-wheel steamer is 108 feet 4 inches long, 20 feet 10 inches wide, 5 feet 3 inches deep, will draw 2 feet 8 inches and displace 100 tons. It will be driven by two tandem compound engines with cylinders 7 inches by 14 inches, stroke of 4 feet, pressure 180 pounds. This steamer will be used in towing in the old French Canal between Cristobal and the handling dock at Gatun.

PACIFIC DIVISION.

The *La Boca* is 118 feet long, 23 feet wide and 12 feet 6 inches deep. On the upper deck is the pilot house, and back of it the captain's room. On the second deck is a deckhouse, made of 3-16-inch iron, containing quarters for the engineers and mates, and a kitchen and messroom. The quarters for the sailors are in the fore-castle. This tug has triple expansion surface-condensing engines, with one cylindrical return tubular boiler, and has 600 rated horse power. It is fitted with electric lights and searchlight. The *La Boca* was formerly the *E. G. Reynolds*, and was practically new when brought to the Isthmus in 1907.

The *Cocoli* is the rechristened *Katherine Moran*, which was built in 1904 at Philadelphia. She is 96 feet long, 23 feet wide and 12 feet 4 inches deep, and is of 213 tons register. She is built of steel, and is propelled by a single screw.

The *Riversdale* was built at Hull, England, in 1899, and is a single screw, one deck, two mast, ketch rigged ship; 102 feet long, 20 feet 6 inches broad, and 11 feet deep. One steel boiler of 160 pounds pressure, and three triple compound, 3-crank, inverted cylinder engines supply power. The indicated horse power is 300, and the rated speed 10 knots. The gross tonnage is 180.36 tons, and the registered tonnage 58.61 tons. The *Riversdale* came to Panama about five months ago, on her way to Cocos Island, where she was to hunt for treasure, said to be hidden there.

Two steam shovels, buried in the mud at the Cucaracha slide by the rain of September 14, were finally extricated September 21. Notwithstanding the loss of the work of these two shovels for the whole week, the excavation record for the Central Division, so far as car measurement may be relied upon, did not fall off.

Three type I7 quarters are being constructed at Corozal by contract. All material will be furnished by the Commission. These are the first houses of this type, one-family married quarters, to be constructed by contract. Advertisement will be made for proposals as soon as the location is determined and specifications prepared.

SOCIAL LIFE OF THE ZONE.

Meeting of Federation of Women's Clubs, Club Work and Other Features.

The third meeting of the Canal Zone Federation of Women's Clubs was held at Gorgona, September 28. Special cars attached to the rear of the trains from the terminals of the Panama railroad brought the delegates, who were met by the members of the entertaining club. At noon the various Federation committees had their sittings in the clubhouse, and at 1 o'clock a special lunch was served at the Commission hotel on decorated tables, fifty-three covers being laid.

The business meeting, which was held in the clubroom over the dining room, was called to order by the president, Mrs. Lorin C. Collins at 2 o'clock. Mrs. E. S. Calvit, president of the Gorgona club welcomed the delegates and visiting women. The regular reports were read and adopted. Owing to removals and resignations committee vacancies were filled as follows: Art and literature, Mrs. E. Lewis Baker; educational, Mrs. Louise Hanson; library extension, Mrs. Charles Boxer; nominating, Mrs. H. R. Trask.

Owing to the vacation period, there were few reports from the presidents. Two of the clubs outlined the work to be taken up for the coming year. The interesting reports were those of the delegates to the "biennial" held in Boston in June. The chairman of the delegation, Mrs. Thomas E. Brown, Jr., gave an admirable survey of the business sessions with excerpts from the addresses of the president and others. The social side of the convention was dealt with in the report by Mrs. E. E. Quimby, which was read, in the absence of the delegate, by Mrs. Boxer. At the conclusion of these reports votes of thanks were tendered to the delegates. A discussion of club work lead by Miss Beattie, Mrs. J. J. Jackson and Mrs. Hanson followed.

A discussion regarding transfer from one club to another and the regulation of dues in such event, resulted in a resolution that a member in good standing may transfer without further payment of dues until the annual meeting of the club into which she is transferred takes place. The design for a Federation badge was submitted, and one sent by Tiffany was selected. It consists of a shield-shaped pin, with a design of laurel leaves encircling it and the letters "C. Z. F." engraved in the center.

The Federation accepted the invitation of the Ancon Woman's Club to hold the January meeting with that organization. An invitation will be extended to Mrs. Philip N. Moore, president of the general Federation, to be the guest of the Federation for the convention.

The meeting authorized votes of thanks to the officials of the Panama railroad for their courtesy to the club women, and thanks were also extended to the entertaining club for its generous hospitality.

The social meeting was held in the entertainment hall of the clubhouse, which was beautifully decorated for the occasion. Refreshments were served at small tables, where the guests gathered informally. A large number of guests were present and the reception was marked by entire informality. Mrs. Adolph Faure gave a number of songs.

This meeting, although devoted to club matters and business, committee conferences

and reports, was one of the most satisfactory that the Federation has held. It demonstrated more forcibly than anything else has done the interest in the movement and the real club spirit that has awakened in the women of the Zone.

At the close of a recent meeting of the Gorgona Woman's Club the organization made a presentation of a set of souvenir spoons to the retiring secretary, Mrs. D. E. Hayes, in recognition of her faithful and self-sacrificing service during her term of office. The receipts from the recent entertainment given by the club amounted to over \$100.

The educational department of the Cristobal Woman's Club has organized a sewing class for young girls, which meets at the residence of the chairman, Mrs. E. P. Eppelsheimer. Practical sewing and needlework are taught. The class has at present 14 members, all of whom are enthusiastic about their work. At the close of the club year it is proposed to give an exhibition of the work. During the sewing there is reading, which is considered an important part of the class work.

The Cristobal club will resume its meetings the first Wednesday in October. The departments have been preparing their programs for the year. The art and literature, and educational departments have the year's work ready. The work of the philanthropy department is also well in hand.

The Pedro Miguel Woman's Club has resumed regular meetings, which are held at the residences of the different members. The opening session, at the home of the president, Mrs. Frank R. Roberts, on September 16, was well attended. The Pedro Miguel Social and Recreative Club has asked the woman's club to cooperate with them in the purchase of a piano for the club room, and in response to this request a social evening has been arranged for October 1. Home-made refreshments will be sold, and simple entertainments provided. The Woman's club will hold its annual meeting with election of officers October 5.

The Ancon Woman's Club met at the Hotel Tivoli on Wednesday, September 16, with an average attendance. The library committee reported through its chairman, Mrs. A. R. Bennet, the arrival of the books ordered. Through the courtesy of the Commission, these books were delivered free of all transportation charges. A special set of rules governing the library will be drawn up and presented by the chairman at the next meeting, at which time the regular librarian will be appointed. The work of soliciting names for the Ancon Library Association is going on through a committee with one of the club women as chairman. Extensive plans are being made for the furtherance of the movement. The annual meeting will be held October 7. Owing to the absence of Dr. Van Kueber from the city, the lecture on the San Blas Indians was not given, but it is expected that he will give it later.

The Gorgona club of the Daughters of Rebekah, the woman's auxiliary to the Independent Order of Odd Fellows, has been holding preparatory meetings for the completion of arrangements for the regular institution which will be held October 10, at Fraternity Hall, Gorgona. There are nine card members, and there are thirty-one applications for membership.

The regular meeting of Trinity Church

Woman's Guild, Culebra, will be held in the Commission Chapel, on Tuesday afternoon, October 6, at 3 o'clock.

PERSONAL.

Among the arrivals from the States on the *Advance*, on September 22, were Maj. Chester Harding, Mrs. Harding and three children.

Among the passengers returning to the Isthmus on the *Allianca* on September 27 were Mrs. H. J. Slifer, two daughters and son, of Colon, and Dr. G. H. Crabtree and family, of Culebra.

Mr. Thomas L. Clear, of Chicago, formerly employed in the Washington office of the Isthmian Canal Commission, and more recently in the office of the Secretary of the Treasury, has been appointed Chief Clerk of the Division of Examiner of Accounts and has reported for duty on the Isthmus.

Messrs. W. P. Ramsey, W. S. Dewhurst, W. C. Elridge, J. S. Wilmeth, and F. B. Warwick, of Washington, are on the Isthmus representing the Treasury Department in the transfer of the accounts and funds from the Disbursing Officer to the Canal Zone Treasurer.

R. Yung has resigned as land agent of the Panama railroad, and since September 23, all land matters have been handled in the office of the General Manager, where the land business will be transacted from this time forth.

Obituary.

Mr. Edwin Townsend, of St. Louis, Mo., died September 21, 1908, as a result of an accidental discharge of a rifle which he was cleaning in his room at Tabernilla, September 21, 1908. He was thirty-three years of age, and had been on the Isthmus nineteen months.

Examination for Stenographer.

An examination for the position of stenographer in the service of the Isthmian Canal Commission will be held at Culebra, Canal Zone, in the office of the Chairman, on Sunday, October 25, beginning at 9 a. m. The application form and the pamphlet describing the examination may be had upon application to John K. Baxter, Secretary, Isthmian Civil Service Board, Culebra, Canal Zone.

Information Wanted.

A letter addressed to Emile Napoleon by his sister, a nun in Jerusalem, is held at the office of the Chairman. This man was employed in the Department of Labor, Quarters and Subsistence up to September, 1906, but there is no record of his subsequent employment. Anyone who knows of his whereabouts should communicate with THE CANAL RECORD.

Rev. Henry Collins, Commission Chaplain, will speak in the Roman Catholic Church at Empire, at 9.30 o'clock, Sunday morning October 4, in the interest of the Church of the Holy Redeemer, Culebra.

LOST—In Panama Sunday, September 20, pair of gold-bowed spectacles. Name of makers, A. J. Lloyd & Co., Boston, Mass., on case. Reward for return to D. F. Pyne, Gatun, C. Z. Possibly lost on beach North of P. R. R. station.

PREDICTING FRESHETS.

System by Which Danger from Chagres Floods Is Anticipated.

The fact that most of the work from Matachin to Gatun, on the line of the Canal, is below high stages of the Chagres River has made necessary the construction of dykes, as described in THE CANAL RECORD of June 24, 1908. Since the dykes are not high enough to protect the low areas against extreme floods, the Division of Meteorology and River Hydraulics was instructed to institute a system of predicting high water in order that opportunity might be given to remove any machinery that seemed to be in danger. It was important not only to give warning of floods, but also to avoid giving false alarm that might cause expensive delays in the Canal work.

Were it possible to estimate from a storm's rainfall the height to be reached in the river channel, twenty-four hours' warning might be given, but so many conditions affect the relation between rainfall and run-off that only a rough approximation of the probable height of a freshet can be predicted from the previous rainfall.

The elements affecting the results are: The amount of rain, the rate of precipitation, the distribution of rain, the rate of run-off before the storm, and the previous degree of saturation of ground. It is clear that any system taking cognizance of all these elements must be complicated, even though the data were available to define them. The rainfall stations are not so located as to give a fair estimate of the rainfall over the whole basin, the area of the watershed is only approximately known, and there are no means at hand of tracing the path of a storm.

Frequently freshets come down the river without any previous warning in the shape of rainfall within the measured area; at other times what appears to be an alarming amount of rain will cause little or no rise in the river, showing that either the rain was above normal in the measured section and deficient in the unmeasured section, or that the ground was so dry as to absorb promptly the rain and retard its delivery to the river. The establishment of more rain gauges in the upper part of the valley would be a costly and impracticable undertaking, inasmuch as each would have to be connected with headquarters by telephone, and would result in little good, for whatever system is used must be based on past records, and by the time enough records were collected from the new gauges the need of this service would probably no longer exist.

In view of these facts it is clear that the only basis from which a prediction can be made is the river itself. The rate of travel of a freshet wave depends on the location of the heaviest rain. Frequently the rise commences simultaneously at all stations, at other times the rise begins later at the lower stations, but the crest always passes the upper stations first at various intervals as shown below, making it possible to pre-

dict high water at Gamboa, Bohio and Gatun several hours in advance.

STATION.	Hours since crest passed El Vigia.	Distance from sea (miles).
El Vigia.....	0	64
Alhajuella.....	2 to 4	54
Gamboa.....	5 to 7	43
Bohio.....	11 to 13	16
Gatun.....	17 to 19	4

It has been found that there are well defined relations between the rises at the several stations, as follows:

Gamboa rise=1.3 X Alhajuella rise.
Bohio rise=1.35 X Alhajuella rise when Alhajuella is less than 12.5 feet.

Bohio rise=Gamboa rise + 4 feet when Alhajuella is greater than 12.5 feet.

Bohio rise=Gamboa rise when Gamboa is less than 16.2 feet.

Bohio rise=0.8 X Gamboa rise + 4 feet when Gamboa is greater than 16.2 feet.

The values thus obtained give the number of feet the river will rise above the level at which it stood immediately preceding the rise, and to refer to mean sea-level it is necessary to add them to the height at that time. It is believed that these results are sufficiently accurate for the purpose desired, as it rarely happens that the error is more than two or three feet. Should the tributaries contribute an excessive amount of water the actual height will be greater than the predicted height. If, on the other hand, they are less than normal, the predicted height will be too large. The formulas given above represent mean conditions and it is sometimes possible to correct them by noting the distribution of rainfall.

The table below shows the heights, actual and predicted, at Alhajuella, Gamboa, and Bohio during freshets of 1904, 1905, 1906, 1907, and an idea of the accuracy of the method may be had therefrom. The El Vigia station has been established too recently to be of much service this year, so it is not included in the table. With the 1908 records this station will be of great service next year in lengthening the time of warning.

These two cases would not, in fact, have had errors so large as indicated in the table, for the Bohio prediction would have been corrected as the crest passed Gamboa, as follows in No. 5. The first prediction for Bohio is that the water will rise 10.1 feet. Later as the crest passes Gamboa, the first prediction is cancelled, and it is predicted that the rise at Bohio will equal the rise at Gamboa, 14 feet. The actual height finally reached is 16.4 feet, the predicted height being in error 2.4 feet.

The following table shows concisely the errors encountered in the use of the method just explained.

Predictions in error more than	GAMBOA.		BOHIO.	
	Num-ber.	Per cent of all freshets.	Num-ber.	Per cent of all freshets.
5 feet....	0	0	2	6.5 per cent
4 feet....	2	6.5 per cent	2	6.5 per cent
3 feet....	2	6.5 per cent	6	19.4 per cent
2 feet....	5	16.1 per cent	10	32.3 per cent
1 foot....	13	42.0 per cent	14	45.2 per cent
0 feet....	31	100.0 per cent	31	100.0 per cent

Having predicted the probable height of the river at the lower station it remains to determine at what hour the maximum will occur. The rate of travel of a freshet wave varies greatly even in those of the same magnitude. There seems, however, to be a relation between the duration of a rise at one station and that at another which relation permits the time of the maximum to be estimated.

Roughly $\left\{ \begin{array}{l} \text{Gamboa duration} = 1.5 \times \text{Alhajuella duration.} \\ \text{Bohio duration} = 1.5 \times \text{Gamboa duration} \\ = 2.25 \times \text{Alhajuella duration.} \end{array} \right.$

But the time of passage of crest is never less than 3 hours from Alhajuella to Gamboa and 5 hours from Gamboa to Bohio, and should the time intervals as calculated by the above formulas be less, 3 and 5 should be used instead. To get the probable time the maximum will occur at Gamboa, it is only necessary to add the calculated dura-

RISES AT ALHAJUELA, GAMBOA AND BOHIO—ACTUAL AND PREDICTED.

No.	Date.	ALHAJUELA.	GAMBOA.				BOHIO.			
			Rise.		Error.		Rise.		Error.	
			Rise.	Actual	Pre-dicted	+ -	Actual	Pre-dicted	+ -	
1	September 4, 1904.....	7.3	8.1	9.5	1.4	9.9	9.8	.....	0.1
2	September 5-6, 1904.....	7.5	9.7	9.8	0.1	8.7	10.1	.....	1.4
3	September 9-10, 1904.....	2.7	6.5	3.5	.....	3.0	7.6	.....	4.0
4	November 6-7, 1904.....	13.0	16.5	16.9	0.4	17.4	17.0	.....	0.4
5	June 9-10, 1905.....	7.5	14.0	9.8	.....	4.2	16.4	.....	6.3
6	May 21-22, 1905.....	8.2	11.3	10.7	.....	0.6	11.9	.....	0.8
7	October 20-21, 1905.....	7.0	13.4	9.1	.....	4.3	15.6	.....	6.2
8	October 29-30, 1905.....	9.0	8.8	11.1	2.3	8.5	12.1	.....	3.6
9	December 3-4-5, 1906.....	24.5	31.4	31.8	0.4	29.5	28.5	.....	1.0
10	May 9-10, 1907.....	8.9	10.2	11.6	1.4	10.3	12.0	.....	1.7
11	May 24-25, 1907.....	6.5	7.6	8.4	0.8	8.3	5.8	.....	0.5
12	June 7-8, 1907.....	8.3	8.6	10.8	2.2	8.0	11.2	.....	3.2
13	June 20-21, 1907.....	4.1	4.6	5.3	0.7	5.1	5.5	.....	0.4
14	June 21-22, 1907.....	5.1	6.8	6.6	.....	0.2	7.0	.....	0.1
15	June 22-23, 1907.....	2.8	3.7	3.6	.....	0.1	3.9	.....	0.1
16	July 12-13, 1907.....	5.5	6.0	7.2	1.2	6.0	7.4	.....	1.4
17	July 13-14, 1907.....	9.0	13.1	11.7	.....	1.4	13.0	.....	0.9
18	August 20-21, 1907.....	3.9	4.1	5.1	1.0	4.4	5.3	.....	0.9
19	August 21-22, 1907.....	5.4	8.6	7.0	.....	1.6	9.7	.....	2.4
20	September 3-4, 1907.....	5.1	6.0	6.6	0.6	6.4	6.9	.....	0.5
21	September 20, 1907.....	6.5	9.6	8.4	.....	1.2	10.4	.....	1.6
22	September 21-22, 1907.....	2.9	3.9	3.8	.....	0.1	3.8	.....	0.1
23	September 25, 1907.....	8.1	9.4	10.5	1.1	8.7	11.0	.....	2.3
24	September 30, 1907.....	2.0	3.4	2.6	.....	0.8	5.4	.....	2.7
25	October 5-6, 1907.....	4.3	6.2	5.6	.....	0.6	5.0	.....	0.8
26	October 11-12, 1907.....	4.6	6.4	6.0	.....	0.4	5.8	.....	0.3
27	October 15-16, 1907.....	3.9	4.7	5.1	0.4	3.2	5.3	.....	2.1
28	October 17, 1907.....	5.0	7.6	6.5	.....	1.1	7.3	.....	0.5
29	October 19-20, 1907.....	2.8	4.1	3.6	.....	0.5	4.8	.....	1.0
30	November 12-13, 1907.....	8.6	10.6	11.2	0.6	8.4	11.6	.....	3.2
31	December 7, 1907.....	12.4	16.4	16.1	.....	0.3	17.0	.....	0.3

It will be seen that, with the exception of Nos. 5 and 7 at Bohio, there are no errors large enough to be of much importance.

tion to the time the rise commenced at Gamboa.

The following brief example (Freshet No.

19, August 21-22, 1907) will perhaps make more clear the use of this method. The arithmetical processes are shown in parentheses, and are not included in the predictive message.

Phone message from Alhajucla at 8 p. m.:
"River now 99.5. Crest. Rose from 94.1 since 5 p. m."

Phone message from Gamboa at 8 p. m.:
"River now 50.5. Rising. Rose from 48.3 since 5 p. m."

Prediction at 8.10 p. m.:
"RIVER WILL RISE AT GAMBOA (5.4X1.3) 7 FEET, REACHING STAGE (48.3+7.0) 55.3, AT ABOUT 11 P. M."

In predicting the time it was found that the calculated duration at Gamboa added to the time the rise began would make the crest less than three hours later than the crest at Alhajucla, so the calculated duration was rejected and the time of maximum was assumed as three hours later than Alhajucla. The actual rise at Gamboa was 8.6 feet, reaching stage 56.9 at midnight, the predicted height being 1.6 feet too low, and the predicted time of maximum one hour too soon. The effective time of warning was 2 hours and 50 minutes. For larger freshets the time of warning will be materially greater. Freshet No. 19 was not large enough to cause any damage.

At each station an electric gong, so adjusted as to sound whenever the river rises above a certain point, has been installed in the sleeping quarters of the observer. A continuous record of the river heights is kept by means of automatic registers and these curves afford very complete data, so far as the main stream is concerned, from which to study the freshets. The errors in results obtained by this system could be materially reduced were the tributaries to be observed. It is doubtful if the extra expense would be justified as it would very rarely happen that an error in prediction of three feet would have any effect on the precautionary measures.

The system herein described is largely a matter of experiment and some modification of the formulas used may result from further data. No literature on the subject in the English language was available. A paper in the "Annales des Ponts et Chaussées," of May, 1889, by M. Allard, a French engineer, was found and was of great assistance. His system is similar to the above, but more elaborate. By means of the heights of the various tributaries and the relations they had to each other, he was able to predict with surprising accuracy the flood heights of the River Seine at Paris.

Gold Hill and Balboa Hill

THE CANAL RECORD:

Will you kindly advise, either by letter or through the THE CANAL RECORD, the height of Balboa Hill, opposite Gorgona, and Gold Hill at Culebra, and what is the highest point in the Zone?

Very truly yours,

J. E. CRUTCHER.

Cristobal, September 11, 1908.

[According to recent surveys Gold Hill is 607 feet high. According to the map and profile prepared for the Panama railroad by George M. Totten, in 1855, based on the survey by Thomas Harrison, Crown surveyor of Jamaica, Balboa Hill (Cerro Grande) is 1,000 feet high. There is no map, or survey so far as is known, that gives information as to what is the highest point in the Zone].

LETTERS FROM THE LINE.

An Open Letter.

Ancon, September 22, 1908.

To the Employes of the Division of Meteorology and River Hydraulics:

Although, as far as you are personally concerned, I feel that it is unnecessary for me to express in words the high regard in which I hold each and everyone of you, for the loyal support I have received from you during the time I have been at the head of the Division of Meteorology and River Hydraulics, I deem it my duty to do so publicly, so that it may be known that whatever degree of success or efficiency the work under my charge has attained has been primarily due to the close unity existing between us and to the intelligence and faithfulness displayed by each of you in the work under your immediate care.

Of the heads of the three sections into which our work is divided, I must say that in all my engineering practice I have never found such loyalty, consistent support, interest in the work and desire to advance its progress, as they have shown me, entailing, consequently, the full confidence of our superiors in the work entrusted to our care. These faithful companions I shall always hold in my memory with respect and gratitude.

My interest in our work will not disappear with my separation from the service, and I feel confident that I will see by its continued success that you are rendering to my successor the same loyal support you have always given me.

I desire here to express my high appreciation of the moral support and encouragement I have always received from the Isthmian Canal Commission in the organization and execution of the work of this division; also of the kind and generous assistance rendered me by Gen. Henry L. Abbot during the entire time I have been in charge of this work.

In closing these lines, I must say that it has been most painful to me to be obliged, on account of my health, to sever my connection with the work of the Isthmian Canal Commission, a work in which I have spent my best energies, and in the ultimate success of which, under the American flag, my faith has never left me for a moment, even in the days of greatest doubt.

RICARDO M. ARANGO,
Division Engineer.

Civic Pride Hindrances.

THE CANAL RECORD:

At the conclusion of the work of the committee sent from the United States to report upon economic and social conditions existing in the Canal Zone, one of its members addressed a public gathering at the Commission clubhouse, Cristobal. In the course of his remarks he took occasion to remind the sojourners of the "Atlantic City," upon whom the Government of the United States is conferring many benefits in the way of homes and equipment and furnishings, that some little duty seemed but natural in return in the way of assuming civic pride, citing in particular the need of settees for the water front along Palm avenue. While there has been no concerted action

looking to the accomplishment of this suggestion, there are those among the Government's beneficiaries who are endeavoring to do their part toward making the city as attractive and beautiful as their individual efforts will bring about.

On five separate occasions the writer has planted a flower bed about the door yard of the quarters assigned him.

Thrice these flowers have been destroyed by goats that are allowed the privileges of "The Cabbage Patch," as the section has been designated.

Once a good soul, a lover of flowers who would embellish his own surroundings at little effort and expense, came to the flower bed in the dark hours of the night, carrying away with him every plant—root and branch.

The good soul who helped himself is more than welcome if he will only add something of grace to his heart, as it is hoped he may do in the way of adorning his flower garden.

Once the ants and goats together devastated the garden.

Thrice the goats have been reported to the Police Department.

These are serious hindrances to civic pride, not alone from a monetary standpoint, but they tend to take the vim out of one, especially when he has to tramp long miles after the beauties of the woods and swamps and cliffs.

The bed has again been planted. Now, how am I to depend upon results against such odds as ravenous goats, hoarding ants, and the dark man?

CIVIC PRIDE.

Cristobal, September 5, 1908.

Empire Christian League,

TO ALL CONCERNED:

At the regular business meeting of the Empire Christian League the following action was taken and resolutions adopted:

Whereas, The people of Empire, realizing the necessity of having a church home, petitioned the Chairman and Chief Engineer of the Isthmian Canal Commission for the provision of same, therefore, be it

Resolved, That a vote of thanks be extended to the Chairman and Chief Engineer for the prompt action in and having erected such a building; therefore, be it further

Resolved, That copies of same be forwarded to the Chairman and Chief Engineer, THE CANAL RECORD, the press, and spread on the minutes of the League.

Very respectfully,

J. FORMAN, President,

F. W. CONNER, Secretary,

Committee on Resolutions.

EMPIRE, September 28, 1908.

A Hose Company Race.

THE CANAL RECORD:

Gatun volunteer company, No. 1, of the Canal Zone Fire Department, challenges any volunteer company of the Zone to a "hub to hub" contest to be held at Cristobal. Arrangements relative to rules, date, prizes, etc., to be made by a committee representing contestants.

Kindly address all communications to

CHAS. WILLETT,

Foreman Gatun Volunteer Company.

Gatun, September 23, 1908.

OFFICIAL CIRCULARS.

Depot Quartermaster.

CULEBRA, September 18, 1908.

CIRCULAR No. 211.

Capt. Courtland Nixon, having reported for duty, is hereby assigned as Depot Quartermaster at Mount Hope, reporting to Maj. C. A. Devol, Chief Quartermaster.

GEO. W. GOETHALS,
Chairman.

Board of Survey and Appraisal Abolished.

CULEBRA, September 22, 1908.

CIRCULAR No. 210.

In accordance with the resolution adopted by the Commission at its 147th meeting, the Board of Survey and Appraisal is hereby abolished.

All records and unfinished business of the Board of Survey and Appraisal will be transferred to the Survey Officer for the Isthmian Canal Commission.

The duties of the Survey Officer will hereafter be performed in accordance with the provisions of Circular No. 1, Quartermaster's Department, and he will forward his reports direct to this office for action.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Storehouses at La Boca and Cristobal.

CULEBRA, September 28, 1908.

CIRCULAR No. 212.

On October 1, 1908, the storehouse now operated by the Quartermaster's Department at La Boca will be turned over to the Division Engineer of the Pacific Division, with all supplies contained therein, and necessary forces.

Effective the same date: The storehouse operated by the Quartermaster's Department at the Dry Dock at Cristobal will be turned over to the Division Engineer of the Atlantic Division, with all supplies contained therein, and necessary forces.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Telephone Calls, Chief Quartermaster's Office.

CULEBRA, September 22, 1908.

TO ALL CONCERNED:

You are informed that a private telephone switchboard has been installed in this office, connecting telephones as follows:

- Maj. C. A. Devol, Chief Quartermaster.
- Lieut. R. E. Wood, Assistant Chief Quartermaster.
- C. H. Mann, Chief Clerk.
- Max Dyer, in general charge of matters pertaining to material and supplies.
- Harry Leonard, in charge of United States requisitions.
- H. T. Bosse, Chief Timekeeper.
- M. B. Huff, in charge of contract laborers' records and vouchers.
- D. H. Beaman, in charge of property returns.
- H. S. Farish, Acting Surveying Officer.
- C. C. Cameron, Chief File Clerk.
- C. S. Todd, Accountant.

In calling the office of the Chief Quartermaster, after connection has been secured with operator of private switchboard, name of person with whom it is desired to speak should be given. If it is not known who has charge of the particular business regarding which call is made, the nature of the business should be stated to the operator, who will make the proper connection.

C. A. DEVOL,
Chief Quartermaster.

Examination of Accounts.

EMPIRE, September 22, 1908.

CIRCULAR No. 4.

The following instructions, in order to carry into effect the provisions of the Chairman's Circular No. 183H, of August 27, 1908, are issued for the information of all departments and divisions:

Pay-rolls—Pay-rolls for services rendered in the month of September will be sent to the Examiner of Accounts in the form they have heretofore been sent to the Disbursing Officer—that is, one copy of the time and pay-roll and one copy of the pay-roll, accompanied by the unsigned pay receipts. These pay-rolls should be sent on the first day of October, or as soon thereafter as practicable, and in no case later than the fifth. The Examiner of Accounts and Disbursing Officer will retain the pay receipts of each department and division until all pay receipts, including both gold and silver rolls of that department or division, are ready for issue.

Beginning with October 1, 1908, each time-keeping office will keep for its office record the present form of time and pay-roll, and will make an original and duplicate of the pay-roll. These original and dupli-

cate pay-rolls will, on November 1, 1908, and each month thereafter, be sent with the pay receipts, to the Examiner of Accounts.

Bonds—Beginning October 1, 1908, all surety bonds of employes of the Isthmian Canal Commission, except employes of the Department of Disbursements who handle money for which the Disbursing Officer is responsible, will run in favor of the United States. Such employes as timekeepers, custodian of coupon books for issue to employes, those bonded for the purpose of witnessing signatures to pay receipts, etc., will be transferred to the schedule bond in favor of the United States. This change from one bond to another will be made by the Examiner of Accounts, and no action on the part of other Departments or Divisions will be necessary. All records will be kept by the Examiner and all correspondence relating to this subject should be addressed to him. Subsequent to the above date, heads of Departments and Divisions should report at the close of each month all changes in the status or location of bonded employes, during the month, and in case of separations from the service should state whether or not the employe satisfactorily accounted for all money or property. Prompt advice should be given to the Examiner of any suspected irregularity or shortage in the accounts of any bonded employe. Application forms for employes whom it is desired to bond will be furnished by the Examiner on request.

Coupon Books—Timekeepers and others charged with the custody and issue of coupon books and meal tickets, will make requisition therefor upon the Examiner of Accounts. When the requisition has been entered and approved in the Examiner's office, it will be sent to the Disbursing Officer, who will issue the coupon books and meal tickets. As required by Circular No. 183H, paragraph 5, timekeepers and others receiving such books and tickets will render a monthly account therefor to the Examiner.

Miscellaneous Reports—The general books of the Commission will be kept in the Examiner's office, where all accounting work involving expenditures of money and the checking of reports, will be done. All reports affecting the accounts heretofore sent to the Disbursing Officer will be sent to the Examiner, and all correspondence had with the Examiner's office, except in the case of questions involving actual payments of accounts or the deposit of moneys belonging to the Commission.

Bills Receivable—As provided by Circular No. 183H, bills issued by all Departments and Divisions will be sent to the Examiner of Accounts. The list of such claims heretofore sent to the Examiner may be discontinued.

W. W. WARWICK,
Examiner of Accounts.

Approved:
GEO. W. GOETHALS,
Chairman.

Notice to P. R. R. Tenants, Colon, R. P.

COLON, September 22, 1908.

The Committee appointed by the Chairman of the Commission to consider the complaints made by the various lessees of lots in the city of Colon, will again resume their meetings on or about November 2. Due notice of the meeting will be issued.

H. J. SLIFER,
General Manager.

UNCLAIMED PACKAGES.

The following is a list of packages that have been forwarded from New York to Isthmian Canal Commission and Panama railroad employes, and that are waiting to be claimed at the freight house at Colon. The owners of these packages will have to make application for free customs entry in connection with Circular No. 85, or in the alternative, pay duty to the Panama Government customs on the value of the contents of the packages, before delivery can be effected:

- | | | |
|--|-------|---------|
| No. 7232—J. W. Foulks, Colon, 1 parcel, ex <i>Dunottar Castle</i> ; September 30, 1907 | ..... | prepaid |
| No. 7622—Frederick White, Cristobal, 1 parcel, ex <i>Advance</i> ; May 16, 1908 | ..... | prepaid |
| No. 7564—Mayer Unterberg, Panama, 1 parcel, ex <i>Esperanza</i> ; April 13, 1908 | ..... | prepaid |
| No. 7723—W. D. Wallman (or Waltman), Cristobal, 1 parcel, ex <i>Panama</i> ; July 9, 1908 | ..... | prepaid |
| No. 7762—Richard F. Bowly (or Boidebuy), Gorgona, 1 parcel, ex <i>Alianza</i> ; August 9, 1908 | ..... | prepaid |

Charges to collect.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

REPORT FOR AUGUST, 1908.

Total membership	.....	1,336
Total number of bowling games	.....	4,943
Total number pool and billiard games	.....	13,008
Number contestants in pool tournaments	.....	45
Total income from soda fountain	.....	\$1,678.04
Number of different men using gymnasium	.....	104
Number of men enrolled in systematic gymnasium class work	.....	53
Number basketball games	.....	8
Number enrolled in chess and checker clubs	.....	78
Number chess contests	.....	6
Number enrolled in glee clubs	.....	30
Number enrolled in dramatic and minstrel clubs	.....	15
Number enrolled in orchestras	.....	14
Number enrolled in Bible class	.....	12
Number enrolled in educational classes	.....	64
Number of members of library	.....	485
Total number of books withdrawn	.....	1,331
Number of imported entertainments	.....	10
Attendance	.....	2,240
Number of local entertainments	.....	6
Attendance	.....	855
Number of functions outside Association management	.....	10
Attendance	.....	960
Number of afternoons for women	.....	26
Attendance	.....	234
Number of evening functions to which women were invited	.....	32
Attendance	.....	1,152
Number of letters written at public tables	.....	5,670
Total attendance at building	.....	36,245
Average attendance per day	.....	1,169

BOYS' DEPARTMENT (AGES 10 TO 16).

Number of members	.....	48
Number afternoons open to boys	.....	52
Total attendance	.....	416
Attendance at gymnasium exercises	.....	396

EMPIRE.

Empire defeated Gorgona at bowling on Saturday evening, September 19, on the Gorgona alleys with a score of 2 to 1. Pin fall—Empire, 854, 812, 875; Gorgona, 827, 827, 808.

The landscape gardener is engaged in beautifying the grounds about the clubhouse.

Fifty new books have just been ordered for the library and are expected to arrive in about three weeks. Alterations are being made in the office for the accommodation of the entire library which, when completed, will consist of about 1,000 volumes. The number now is 700.

Concert by the I. C. C. Band.

HOTEL TIVOLI, ANCON.

Sunday, October 4, 1908, at 7.30 p. m.

PROGRAM.

- 1 March—*Santiago Flynn*.....Morse
 - 2 Overture—*Lustspiel*.....Kelar Bela
 - 3 Waltz—*Moonlight on the Hudson*.....Herman
 - 4—*U. S. Army Lancers*.....Tobani
 - 5 Medley Selection—*Geo. Washington, Jr.*.....Cohan
 - 6 Barytone Solo—*Let all Obey*.....Leach
- D. E. NORCROSS.
- 7 { a Polka—*Horpipe*.....Smith
 - b Schottische—*Let Me Be Your Lemon*.....Allen
 - 8 Selection—*The Red Mill*.....Herbert
 - 9 Descriptive—*Indian War Dance*.....Bellstedt
 - 10 Galop—*Telemachus*.....Bennet
- CHAS. E. JENNINGS, Musical Director.

A concert will be given at Empire, C. Z., Sunday, October 11.

Misdirected Letters.

Division of Dead Letters.

Ancon, C. Z., September 30, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

Bealler, Archie	McNulty, Louis
Bentley, E. A.	O'Dea, William
Bingham, J.	Robinson, A. L.
Daley, Tom	Rogebert, Laurent
Davis, John S.	Root, William F. S.
Goulstone, Arthur	Rowe, A.
Hunt, Emma	Schroeder, I. F.
Lohing, J. G.	Sheakley, Fred E.
Mackie, Samuel	Wallace, Joe
Michelbaugh, Bernard	Waterworth, C. E.
Murling, Dan.	

COMMISSARY DEPARTMENT.

NOTICE.

CRISTOBAL, C. Z., September 29, 1908.

Effective October 1: All communications intended for either the Subsistence Department, I. C. C., or the Commissary Department, P. R. R., should be addressed to the Subsistence Officer, Cristobal, C. Z.

MAJ. EUGENE T. WILSON,
Subsistence Officer.

COMMISSARY PRICES

For week beginning September 29:

FRESH MEATS.		Price.
Mutton—Stewing.....	per lb	6
Shoulder and neck (not under 6 pounds).....	per lb	7
Entire forequarter (not under 10 pounds).....	per lb	8
Leg (8 to 10 pounds).....	per lb	16
Short-cut chops.....	per lb	20
Lamb—Stewing.....	per lb	6
Entire forequarter.....	per lb	8
Leg (6 to 8 pounds).....	per lb	27
Chops.....	per lb	29
Veal—Stewing.....	per lb	10
Entire forequarter (15 to 20 lbs).....	per lb	11
Loins.....	per lb	22
Short-cut chops.....	per lb	23
Cutlets.....	per lb	23
Pork—Cuts.....	per lb	20
Beef—Suet.....	per lb	4
Soup.....	per lb	8
Stew.....	per lb	12
Corned.....	per lb., 12, 14, 16	
Rib-roast, second cut (not under 3 pounds).....	per lb	19
Rib-roast, short cut (not under 3½ pounds).....	per lb	23
Sirloin roast.....	per lb	29
Rump roast.....	per lb	29
Porterhouse roast.....	per lb	29
Steak, round.....	per lb	23
Rib.....	per lb	24
Sirloin.....	per lb	29
Porterhouse.....	per lb	29
Rump.....	per lb	29
Tenderloin.....	per lb	30

MISCELLANEOUS.

Livers—Beef.....	per lb	12½
Calf.....	each	60
Sausage—Pork.....	per lb	19
Frankfurter.....	per lb	13
Leberwurst.....	per lb	15
Bologna.....	per lb	15
Sweet bread—Veal.....	each	1.20
Beef.....	per lb	25
Ox tongues.....	each	90
Pigs' feet, pickled.....	per lb	11
Pigs' tongues, pickled.....	per lb	15
Eggs, fresh.....	dozen	34

POULTRY AND GAME.

Chickens—Dressed (milk-fed).....	each	1.30
Large (milk-fed).....	each	1.65
Capons.....	each	2.40
Broilers.....	each	60
Fowls, medium and large.....	each, 80c. and	1.00
Ducks, fatted (fancy).....	each	1.10
Suckling pigs.....	each	4.90
Turkeys.....	per lb	30
Squabs.....	each	45

CURED AND PICKLED MEATS.

Bacon—Strips.....	per lb	23
English, breakfast sliced.....	per lb	\$26
Ham—Sugar-cured, sliced.....	per lb	\$25
One-half, for boiling.....	per lb	\$21
Westphalia.....	per lb	45
Ferris.....	per lb	20
Beef, salt, family.....	per lb	16
Salt pork.....	per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....	per lb	33
Cheese—Roquefort.....	per lb	45
Young America.....	per lb	22
Swiss.....	per lb	33
Edam.....	each	1.05
Camembert.....	per lb	28
McLaren's.....	jar	15
Pinxter's.....	tin	22
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....	tin	20
Buttermilk.....	quart	15
Milk, Briarcliff.....	quart	25

VEGETABLES AND FRUITS.

Tomatoes (local only).....	per lb	8
Lettuce.....	per lb	14
White potatoes.....	per lb	3½
Sweet potatoes.....	per lb	2½
Cabbage.....	per lb	4
Onions.....	per lb	3½
Cucumbers.....	per lb	6
Squash (summer).....	per lb	3
Green corn.....	dozen	26
Limes.....	dozen	40
Lemons.....	dozen	24
Oranges.....	dozen	18
Cantaloupes.....	each	10
Grapes.....	per lb	10

§ Sold only from cold-storage and not from Commissaries

NEW ARTICLES.

	Price.
Mats, cocoa, door, 22x36-inch.....	each \$2.00
Berry bowls, 8-inch.....	each 25
Glasses, cocktail.....	each 8
Plates, 7-inch.....	each 12
Parasols.....	each 1.50
Beds, iron, single, No. 365.....	each 2.50
Beds, iron, double, No. 360.....	each 3.50
Beds, iron, double, No. 295.....	each 6.75
Shoes—Velour calf, Christy ties.....	pair 5.50
Milwaukee kid, Eng. oxf.....	pair 5.50
Glazed kid, bals.....	pair 5.75
Pat. Cold Yale ties.....	pair 6.00
Pat. calf pumps.....	pair 5.50

Soldiers, Sailors, and Marines.

All ex-soldiers, sailors, and marines, regulars and volunteers, now residing on the Isthmus, are requested to send in their names, to be included in the roster, or directory of ex-service men on the Isthmus of Panama, which is being compiled by Birt S. Sturtevant Garrison, No. 41, Regular Army and Navy Union, U. S. A. Full name, date of enlistment, date of discharge, name of organization in which service was rendered, Isthmian address and home address should be furnished.

PAUL D. MAY, *Commander.*

Sojourners' Lodge, No. 874, A. F. and A. M., will meet at its hall in Colon, on Saturday, October 3, 1908, at 7.30 p. m., in ordinary communication. Masons in good standing are fraternally invited to be present.

The United Fruit Company's third new ship, *Heridia*, will arrive in Colon in time to sail for New Orleans on October 6, at 1.30 o'clock in the afternoon. The *Heridia* is a sister ship to the *Cartago* and *Parismina*, and is equipped with a modern wireless outfit.

A coal trestle is being constructed in the Panama railroad yard at Panama to aid in the rapid coaling of locomotives. Coal will be dumped from the cars through the trestle, and from the pile beneath the trestle will be loaded upon the tenders by a crane assigned to this work.

Trains on the Panama railroad will enter Gatun by the old line from Mindi, and will stop at the old station, for a few weeks, until the trestle on the relocated line has been filled. From the old station at Gatun trains will run on to the relocated line at the north end of the Gatuncillo fill by a cross-over track recently completed.

All but one mile of the roadbed on the relocation of the Panama railroad, between Barbaocoas and Gamboa bridges, a distance of seven miles, has been completed, and trestles now being driven are rapidly closing up the gap. This section of the work has been done within a year by a comparatively small force of men.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Finance.....	P. R. R. Saturday.....	Sept. 26
Prinz Joachim.....	H.-A. Saturday.....	Sept. 26
Esperanza.....	P. R. R. Thursday.....	Oct. 1
Atrato.....	R.-M. Saturday.....	Oct. 3
Advance.....	P. R. R. Wednesday.....	Oct. 7
Prinz Aug. Wilhelm.....	H.-A. Saturday.....	Oct. 10
Colon.....	P. R. R. Monday.....	Oct. 12
Trent.....	R.-M. Saturday.....	Oct. 17
Prinz Joachim.....	H.-A. Saturday.....	Oct. 24
Tagus.....	R.-M. Saturday.....	Oct. 31
Prinz Aug. Wilhelm.....	H.-A. Saturday.....	Nov. 7
Magdalena.....	R.-M. Saturday.....	Nov. 14
Prinz Joachim.....	H.-A. Saturday.....	Nov. 21
Orinoco.....	R.-M. Saturday.....	Nov. 28
Atrato.....	R.-M. Saturday.....	Dec. 12
Trent.....	R.-M. Saturday.....	Dec. 26

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK.

Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Sept. 29
Allianca.....	P. R. R. Saturday.....	Oct. 3
Clyde.....	R.-M. Tuesday.....	Oct. 6
Finance.....	P. R. R. Thursday.....	Oct. 8
Panama.....	P. R. R. Tuesday.....	Oct. 13
Prinz Joachim.....	H.-A. Tuesday.....	Oct. 13
Advance.....	P. R. R. Monday.....	Oct. 19
Tagus.....	R.-M. Tuesday.....	Oct. 20
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Oct. 27
Magdalena.....	R.-M. Tuesday.....	Nov. 3
Prinz Joachim.....	H.-A. Tuesday.....	Nov. 10
Orinoco.....	R.-M. Tuesday.....	Nov. 17
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Nov. 24
Atrato.....	R.-M. Tuesday.....	Dec. 1
Prinz Joachim.....	H.-A. Tuesday.....	Dec. 8
Trent.....	R.-M. Tuesday.....	Dec. 15

FROM NEW ORLEANS TO COLON.

Heridia.....	U. F. C. Saturday.....	Sept. 26
Cartago.....	U. F. C. Saturday.....	Oct. 3
Parismina.....	U. F. C. Saturday.....	Oct. 10
Heridia.....	U. F. C. Saturday.....	Oct. 17
Cartago.....	U. F. C. Saturday.....	Oct. 24
Parismina.....	U. F. C. Saturday.....	Oct. 31
Heridia.....	U. F. C. Saturday.....	Nov. 7
Cartago.....	U. F. C. Saturday.....	Nov. 14
Parismina.....	U. F. C. Saturday.....	Nov. 21
Heridia.....	U. F. C. Saturday.....	Nov. 28

FROM COLON TO NEW ORLEANS.

Heridia.....	U. F. C. Tuesday.....	Oct. 6
Cartago.....	U. F. C. Tuesday.....	Oct. 13
Parismina.....	U. F. C. Tuesday.....	Oct. 20
Heridia.....	U. F. C. Tuesday.....	Oct. 27
Cartago.....	U. F. C. Tuesday.....	Nov. 3
Parismina.....	U. F. C. Tuesday.....	Nov. 10
Heridia.....	U. F. C. Tuesday.....	Nov. 17
Cartago.....	U. F. C. Tuesday.....	Nov. 24
Parismina.....	U. F. C. Tuesday.....	Dec. 1

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 11 a. m., and from Colon at 1.30 p. m., via Port Limon, for New Orleans. In addition to the above, the United Fruit Company dispatches a steamer about every ten days from Colon, via Boca del Toro, for New Orleans.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The following steamers have recently arrived at La Boca: September 19, *California*, from Valparaiso; September 20, *Quito*, from Buenaventura; September 25, *San Juan*, from San Francisco. Departures were: September 19, *Ecuador*, for Buenaventura; September 22, *Limari*, for Valparaiso; September 26, *Acapulco*, for San Francisco.

Two turnstiles will be added to the two now provided at the Panama railroad station in Panama, as exits for first class passengers.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, OCTOBER 7, 1908.

No. 6.

The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies can be obtained from the news stands of the Panama Railroad Company for five cents each

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Canal Record Index.

An alphabetical index of Vol. I, of THE CANAL RECORD has been compiled and printed in form suitable for binding with the issues of the paper for the year. A limited number of copies is available for persons who desire to preserve THE RECORD in book form. Application, stating full name and position in the service, should be made at the office of THE CANAL RECORD.

Lock Excavation Below Sea-level.

One of the shovels at work in the lock site at Gatun is below sea-level, making a cut at -6. This is in the lowest of the three locks. Little trouble has been experienced from seepage, and the 12-inch pump recently installed is able to keep the water below the point where it would interfere with the shovel. Two additional 12-inch pumps are at hand in case they are needed, as they probably will be later. The excavation in the lower locks will go down to -55.67. The excavation from the lock site is being used in the fill of the high trestle on the relocated line of the Panama railroad at Gatun.

Chamé Sand Deposits.

Borings along the beach at Chamé are about half finished. Holes have been sunk along the inner side of the peninsula 1,000 feet apart and 50 feet below mean tide. At this depth the sand is apparently of the same grade as at the surface, and the amount that can be obtained at this place is, therefore, greater than was estimated. Borings are now being made along the outside shore of the peninsula.

New Shovel Records.

The largest daily record for steam shovel excavation in the Central Division was made on September 30, when 52 shovels took out 63,418 cubic yards of material. The best previous record was made on July 9, when

55 shovels excavated 63,049 cubic yards. On September 28, shovel 209, working at Pedro Miguel, took out 3,100 cubic yards, which is the best record for a single shovel in 1908. The best record for a single shovel was made in 1907 by shovel 226, which took out 3,750 cubic yards on November 18.

September Excavation.

The grand total of excavation during the month of September was 3,158,886 cubic yards. All of this except 69,035 cubic yards was taken from the Canal prism. This is 93,620 cubic yards less than the record for August, and 321,384 cubic yards less than the highest record, that of March, 1908. There were 25 working days in September, one less than in August, and one less than in March. Of the grand total of September excavation 1,374,856 cubic yards were taken out by dredges and the remainder was dry excavation. The average rainfall for September for the territory in which excavation is in progress was 9.72 inches, as compared with 11.91 inches in August.

The excavation for September, 1908, as compared with that for the same month in 1907, is over twice as large, while the rainfall in September, 1907, was 11.55. In making such a comparison, however, it should be borne in mind that the work has developed greatly all along the line within a year, and that in September, 1907, the excavation at the lock sites at Miraflores and Pedro Miguel had not been begun, while the seagoing suction dredge now at work on the Pacific end had not arrived on the Isthmus.

In the Atlantic Division the excavation was 802,878 cubic yards, of which 104,780 cubic yards were from the site of the locks, 32,112 cubic yards from the prism at Mindi, and 41,210 cubic yards from the spillway of Gatun Dam. The dredges working in the prism in Limon Bay took out 624,776 cubic yards.

In the Central Division the excavation was 1,459,808 cubic yards, of which all but 27,241 cubic yards was in the Canal prism. This excavation was entirely by steam shovels. As compared with August the excavation in the Central Division fell off 70,802 cubic yards, and as compared with July it was 2,726 yards larger. In the Culebra section, or Culebra Cut, the total excavation was 1,122,860 cubic yards, of which 27,241 cubic yards were from the Obispo Division, which is not in the Canal prism. On this section of the work the rainfall in September was slightly heavier than in August, and the record was also influenced by the temporary burying of three shovels at Cucaracha slide, and by the fact that the month was one working day shorter than the month of August. On the other hand, in spite of the heavier rainfall the dumps at both ends of the Cut were in unusually good condition, the experience of past rainy sea-

sons having been used to advantage in keeping up the tracks and handling the spoil.

In the Pacific Division all previous records were broken by an excavation of 886,200 cubic yards, all but 584 cubic yards of which was taken from the Canal prism. The dredges, took out 750,080 cubic yards. The dry excavation amounted to 136,120 cubic yards.

A detailed statement of the excavation in the three divisions follows:

ATLANTIC DIVISION.

Locality.	From Canal Prism	Outside Canal Prism	Total excavation
	cu. yds.	cu. yds.	cu. yds.
<i>Dry excavation—</i>			
Gatun spillway.....		41,210	41,210
Gatun Locks.....	104,780		104,780
Mindi.....	32,112		32,112
Total.....	136,892	41,210	178,102
<i>Wet excavation—</i>			
Colon dredging.....	624,776		624,776
Total wet and dry excavation.....	761,668	41,210	802,878

CENTRAL DIVISION.

<i>All dry excavation—</i>			
Chagres section.....	346,948		346,948
Culebra section.....	1,095,619	27,241	1,122,860
Total.....	1,442,567	27,241	1,469,808

PACIFIC DIVISION.

<i>Dry excavation—</i>			
Miraflores Locks.....	88,605	501	89,106
Pedro Miguel Locks....	28,750	83	28,833
Cardenas Hill.....	18,181		18,181
Total.....	135,536	584	136,120
<i>Wet excavation—</i>			
Pacific entrance.....	750,080		750,080
Total wet and dry excavation.....	885,616	584	886,200

TOTAL EXCAVATION, ENTIRE CANAL.

Dry excavation.....	1,714,995	69,035	1,784,030
Wet excavation.....	1,374,856		1,374,856
Total.....	3,089,851	69,035	3,158,886

Mean rainfall along Canal (eleven stations), 9.72 inches.

Figures of monthly excavation are based upon telephone reports from the Division Engineers, and are subject to slight alterations when the official reports are received.

Post-office at Miraflores.

A post-office was opened at Miraflores on October 1. It is a money order office and is located in a remodeled building near the railroad station. This addition brings the number of post-offices in the Canal Zone up to eighteen.

La Boca Shipways.

The old French ladder dredge *Mole*, formerly dredge A-2, was taken from the ways at La Boca, September 30, and within a week will resume work in the harbor. This is the dredge that worked five years without undergoing general repairs, and now that

NOTES OF PROGRESS.

(Continued)

extensive repairs have been made it is believed to be in as good condition as ever.

The steam trawler *Riversdale* has been rechristened the *Chame*. She is undergoing repairs and being fitted with an oil tank and oil burning apparatus at the La Boca shipyards. A refrigerator plant will probably be installed before the ship is set at work as a tender in the Chamé sand service.

September Rainfall for Two Years.

Stations—	Rainy days.	Total Sept., 1907.	Total Sept., 1908.	Station average for month.
<i>Atlantic Slope—</i>				
Cristobal.....	26	11.72	11.57	12.48
Brazos Brook.....	26	13.02	12.05	13.23
Gatun.....	26	8.03	8.52	10.48
Bohio.....	27	13.63	8.74	14.07
Tabernilla.....	23	12.51	12.85	12.68
San Pablo.....	24	13.39	9.42	11.40
<i>Central Section—</i>				
Bas Obispo.....	25	14.71	6.70	11.78
Gamboa.....	26	14.01	6.28	10.65
Empire.....	26	10.86	9.76	7.87
Camacho.....	26	13.47	12.33	10.64
Culebra.....	28	11.38	13.74	11.58
Río Grande.....	27	11.99	15.32	11.58
<i>Pacific Slope—</i>				
Pedro Miguel.....	24	.....	7.56	.....
La Boca.....	21	9.99	3.93	6.71
Ancon.....	20	11.15	5.93	8.02
<i>Upper Chagres—</i>				
Alhajuela.....	24	11.88	13.44	11.80
<i>Atlantic Coast—</i>				
Porto Bello.....	22	.....	8.59	.....

Clerical Work of Mechanical Division.

The keeping of "time," the records of labor distribution, and the work on distribution of charges for material in the Mechanical Division will be done hereafter at the shops instead of in the office at Culebra. Each master mechanic will make up the payroll for his shop. This involves the transfer of clerks heretofore employed at Culebra to the shops. The change is made in order that the clerical work involved in keeping these records may be consolidated in the shops, thereby giving the master mechanic a better grasp of the work entrusted to him.

September with the Dredges.

The dredges at work in the Atlantic and Pacific Divisions excavated 1,437,885 cubic yards of earth and rock in September. This total does not agree with that given in the table of September excavation, 1,374,856, because the latter amount includes only excavation from the Canal prism, and does not take into consideration the 63,029 cubic yards excavated by suction dredge No. 82, and the 16-inch suction dredge in the Atlantic Division.

During the month dredge No. 83, which was undergoing repairs at the Cristobal drydock, was set at work and excavated 33,841 cubic yards. The dipper dredge *Chagres* made the remarkably high record of 25,179 cubic yards, working in rock in the prism on the shore of Limon Bay.

In the Pacific Division the dredging fleet was strengthened by the addition of the 20-inch suction dredge *Sandpiper*, and the dipper dredge. The *Sandpiper* was undergoing her first month's test, and the amount excavated is no indication of her capacity. All of the dredges in the Pacific Division, except the *Culebra*, are working inside the harbor. The sea-going ladder dredge *Gopher* struck a ledge of rock at elevation -26 during the last week of September.

The dipper dredge was set at work on September 16. All the other dredges worked the full month.

A statement of the amount and nature of material excavated by each dredge follows:

ATLANTIC DIVISION.

Name and class of Dredge.	Excavation, Cu. yds.	Material.
Ancon (sea-going suction).	350,310	Earth.
No. 1 (French ladder)....	152,727	Earth.
No. 6 (French ladder)....	43,942	Earth and rock.
Mindi (dipper).....	18,777	Rock.
Chagres (dipper).....	25,179	Rock.
16-inch suction.....	14,055	Coral.
No. 82 (20-inch suction).	48,974	Earth and rock.
No. 83 (20-inch suction).	33,841	Earth.
Total.....	687,805	

PACIFIC DIVISION.

Name and class of Dredge.	Excavation, Cu. yds.	Material.
Culebra (sea-going suction).	432,312	Earth.
Gopher (sea-going ladder, French).	138,757	Earth.
No. 14 (ladder, French).	129,608	Earth.
Dipper.....	21,309	Earth.
Sandpiper (20-inch suction).	38,094	Earth.
Total.....	750,080	
Grand total.....	1,437,885	

Canal Zone Schools.

A meeting of the teachers of the Canal Zone schools was held in the office of the Superintendent of Schools at Ancon on Tuesday, September 29. The white teachers met in the morning and the colored teachers in the afternoon. Matters in connection with the opening of the schools on October 1 were discussed and assignment of teachers made. The teachers in the white schools are as follows:

Ancon—Miss Catharine Bailey, principal, Miss Helen C. Danforth, and Mrs. Winifred C. Ewing.
 Pedro Miguel—Mrs. W. E. Maxon.
 Paraiso—Miss Margaret E. Kye.
 Culebra—Mrs. Mamie Miracle, principal, Mrs. C. H. Ellsworth, Miss Gertrude L. Bliss, and Miss Jessie S. Wilson.
 Empire—Miss Jessie J. Heller, principal, Miss Ida Keys, and Mrs. Eugene G. Argraves.
 Las Cascadas—Mrs. Fay Calvert Berry,
 Gorgona—Mrs. Edith C. Bristol, principal, Miss Florence O'Connor, and Miss D. Vera Sabovich.
 Gatun—Miss Ida Altstaetter, principal, and Mrs. A. B. Shippee.
 Cristobal—Mrs. Edward J. Corcoran, principal, Miss Odina J. L. Frost, Miss Grace Varborough, and Miss Edith Slifer.
 Colon Beach—Miss Margaret B. Slifer, principal, and Miss Cherry Robb.

Owing to the small number of children attending school at La Boca last year that school has been abolished and the children at La Boca will be transported to and from the school at Ancon in a wagonette.

On the opening day of school there were 43 teachers employed, 24 white and 19 colored. The number of children enrolled on the first day was 396 white and 264 colored. There is no available record of the first day's attendance for last year, but accord-

ing to a report made out shortly after the first week of school, there were enrolled 299 white children and 638 colored children. The white schools are opening this year, therefore, with an enrollment on the first day of 97 more than there had been enrolled by the end of the first week last year. The children of the colored schools are coming in slowly. From inquiries made on the second day the indication is that they will enter rapidly during the coming week.

High school work is being carried on at Cristobal and Culebra. At the latter place there are several high school pupils, and both first and second year work is being done.

Depth of Water at Locks.

THE CANAL RECORD:

I would like to ask whether the difference between the specific gravity of salt water and that of fresh water will interfere with the passage through Sosa Lake of vessels which are loaded for salt water voyages?

J. M. GALLION.

Chicago, Ill., September 12, 1908.

[There will be no Sosa Lake, since under the change of plan, adopted in December, 1907, two of the locks at the Pacific end of the Canal will be placed at Miraflores instead of at La Boca. The channel from the Pacific to Miraflores Locks will be 45 feet deep below mean tide, and the channel at the Atlantic entrance to Gatun Locks will be 41 feet deep, below mean tide. This difference in the depth of water between the Atlantic and Pacific entrances is due to the difference in tidal oscillations in the two oceans.

The controlling element, so far as navigation is concerned, will not be the depth of water in Gatun Lake, or other body of water, but the depth over miter sills of the locks. The depth over miter sills of the locks was fixed by resolution of the Isthmian Canal Commission on November 20, 1905, afterward approved by the President, and is to be not less than 40 feet in salt and 41½ feet in fresh water. Consequently the difference in draft of vessels, due to the difference in specific gravity of fresh and salt water, will be provided for].

New Observation Tower.

A new observation tower for the Division of Meteorology and River Hydraulics is being built in the rear of the new building of the Division at Ancon. The elevation of the ground at the base of the tower is 97 feet, and the platform is to be 50 feet above the ground, which will give an elevation of 147 feet above mean sea-level. The instruments, which will include an anemometer and a sunshine and cloud recorder, will be 18 feet above the platform, which will put them well above the roofs of the surrounding buildings. The advisability of having a time ball also is being considered.

WEATHER CONDITIONS, CANAL ZONE, SEPTEMBER, 1908.

Stations	Pressure (reduced to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.			
		Mean.	Maximum.	Date.	Minimum.	Date.		Total.	Number of rainy days.	Station average per month.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Date.
Cristobal.....	29.86	79	90	10	72	8	90	11.57	26	12.48	3,864	s.e.	32	8
Bas Obispo.....	29.86	78	89	22	69	20	95	6.70	25	11.78	2,550	n.w.	18	9
Ancon.....	29.85	80	91	4	70	3	87	5.93	20	8.02	4,038	n.w.	18	26

FROM TABERNILLA TO GAMBOA.

Old Chagres Division Work Nearing Completion.

At the time of the organization of the Chagres Division, August 1, 1907, it was estimated that about twelve million cubic yards of material were to be excavated, of which 7,000,000 were to be by steam shovel and the remaining 5,000,000 cubic yards by suction dredge. This division extended from Gatun to the beginning of Culebra Cut at Bas Obispo.

A study of the maps available at that time showed that these quantities could be materially reduced. By December of 1907, the engineers were able to present a new plan of Canal location in which nearly the entire line from Gatun to Bas Obispo was changed, and by which, without increasing the curvature, a saving of 1,750,000 cubic yards would be made.

In the reorganization of July 1, 1908, the Tabernilla and Gorgona Districts of the Central Division were created to comprise that part of the old Chagres Division which extends from Tabernilla to the beginning of Culebra Cut. No work had been done on that part of the old Chagres Division extending from Tabernilla to Gatun, now included in the Atlantic Division.

The amount to be excavated in the Tabernilla and Gorgona Districts, including the work from Tabernilla to Gamboa, was estimated at 3,459,132 cubic yards and 2,965,309 cubic yards, respectively, to be taken out by steam shovels, and a total of 4,500,000 cubic yards by suction dredges in both districts. A careful estimate just completed gives the amount of material to be removed after September 1, 1908, as 8,033,684 cubic yards, of which 6,325,700 cubic yards are earth, 1,709,984 are rock, and 22,000 cubic yards have been added to allow for possible slides. The French excavated 2,538,265 cubic yards in this territory.

Work in the Tabernilla District was begun in September, 1907, and up to September 1, of this year, 1,585,816 cubic yards had been removed, the work therefore being 45 per cent completed. The present plant consists of five 70-ton Bucyrus shovels and two Model-91 Marion shovels. Both Belgian and American locomotives, and French and Oliver dump cars are used in hauling away the spoil. The shovels that are seen at work in front of the village of San Pablo are working at grade. At San Pablo the Canal is to be 800 feet in width, and it will embrace that part of the present roadbed of the Panama railroad lying between the post-office and a point about 750 feet south of the Panama railroad bridge spanning the old French canal. Before this section may be completed it will be necessary to throw the railroad line in toward the river so that it may lie clear of the prism, or to wait until the relocated line of the railroad from Barbacoas to Gamboa can be used.

The prosecution of the Caimito work developed a peculiar state of affairs. The present location of the Canal lies just south and clear of the old French canal at this point. It is estimated that the French excavated in one deep cut at this location 1,000,000 cubic yards of rock. In the work that has been going on the past year it has been found necessary to move several hundred thousand yards of this French exca-

vation, which had been dumped where the Canal prism is now located, and to dump it back into the old French canal cut, which incidentally made a very convenient dumping ground.

Between Caimito and Matachin the line of the Canal follows closely the Chagres River. In this territory some 4,500,000 cubic yards of material, practically all earth, are to be taken out. It is proposed to excavate this material by suction dredge, the work to be begun when the water in Gatun Lake reaches an elevation of approximately 55 feet. It is possible that the old French dredge now at Mamei may be overhauled, made into a hydraulic dredge, and used for a part of this work. Part of this section lies in the Tabernilla and part in the Gorgona districts.

The Gorgona District comprises also what is known as the Santa Cruz and Matachin work, the excavation to be made originally being 1,247,652 cubic yards and 1,717,657 cubic yards respectively. This work is at present about 35 per cent completed and should be finished before August, 1909.

The work in the Gorgona District is vitally concerned with the waters of the Chagres River, the grade of the Canal being lower than the river at its low water stage. Earth dams were constructed and two pumping plants were installed each consisting of two 10-inch centrifugal pumps, one plant being driven by compressed air and the other using steam. These pumps are operated after a heavy rain or during a rise of the river, and no trouble is experienced in keeping the low level drained. With the completion of the shovel excavation the river will be turned through the completed Canal, thus allowing the railroad to straighten its relocated line, and eliminate the tortuous curves lying in the first mile north of the Gamboa bridge.

Official Addresses in the States.

The Washington office of the Isthmian Canal Commission requests that whenever officials of the Commission are in the States they notify that office of their address. At times the Washington office has occasion to communicate with such officials, and frequently mail is sent in care of that office, which can not be forwarded because of the lack of definite information as to addresses.

Culebra Brake Service Discontinued

The Chief Quartermaster announces that the brake service at Culebra will be discontinued, effective Saturday, October 10, until further notice, owing to the necessity for making general repairs to the brake.

Central Division Magazines.

A service magazine, with a capacity of a carload of dynamite, has been built on the east side of the Canal at Cucaracha. It is constructed of concrete blocks. The old storage magazine at Bas Obispo has been taken down and rebuilt at the end of Mamei dump, and is now in use. It has a capacity of 500,000 pounds, and is under the management of the Quartermaster's Department.

Examination for Physician.

A local examination for the position of physician in the service of the Isthmian Canal Commission, entrance salary \$1,800 per annum, will be held October 14, 1908, at 9 a. m. in the office of the Chairman, Culebra.

The Manual of Examinations, containing all necessary information and Application Form, may be obtained from the Secretary of the Isthmian Civil Service Board, office of the Chairman, Culebra, Canal Zone.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, October 3, 1908:

	STATIONS.				
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun.
Height of low water above mean sea level, feet.....	129	92	46	0	0
Maximum height above low water, feet:					
Sunday, Sept. 27.....	7.55	6.25	9.53	11.50	5.15
Monday, Sept. 28.....	4.10	4.80	9.60	13.75	5.84
Tuesday, Sept. 29.....	5.10	4.50	6.25	10.55	5.00
Wednesday, Sept. 30.....	1.80	2.28	3.60	8.55	4.00
Thursday, Oct. 1.....	1.45	2.03	3.90	7.75	2.60
Friday, Oct. 2.....	3.60	3.57	4.15	8.42	2.90
Saturday, Oct. 3.....	2.40	3.42	5.00	9.45	3.70
Maximum for week.....	7.55	6.25	9.60	13.75	5.84

Bids for the construction by contract of two type 17 houses, to be erected at Corozal, will be opened at the Mount Hope Depot on October 13. Plans may be procured at the Mount Hope Depot, or seen at the Office of the Chairman at Culebra.

OFFICIAL CIRCULARS.

Addition to Quartermaster Work.

CULEBRA, September 29, 1908.
CIRCULAR No. 183F-1.
Effective October 1, 1908: The work performed by the Quartermaster's Department under the provisions of Circular No. 183F, is extended to include the territories of Mount Hope and Cristobal.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Storehouse at Gatun.

CULEBRA, September 30, 1908.
CIRCULAR No. 213.
On October 1, 1908, the storehouse and lumber yard at Gatun, now operated by the Quartermaster's Department, will be transferred to the Division Engineer of the Atlantic Division, with all material and supplies on hand, and necessary forces.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Malingers to Be Dismissed.

CULEBRA, October 2, 1908.
CIRCULAR No. 214.
A number of cases of malingering have recently been reported. If any employe is too ill to work he is expected either to go to the hospital or to remain in quarters, except for such time as may be necessary to consult a physician or to go to a dispensary. In future, any employe found loafing or loitering on any day for which he presents a sick certificate will be dismissed from the service.

H. F. HODGES,
Acting Chairman.

Acting Chief Clerk.

ANCON, September 29, 1908.
HEADS OF DEPARTMENTS:
Effective this date: Mr. John S. Walker will act as Chief Clerk during the absence on leave of Mr. Harry E. Bovay.

By direction of the Chief Sanitary Officer.
C. C. McCULLOCH, JR.,
Acting Executive Officer.

NOTICE.

PANAMA RAILROAD COMPANY AND PANAMA RAILROAD STEAMSHIP LINE, COLON, R. P., October 2, 1908.
Gambling and other violations of the Panamanian laws on Panama Railroad leased property are prohibited.
HIRAM J. SLIFER,
General Manager.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION.
MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	62,835	65,632	62,835	65,632
February.....	81,850	67,436	81,850	67,436
March.....	54,333	32,022	54,333	32,022
April.....	731	15,257	731	15,257
May.....	16,309	28,857	16,309	28,857
June.....	28,515	41,078	28,515	41,078
July.....	32,112	40,003	32,112	40,003
August.....	46,945	46,945	46,945	46,945
September.....	172,851	172,851	172,851	172,851
October.....	436,044	436,044	436,044	436,044
November.....				
December.....				
Totals.....	1,728,511	1,728,511	1,728,511	1,728,511

Total to October 1, 1908—608,895 cubic yards.

COLON—DREDGES.

Months.	1905*		1907		1908	
	Outside Canal Prism	From Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	90,700	444,403	111,100	46,298	444,403	46,298
February.....	105,500	401,887	110,000	25,835	401,887	25,835
March.....	126,650	515,223	84,145	31,663	515,223	31,663
April.....	87,000	69,889	69,889	496,366	69,889	496,366
May.....	64,875	564,386	133,847	564,386	564,386	564,386
June.....	60,700	572,749	107,115	572,749	572,749	572,749
July.....	73,500	625,497	164,322	625,497	625,497	625,497
August.....	58,050	638,217	5,127	638,217	638,217	638,217
September.....	53,183	624,776	5,488	624,776	624,776	624,776
October.....	48,800	5,488	5,500	5,488	5,488	5,488
November.....	111,020	428,053	417,297	428,053	428,053	428,053
December.....	38,260	14,782	438,053	14,782	438,053	14,782
Totals.....	92,250	3,998,820	1,027,645	1,969,316	652,598	4,883,504

Total to October 1, 1908—9,036,679 cubic yards.

* No work done inside of Canal Prism.

There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Months.	1906*		1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	47,539	193,567	47,539	193,567	47,539	193,567
February.....	70,177	176,291	70,177	176,291	70,177	176,291
March.....	100,151	202,763	100,151	202,763	100,151	202,763
April.....	103,459	196,105	103,459	196,105	103,459	196,105
May.....	70,528	138,815	70,528	138,815	70,528	138,815
June.....	71,181	8,832	71,181	8,832	71,181	8,832
July.....	59,537	14,628	59,537	14,628	59,537	14,628
August.....	78,357	26,866	78,357	26,866	78,357	26,866
September.....	87,423	36,315	87,423	36,315	87,423	36,315
October.....	3,055	136,777	3,055	136,777	3,055	136,777
November.....	11,517	40,236	11,517	40,236	11,517	40,236
December.....	12,056	69,756	12,056	69,756	12,056	69,756
Totals.....	26,628	1,107,559	232,620	1,396,402	232,620	985,913

Total to October 1, 1908—3,749,132 cubic yards.

* No work done outside of Canal Prism.

CENTRAL DIVISION.

CULEBRA SECTION—STEAM SHOVELS.

Months.	1904	1905	1906	1907	1908
	January.....	70,550	130,990	566,750	1,227,022
February.....	75,260	148,410	639,112	1,248,265	1,248,265
March.....	132,749	230,178	815,271	1,290,885	1,290,885
April.....	75,935	196,209	970,577	1,242,574	1,242,574
May.....	37,556	75,905	690,365	960,840	960,840
June.....	42,855	78,500	624,586	1,134,032	1,134,032
July.....	31,896	78,570	770,370	1,171,927	1,171,927
August.....	35,056	49,210	244,823	786,866	786,866
September.....	25,226	44,085	291,452	753,468	753,468
October.....	16,309	52,940	327,009	834,499	834,499
November.....	40,003	28,860	790,632	1,122,860	1,122,860
December.....	46,945	60,540	307,689	1,025,485	1,025,485
Totals.....	243,472	914,254	2,702,991	9,177,130	10,519,730

Total to October 1, 1908—23,557,577 cubic yards.

CHAGRES SECTION—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	169,447	200,145	169,447	200,145
February.....	324,233	329,483	324,233	329,483
March.....	235,902	322,145	235,902	322,145
April.....	345,757	366,810	345,757	366,810
May.....	2,900	346,948	2,900	346,948
June.....	21,546	44,044	21,546	44,044
July.....	25,627	95,652	25,627	95,652
August.....	192,769	2,640,870	192,769	2,640,870
September.....	1,873	1,873	1,873	1,873
October.....				
November.....				
December.....				
Totals.....	2,640,870	2,640,870	2,640,870	2,640,870

Total to October 1, 1908—2,835,512 cubic yards.

FRENCH AND AMERICAN RECORDS.

Highest elevation on new center line of Canal before excavation began by the French:	Feet
At Bas Obispo.....	235
Greatest depth of excavation by the French:	
On I. C. C. axis—At Culebra.....	161
At Bas Obispo.....	148
Greatest center-line depth remaining to be excavated when Americans took control in order to reach the bottom of an 85-foot level Canal:	
At Culebra—At same point as before.....	111
At barrier on Contractor's Hill.....	140
At Bas Obispo.....	45
Total excavation by the French at all points and including diversion channel.....	81,548,000
Amount excavated under American control to October 1, 1908:	
In Culebra Cut.....	23,557,577
By steam shovels.....	31,656,338
By dredges.....	18,849,979
Total by steam shovels and dredges, entire canal.....	50,506,317

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	6,832	6,832	6,832	6,832
February.....	18,964	18,964	18,964	18,964
March.....	21,203	21,203	21,203	21,203
April.....	28,750	28,750	28,750	28,750
May.....	3,684	3,684	3,684	3,684
June.....	1,014	1,014	1,014	1,014
July.....	83	83	83	83
August.....				
September.....				
October.....				
November.....				
December.....				
Totals.....	75,749	75,749	75,749	75,749

Total to October 1, 1908—86,928 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	7,203	7,203	7,203	7,203
February.....	38,661	38,661	38,661	38,661
March.....	67,963	67,963	67,963	67,963
April.....	92,261	92,261	92,261	92,261
May.....	54,606	54,606	54,606	54,606
June.....	68,691	68,691	68,691	68,691
July.....	87,675	87,675	87,675	87,675
August.....	4,204	4,204	4,204	4,204
September.....	101,065	101,065	101,065	101,065
October.....	501	501	501	501
November.....				
December.....				
Totals.....	596,730	596,730	596,730	596,730

Total to October 1, 1908—632,525 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at the La Boca locks and dams in 1907, and 107,548 cubic yards at Cardenas Hill in March, April, May, June, July August and September, 1908.

LA BOCA—DREDGES.

Months.	1905*		1907		1908	
	Outside Canal Prism	From Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	95,940	94,710	95,940	94,710	95,940	94,710
February.....	95,940	94,710	95,940	94,710	95,940	94,710
March.....	116,820	92,310	116,820	92,310	116,820	92,310
April.....	110,700	103,855	110,700	103,855	110,700	103,855
May.....	112,767	122,157	112,767	122,157	112,767	122,157
June.....	50,676	62,697	50,676	62,697	50,676	62,697
July.....	41,353	98,600	41,353	98,600	41,353	98,600
August.....	54,380	115,930	54,380	115,930	54,380	115,930
September.....	114,366	105,780	114,366	105,780	114,366	105,780
October.....	81,576	97,170	81,576	97,170	81,576	97,170
November.....	92,988	365,423	92,988	365,423	92,988	365,423
December.....	71,094	349,551	71,094	349,551	71,094	349,551
Totals.....	485,153	1,191,233	1,557,695	586,094	5,954,700	5,954,700

Total to October 1, 1908—9,774,875 cubic yards.

* No work done inside Canal Prism.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Gatun Woman's Club held its opening meeting on Friday, September 25, the president, Mrs. C. D. Corp, in the chair. The meeting was informal and was devoted to discussions of club work and the best means of accomplishing the aims of the organization. Owing to the number of club members removed from Gatun and the absence of others on vacation, it was decided to defer the annual meeting with election of officers until the first Friday in November. In the meantime, the organization will meet regularly.

The Gorgona Woman's Club held its regular meeting on Thursday, October 1, with the president in the chair. After a few informal remarks on items of interest from the recent Federation meeting, committees were appointed for the ensuing half year, as follows: Philanthropic, Mrs. F. Morrison, Mrs. J. Cockett, Mrs. Toberer; home, Mrs. Phillips, Mrs. Bergstrom, Mrs. Varen Kamp; music, Mrs. Swain, Mrs. Beatham, Mrs. Hudson; art, Mrs. Bromley, Mrs. Hinkle, Mrs. Sweet; literary, Mrs. Everist, Mrs. Texter, Mrs. Strock. Mrs. Ament, who sailed for the States on October 6, after a visit of two months with her sister, Mrs. Morrison, was given a rising vote of thanks for her assistance in club matters, and on Friday evening the club presented her with a centerpiece as a token of appreciation.

The monthly business meeting of the Las Cascadas Woman's Club was held at the residence of Mrs. J. P. Doyle, October 1. The committees appointed were: Social, Mrs. Albrecht, chairman, Mrs. Green, Mrs. Thompson, and Mrs. Grimmison; visiting, Mrs. Doyle and Mrs. Hutton. The next meeting will be held October 8, at the residence of Mrs. Albrecht. The first anniversary of the organization of the Las Cascadas club will occur on October 17. The purposes of the club have been the promotion of social life, and municipal improvements, and the organization has been a factor in the community life that has been greatly appreciated. Several public improvements made in the town are due to the efforts and influence of the club. The division of the commissary for whites and negroes, better accommodations at the post-office, and improvement in the bridges and sidewalks being among them. The weekly social meetings tend to make life in the town pleasanter and to draw the women together. A sewing class has been started for young girls which meets regularly.

The Empire Woman's Club gave a reception to its president, Mrs. F. W. Miracle, on Tuesday, September 30, a large number of club members and guests attending. Refreshments were served by a committee at tables decorated with flowers and plants. Mrs. H. C. Ball presided at a short business meeting before the reception. Reports from the various Federation committees were read and a discussion on the subject of the reading course which the club expects to take up was held. A paper on the etiquette of Japanese tea was read by Mrs. J. H. Helmer, and violin and piano selections were given by the Misses Sophia and May Johnson. The president gave an account of her experience during the hurricane on the recent trip of the *Colon*.

The Culebra Woman's Club had a well at-

tended meeting on Thursday, October 1. Reports from the Federation meeting were rendered. Master Arthur Howard gave piano selections. There were several guests for the afternoon including Mrs. Frank Miracle of Empire.

Alfaretta Council No. 1, Degree of Pochantans, of the Improved Order of Red Men, will give a grand box social, followed by a dance and entertainment, Tuesday evening, October 13, at the Fraternal Hall, Culebra. All friends are cordially invited to be present.

The Paraiso Social Club gave a dance last week which was attended by a number of visitors from Pedro Miguel and Culebra.

The Pedro Miguel Woman's Club gave an entertainment on Thursday evening, October 1, for the purpose of assisting the Social and Recreative Club in the purchase of a piano. There was a good attendance and a pleasant evening was spent in games, dancing and other amusements. Home-made refreshments were sold. Mrs. H. C. Shick, secretary of the club from its organization, left Monday, October 5, to spend the winter in California. She expects to return to the Isthmus in the spring.

Mrs. Lorin C. Collins, president of the Canal Zone Federation of Women's Clubs and of the Cristobal Woman's Club, sailed on the *Allianca*, October 3, for a three months' visit to the United States. During her absence Mrs. E. Lewis Baker, vice-president, will preside at the meetings of the Cristobal club.

Notice to Odd Fellows.

B. F. Sisson, District Deputy Grand Sire, I. O. O. F., will institute Isthmian Canal Rebekah Lodge No. 1 in the lodge hall at Gorgona, on Saturday evening, October 10, 1908. All members of the Rebekah degree on the Isthmus are requested to be present and any one who is eligible and wishes to become a member is invited to send in an application.

Tivoli Club Notice.

The regular Tivoli Club dance will be given on Saturday evening, October 10, at Hotel Tivoli. Notice has been sent to each member.

As it is now generally known that the club dances are held on the second and fourth Saturday of each month, the secretary announces that no individual notices will be sent out in future except in case of special dances. A general notice will be printed in THE CANAL RECORD, and the daily newspapers.

Ancon Library Association.

A meeting was held at Hotel Tivoli on the night of August 28, to form a library association in Ancon, notice of which had been given through THE CANAL RECORD.

It was the sense of the meeting that the interest in the library indicated by the attendance was not sufficient to justify a preliminary organization, and it was decided to canvass Ancon, La Boca and Corozal, and ascertain how many would be willing to become members of such an association and pay for the support of a reading room the sum of two dollars per year, payable semi-annually.

It is intended to have a circulating library of at least one thousand volumes, and all

current newspapers and periodicals on file in the reading room.

The association if formed has been promised by the Chairman of the Isthmian Canal Commission the use of the rooms formerly occupied by the Chief Sanitary Inspector, over the present offices of the District Quartermaster.

If a sufficient number of persons agree to become members, another meeting will be called, adequate notice of which will be given through THE CANAL RECORD, and an organization will be effected.

Any names sent to THE CANAL RECORD will be placed upon the list.

PERSONAL.

W. G. Comber, resident engineer at La Boca, left on the *Heridia*, October 6, for Costa Rica, where he will spend his annual leave.

Capt. T. C. Lyster, Medical Corps, U. S. A., of Ancon Hospital, sailed for the States on the *Advance*, September 28, having been ordered to Washington for examination for promotion.

Obituary.

Paul Vanderstop, of Chicago, Ill., died at Ancon Hospital on September 20, of malaria. He came to the Isthmus in February, 1907, and had been living recently at East La Boca. His brother, Peter Vanderstop, lives at 291 Reynolds street, Rochester, N. Y.

Civic Pride Hindrances.

THE CANAL RECORD:

The letter signed Civic Pride, which appeared in your issue of September 30, attracted my attention because of the apparent reflection it contained on the work of the Canal Zone police. The writer does the police department at Cristobal an injustice when he insinuates that little effort is made to keep stray animals off the streets and lawns of this village. It is not possible to keep the animals that stray from Colon into Cristobal entirely out of the American settlement, but an effort is made, and I believe it is attended with remarkable success, to impound such animals as soon as they are detected. In September, for instance, the police department at Cristobal impounded 7 horses, 2 mules, 4 goats, and 1 cow. I do not like to have Cristobal, or any part of it referred to as a "cabbage patch," because it is my home, and because civic pride can not be stimulated by the use of slurring epithets. Please publish this in justice to the police of Cristobal.

Respectfully,

A RESIDENT.

Cristobal, October 3, 1908.

Misdirected Letters.

Division of Dead Letters.
Ancon, C. Z., October 6, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

Bowen, A. S.	Karsner, J. Walter
Brown, Geo. (Engineer)	Koch, Capt. F.
Dailey, John	Leach, Arthur
Delacroix, Clem	Locken, F. O.
Dickinson, Wm. F.	MacDevitt, John
Edwards, Howard	Maynard, Miss B. I.
Highme, H. D.	Neely, P. John
Graham, Mrs. W. H.	O'Brien, Mrs. N. O.
Holt, X. D.	Schultz, Walter
Howell Corporal	Swinehart, Robt.
Irwin, Mrs. Don E.	Taylor, Mrs. Jennie
Jones, Parker A.	

Piles are being driven for the handling docks and cement storehouse at Gatun Locks.

A MOSQUITO HUNT.

How the Malaria Rate at Corozal Was Reduced.

During the latter part of June, the malaria rate at Corozal suddenly took a jump upward. No further indication was needed to assure the Department of Sanitation that the anopheles mosquito had found a new breeding place in that vicinity, undiscovered by the district inspector.

Unable to account for the rise, at his request a special inspector was sent to his assistance. The Chief Sanitary Inspector, not being satisfied with the report, sent out a second inspector, and finally a third. The recommendations of all were carried out, and the rate fell steadily, but not to the normal, and the returns for each week were regarded with dissatisfaction.

About the middle of August, the rate suddenly shot up higher than ever. Two inspectors were sent to the district inspector with orders that the three cover every foot of the ground. This was accomplished in two days by hard work and late hours. Two reported that the breeding place of the mosquitoes was 700 yards from the nearest camp, and the third inspector stated that the infection was from the aggregate of small breeding places in which the larvæ had since been destroyed by oilings. One of the characteristics of the anopheles mosquito is that it is not likely to fly at one time a distance of more than 200 yards from its breeding place, and that it is seldom found more than this distance from its home.

Comparatively little of the life-habit of the anopheles is accurately known, but the legitimate inference deducted from the known facts are sufficient to establish a working basis, viz:

(1) That the female anopheles has the hovering instinct for raising her family, analogous to the fish.

(2) That after her eggs are fertilized she is impelled to seek the blood of animals or human beings in order to develop her eggs to perfection.

(3) That after obtaining the necessary blood she seeks her own birth place to deposit her eggs.

Herein lies the weakness of the anopheles female of which man takes advantage. Her home ties hold her from any such migrations as the *Culex* often makes, and being fatally susceptible to the sunlight a clearing of all grass and brush for 200 yards from her home is sufficient to accomplish her destruction.

Hence the breeding place 700 yards distant could not be accepted, although it was destroyed as a precautionary measure. A third inspector was sent to Corozal, with orders not to consult with the others, but to remain there until he could positively locate the point of infection. He began by searching each building for adult anopheles. From the building in which he captured the greatest number he started early in the morning when the grass was wet and the mosquitoes were lying low. He followed a zigzag course, turning from point to point as he found the number lessening. This led him to a salt marsh 280 yards from the buildings. But anopheles do not breed in salt water, and moreover the edges of the swamp were well oiled where fresh water would collect and no larvæ were found.

He kept on, and penetrating the jungle

300 yards, came upon a few larvæ and pupæ. The district inspector appeared on the opposite bank with a machete in hand, saying that he believed the breeding place was in the middle of the swamp, and that he had determined to go in. Go in he did, to his waist, in water and mire, laboriously cutting his way through the branches to the middle of the swamp, where he found the larvæ thick enough to blacken the comparatively fresh water. Half a mile away a culvert was found so obstructed that the salt water did not have free access to the swamp during high tide, and the outflow was blocked at low tide. In consequence of the heavy rains the salt marsh had been gradually converted into a fresh water marsh, and as it was filled with rank vegetation, the anopheles were provided an ideal place for life and breeding.

Planks were thrown out into the marsh, lanes were cut in the vegetation and the oilers were set at work. The number of adult anopheles found in the camps began to dwindle at once, and the malaria rate soon fell to normal.

This is only one instance of many similar ones, and it is cited to show the difficulties attending mosquito extermination and the maintenance of good health in the Canal Zone.

Cost of Municipal Improvements.

Municipal improvements made by Americans in Panama, Colon and the Canal Zone, up to the close of the fiscal year 1908, cost \$5,770,750.87, distributed as follows:

Panama water works and sewers.....	\$853,849.23
Colon water works and sewers.....	601,043.91
Zone water works and sewers.....	2,358,840.44
Paving, Panama.....	489,007.77
Paving, Colon.....	293,231.26
Zone roadways.....	1,174,778.26
Total.....	\$5,770,750.87

The work done in the cities of Panama and Colon was in accordance with Article 7 of the Treaty between the United States and the Republic of Panama, in which the United States was given the right to construct, maintain, and operate "all works of sanitation, collection and disposition of sewage, and the distribution of water in the cities of Panama and Colon" as "may be necessary and convenient for the construction, maintenance, operation, sanitation, and protection" of the Panama Canal and Panama railroad. The municipal works in the cities of Colon and Panama are to be paid for, with interest, within the period of fifty years, by water and sewerage rates imposed and collected by the United States, and when paid for are to become the property of the Panamanian Government.

In the prosecution of this work the old Division of Municipal Engineering, from the time of its organization, July 19, 1904, up to the end of the fiscal year, had laid 60,469 feet of water pipe in the city of Panama, and 69,280 feet in the city of Colon. In Panama 67,925 feet of sewer were laid and in Colon 37,896 feet. The paving done in the city of Panama amounts to 66,365 square yards of brick, 19,116 square yards of concrete, 3,572 square yards of macadam, 51,401 linear feet of concrete curb. In Colon 62,621 square yards of macadam pavement, 6,410 square yards of brick, 41,267 linear feet of concrete curb, and 1,923 linear feet of basket gutter have been laid. Water for Colon is supplied by a Canal Zone reservoir

located at Brazos Brook, and for Panama from a reservoir in the Rio Grande valley, near Culebra. These reservoirs also supply the neighboring American settlements, and the settlements in the interior of the Zone are supplied by reservoirs at Empire and Gorgona, and by pumping stations.

In the Canal Zone nearly 98 per cent of all quarters constructed by the Commission, as well as office buildings and shops have been connected with the Zone sewer systems. At the close of the fiscal year, 217,975 feet of sewer had been laid and 2,162 house connections had been made; and 292,633 square yards of macadam road, 1,000 square yard of brick pavement, and 9,266 square yards of paths had been constructed in the Zone. The great majority of the road-building done thus far has been confined to the American settlements and has been made necessary by the construction of office buildings and quarters.

Death of a Sailor.

Charles Rand, boatswain mate, first-class, United States Navy, acting chief boatswain mate on the U. S. S. *Buffalo*, died at Ancon hospital on September 30, 1908, of peritonitis, caused by a knife wound in the abdomen inflicted by a Panamanian. He was 34 years old and lived at Orange, N. J.; was serving his third enlistment in the Navy; had been a gun pointer on the U. S. S. *Raleigh* on a previous cruise, and had been given a good conduct medal for meritorious service. He was not of a quarrelsome disposition, and was considered by the officers of the *Buffalo* one of the most efficient and well behaved men aboard ship. His assailant has been arrested and is awaiting trial in Panama courts.

Barbadian Found Dead.

Charles Best, a Barbadian negro employed by the Panama Railroad Company, was found dead in some bushes between the Insane Asylum and the railroad track at Ancon on the morning of September 23. His skull had been fractured and his throat cut. It is believed that he was murdered, and from the fact that his pockets were turned inside out, that the reason for the murder was robbery. Charles Samuels and Ruth White, both colored, have been arrested and are being held pending investigation.

A new yard for bad-order cars has been authorized for the Central Division and will be located at Pedro Miguel. At present the construction trains run back from the dumps and are held up on the main line until the "bad orders" are taken out. Three new tracks, two extensions, and several cross-overs will be added to the yard in order that delays consequent on using the main track may be avoided.

The Assistant Chief Engineer, the Division Engineer of the Central Division, and the Assistant to the Chief Engineer, have been appointed a committee to make recommendations with regard to the construction of a breakwater in Limon Bay for the harbor of Colon.

Three Lidgerwood unloaders, working on the La Boca dumps, unloaded 652 trains, in all 10,432 cars of 20 yards to a car in August. In the same period the four unloaders working at Tabernilla unloaded 1,199 trains of sixteen 20-yard cars.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The standing of the bowling league to October 3 follows:

	Played	Won	Lost	Percent.
Empire.....	48	27	21	.545
Cristobal.....	48	27	21	.545
Culebra.....	42	18	28	.420
Gorgona.....	42	16	26	.372

GORGONA.

Friday evening, October 2, the Gorgona Y. M. C. A. extended the privileges of "open house" to the people of Santa Cruz. A special feature of the evening was a kinetoscope entertainment. A special train conveyed the people to Gorgona and back home.

The Culebra bowlers visited Gorgona Saturday evening, October 3. The Gorgona team took three straight games.

An exciting ping pong tournament was a feature of last Saturday evening. There were ten entries; each man played each of the other the best three out of five sets.

Sunday afternoon, October 4, an "Association Sing" was held in the clubhouse.

CRISTOBAL.

A new corduroy cover for the wrestling mat has been received, and wrestling practice will be engaged in every Friday night.

The Cristobal billiard and pool team will play at Gorgona on Saturday, October 10, and will play return games with the Gorgona team at the Cristobal clubhouse on Saturday, October 17.

Two moving picture entertainments were given during the past week.

The orchestra from the ship *Prinz August Wilhelm* will give a concert at the Cristobal clubhouse on Monday night, October 19.

The following schedule has been adopted for the boys' department:

Tuesdays—3.30 to 5 p. m., gymnasium and bowling.
Thursdays—3.30 to 5 p. m., gymnasium and bowling.
Saturdays—9 to 11 a. m., gymnasium and outdoor sports.

The reading room is opened to boys every day until 5 o'clock. Boys are not allowed in the building after 5 p. m., except to attend regular match games or other public entertainments.

The games bowled at Cristobal October 3, resulted as follows:

CRISTOBAL.

	First	Second	Third	Average
Robertson.....	199	171	164	178
Thomas.....	173	112	....	142½
Strong.....	169	132	171	154
McCormick.....	167	170	148	161
Gilmartin.....	173	169	167	169½
Nelson.....	....	....	170	170
Total.....	881	754	820	818

EMPIRE.

Brown.....	163	185	123	157
Bardelson.....	147	146	114	135½
Durand.....	206	151	183	180
Edwards.....	179	191	168	179½
Dougherty.....	125	155	190	156½
Total.....	820	828	788	812

Concert by the I. C. C. Band.

EMPIRE, C. Z.

Sunday, October 11, 1908, at 2.30 p. m.

PROGRAM.

- 1 March—*Washington Grays*.....Grafulla
 - 2 Selection—*The Red Mill*.....Herbert
 - 3 Waltz—*Pansies for Thought*.....Blynn
 - 4 { a Tone Poem—*Lilacs*.....Roberts
b Schottische—*Let Me Be Your Lemon*
Coan.....Allcu
 - 5 Cornet Solo—*A Man, a Maid, a Moon,*
a Boat.....Harris
- CHAS. E. JENNINGS.
- 6 Medley Selection—*Mill's Merry Melodies*.....Mills
 - 7 Morceau—*Dawn of Love*.....Bendix
 - 8 Overture—*If I Were King*.....Adam
 - 9 Descriptive—*The Racket at Gilligan's*.....DeWitt
- Synopsis—The guests gather at Gilligan's; after their arrival Gilligan sings a song, which is followed by a country dance. The star singer then renders a touching ballad, after which the bagpipes strike up. "Are ye's all ready?" shouts Gilligan. "Yis." "Then fire away." A regular "well the floor" and "slip" time follows. A sand jig comes next, and the festivities closed by all singing "Saint Patrick's Day in the Morning."
- 10 Galop—*Telemachus*.....Bennet
- CHAS. E. JENNINGS, Musical Director.

A concert will be given at Paraiso, C. Z., Sunday, October 18.

COMMISSARY DEPARTMENT.

NOTICE.

CRISTOBAL, C. Z., September 29, 1908.

Effective October 1: All communications intended for either the Subsistence Department, I. C. C., or the Commissary Department, P. R. R., should be addressed to the Subsistence Officer, Cristobal, C. Z.

EUGENE T. WILSON,

Subsistence Officer

COMMISSARY PRICES

For week beginning October 6:

FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	6
Shoulder and neck (not under 6 pounds).....per lb	7
Entire forequarter (not under 10 pounds).....per lb	8
Leg (8 to 10 pounds).....per lb	16
Short-cut chops.....per lb	20
Lamb—Stewing.....per lb	6
Entire forequarter.....per lb	8
Leg (6 to 8 pounds).....per lb	27
Chops.....per lb	29
Veal—Stewing.....per lb	10
Entire forequarter (15 to 20 lbs).....per lb	11
Loin.....per lb	22
Short-cut chops.....per lb	23
Cutlets.....per lb	23
Pork—Cuts.....per lb	20
Beef—Suet.....per lb	4
Soup.....per lb	8
Stew.....per lb	12
Corned.....per lb, 12, 14	16
Rib-roast, second cut (not under 3 pounds).....per lb	19
Rib-roast, short cut (not under 3½ pounds).....per lb	23
Sirloin roast.....per lb	29
Rump roast.....per lb	29
Porterhouse roast.....per lb	29
Steak, round.....per lb	23
Rib.....per lb	24
Sirloin.....per lb	29
Porterhouse.....per lb	29
Rump.....per lb	29
Tenderloin.....per lb	30

MISCELLANEOUS.

Livers—Beef.....per lb	12½
Calif.....each	65
Sausage—Pork.....per lb	19
Frankfurter.....per lb	17
Leberwurst.....per lb	17
Bologna.....per lb	17
Sweet bread—Veal.....each	1.20
Beef.....per lb	25
Ox tongues.....each	90
Pigs' feet, pickled.....per lb	14
Pigs' tongues, pickled.....per lb	15
Eggs, fresh.....dozen	34

POULTRY AND GAME.

Chickens—Dressed (milk-fed).....each	1.30
Large (milk-fed).....each	1.50
Capons.....each	2.40
Broilers.....each	60
Fowls, medium and large.....each, 80c. and 1.00	
Ducks, fattened (fauy).....each	1.10
Suckling pigs.....each	4.90
Turkeys.....per lb	30
Squabs.....each	45

CURED AND PICKLED MEATS.

Bacon—Strips.....per lb	25
English, breakfast sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Westphalia.....per lb	45
Ferris.....per lb	20
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	35
Cheese—Roquefort.....per lb	45
Neufchatel.....each	6
Young America.....per lb	22
Swiss.....per lb	33
Edam.....each	1.05
Camembert.....per lb	28
McLaren's.....jar	15
Pinxter's.....tin	22
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....tin	20
Buttermilk.....quart	15
Milk, Briarcliff.....quart	25

VEGETABLES AND FRUITS.

Tomatoes (local only).....per lb	8
Lettuce.....per lb	14
Cauliflower.....per lb	10
White potatoes.....per lb	3½
Sweet potatoes.....per lb	2½
Cabbage.....per lb	4
Onions.....per lb	3½
Cucumbers.....per lb	8
Parsnips.....per lb	3
Lima Beans.....per lb	8
Squash (summer).....per lb	3
Beets.....per lb	3
Celery.....bunch	18
Green corn.....dozen	36
Carrots.....per lb	3
Turnips.....per lb	2½
Onions (Spanish).....per lb	5
Limes.....hundred	40
Lemons.....dozen	24
Oranges.....dozen	18
Cantaloupes.....each	8
Grapes.....per lb	8
Peaches.....per lb	15
Pears.....per lb	8

§ Sold only from cold-storage and not from Commissaries

UNCLAIMED PACKAGES.

The following is a list of packages that have been forwarded from New York to Isthmian Canal Commission and Panama railroad employes, and that are waiting to be claimed at the freight house at Colon. The owners of these packages will have to make application for free customs entry in connection with Circular No. 85, or in the alternative, pay duty to the Panama Government customs on the value of the contents of the packages, before delivery can be effected:

- W. S. Clements, Colon, 1 box, *Advance*, July 6.
- J. F. Meniero, Panama, 2 cases instrument boxes *Allianza*, July 15.
- J. F. Dempsey, Colon, 1 box cloth, *Allianza*, July 15.
- J. R. Cocoran, Empire, 2 boxes leather, *Esperanza*, August 10; 2 crates bicycles, 1 case C material, 1 case oil stove, 1 case S dressing, *Finance*, August 14.
- S. Chennalloy, Colon, 1 parcel (No. 7656), *Advance*, June 10.
- C. Thomas, Cristobal, 1 parcel (No. 7778), *Esperanza*, August 18.
- J. B. Marsh, Gorgona, 1 seal press, *Colon*, August 23.
- A. W. Ingram, Colon, 1 bundle wall paper, *Finance*, September 8.
- H. H. Rickers, Camp Elliott, 1 box personal effects, *Esperanza*, September 11.
- Arthur F. Rex, Ancou, 1 box musical instruments, *Esperanza*, September 11.
- C. H. Hamy, Gorgona, 1 box musical instruments, *Esperanza*, September 11.
- Jas. A. Utis, Corozal, 1 box musical instruments, *Esperanza*, September 11.
- District Physician, San Pablo, 1 parcel (No. 7813), *Esperanza*, September 11.
- J. O. Gonzalez, Colon, 1 case hardware, *Colon*, September 18.

Tug Service Porto Bello and Nombre de Dios.

Effective, August 6, 1908: The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Cristobal 6.30 p. m. for Porto Bello only; returning same day.

Monday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Tuesday: Leave Cristobal after Train 2 without tow, for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.

Wednesday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Friday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Saturday: Leave Cristobal after Train 2 for Porto Bello only; returning, leave Porto Bello 5.30 p. m.

The following steamers have recently arrived at La Boca: September 27, *Tucapel*, from Valparaiso; September 28, *Guatemala*, from Valparaiso, and U. S. cruiser *Buffalo*, from the north. Departures were: September 26, *Acapulco*, to San Francisco; September 28, *California*, to Valparaiso; September 30, *Quito*, to Buenaventura.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Lieut.-Col. Geo. W. Goethals, U. S. A., Culebra.
 Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
 Maj. D. D. Gaillard, U. S. A., Empire.
 Maj. Wm. L. Sibert, U. S. A., Gatun.
 Civil Engineer H. H. Rousseau, U. S. N., Culebra.
 Mr. Jo C. S. Blackburn, Ancon.
 Col. W. C. Gorgas, U. S. A., Ancon.
 Mr. Joseph Bucklin Bishop, Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.
 Lieut.-Col. Geo. W. Goethals, Chairman and Chief Engineer.
 M. B. DePatron, Assistant to the Chairman.
 W. H. May, Secretary to the Chairman.
 C. A. McIvaine, Chief Clerk.
 Caleb M. Saville, Assistant Engineer.
 Lieut.-Col. H. F. Hodges, Assistant Chief Engineer.
 C. O. Carlson, Secretary.
 Edward Schildhauer, Electrical and Mechanical Engineer.
 L. D. Cornish, H. F. Tucker, Henry Goldmark and David Molitor, Designing Engineers.
 Civil Engineer H. H. Rousseau, Assistant to the Chief Engineer.
 J. C. Parsons, Secretary.
 A. B. Nichols, Office Engineer.
 P. O. Wright, Architect.

Central Division.

Headquarters, Empire.
 Maj. D. D. Gaillard, Division Engineer.
 A. E. Bronk, Chief Clerk.
 Louis K. Rourke, Assistant Division Engineer.
 A. S. Zinn, Resident Engineer.
 Mark W. Tenny, Assistant Engineer.
 R. W. Heberd, Assistant Engineer.
 W. L. Thompson, Assistant Engineer.
 Geo. H. Ruggles, Assistant Engineer.

Atlantic Division.

Headquarters, Gatun.
 Maj. Wm. L. Sibert, Division Engineer.
 R. M. Sands, Chief Clerk.
 Maj. Chester Harding, U. S. A., Assistant Division Engineer.
 Maj. Edgar Jedwin, U. S. A., Resident Engineer.
 Maj. J. P. Jervey, U. S. A., Resident Engineer.
 Capt. G. M. Hoffman, U. S. A., Assistant Engineer.
 Capt. Horton W. Stickle, U. S. A., Assistant Engineer.
 L. G. Thom, Assistant Engineer.
 F. C. Stanton, Assistant Engineer.
 R. B. Smith, Superintendent of Dredging.

Pacific Division.

Headquarters, Corozal.
 S. B. Williamson, Division Engineer.
 E. A. LeMay, Chief Clerk.
 W. G. Comber, Resident Engineer.
 G. B. Strickler, Resident Engineer.
 Wm. F. M. Acheson, Assistant Engineer.
 James MacFarlane, Superintendent of Dredging.

Mechanical Division.

Headquarters, Culebra.
 Mr. Geo. D. Brooke, Superintendent of Motive Power and Machinery.
 F. W. Doty, Chief Clerk.
 Earle J. Banta, Mechanical Engineer.
 A. L. Robinson, Electrical Engineer.

Division of Meteorology & River Hydraulics

Headquarters, Ancon.
 Civil Engineer H. H. Rousseau, Acting Division Engineer.
 D. W. MacCormack, Chief Clerk.

Quartermaster's.

Headquarters, Culebra.
 Maj. C. A. Devol, U. S. A., Chief Quartermaster.
 C. H. Mann, Chief Clerk.
 Lieut. R. F. Wood, U. S. A., Assistant Chief Quartermaster.
 Capt. Courtland Nixon, U. S. A., Depot Quartermaster, Mount Hope.
 C. E. Parker, C. C. McColley, Inspectors.
 H. S. Farish, Acting Survey Officer.

District Quartermasters.

Ira A. Miles, Cristobal.
 R. R. Watson (acting), Gatun.
 J. M. King, Tabernilla.
 J. H. Humphreys, San Pablo.
 R. C. Shady, Gorgona.
 M. R. Currie, Bas Obispo.
 D. J. Shannon, Las Cascadas.
 J. B. Jeffries, Embire.
 C. P. Allen, Culebra.
 Harry Dundas (acting), Paraiso.
 Otto Marstrand, Pedro Miguel.
 A. R. Bennet, Corozal.
 B. C. Poole, Ancon.
 W. H. South, La Boca.
 C. E. Heisey, Porto Bello.

Subsistence.

Headquarters, Cristobal.
 Maj. Eugene T. Wilson, U. S. A., Subsistence Officer.
 W. F. Shipley, Chief Clerk.

Civil Administration.

Headquarters, Ancon.
 Jo C. S. Blackburn, Head of the Department.
 H. D. Reed, Executive Secretary, Ancon.
 G. A. Ninas, Chief Clerk, Ancon.
 Tom M. Cooke, Chief, Division of Posts, Customs and Revenues, Ancon.
 Herman A. Gudger, Deputy Collector, Ancon.
 E. Lewis Baker, Deputy Collector, Cristobal.
 George M. Shontz, Prosecuting Attorney, Ancon.
 George R. Shanton, Chief of Police, Ancon.
 D. E. McDonald, Chief Clerk.
 C. E. Weidman, Chief, Fire Department, Cristobal.
 Geo. L. Campen, Supt of Public Works, Ancon.
 C. R. Sargent, Chief Clerk.
 J. J. Reidy, Asst. Supt. Public Works, Cristobal.
 H. L. Smith, Superintendent of Schools, Ancon.
 H. A. A. Smith, Treasurer of Canal Zone, Empire.

Canal Zone Judiciary.

Headquarters, Ancon.
 Supreme Court—Dr. F. Mutis Durán, Chief Justice.
 Walter Emery, Clerk, Ancon.
 H. A. Gudger, Associate Justice, Empire.
 Lorin C. Collins, Associate Justice, Cristobal.
 Circuit Court, First Circuit—Dr. F. Mutis Durán, Judge, Ancon.
 Walter Emery, Clerk, Ancon.
 Circuit Court, Second Circuit—H. A. Gudger, Judge, Empire.
 Elbert M. Goolsby, Clerk, Empire.
 Circuit Court, Third Circuit—Lorin C. Collins, Judge, Cristobal.
 Nelson R. Johnson, Clerk, Cristobal.
 M. C. Rendell, Senior District Judge, Cristobal.
 S. E. Blackburn, District Judge, Ancon.
 Edgar S. Garrison, District Judge, Empire.
 J. B. March, District Judge, Gorgona.
 Thomas E. Brown, Jr., District Judge, Cristobal.

Law.

Headquarters, Washington, D. C.,
 Richard Reid Rogers, General Counsel, Washington, D. C.
 George M. Shontz, Attorney for Isthmian Canal Commission and Panama Railroad Company, Ancon.
 George H. Bartholomew, Assistant Attorney.

Sanitation.

Headquarters, Ancon.
 Col. W. C. Gorgas, Chief Sanitary Officer.
 Capt. Robert E. Noble, U. S. A., Executive Officer.
 Harry E. Bovay, Chief Clerk.
 H. R. Carter, Director of Hospitals, Ancon.
 Surgeon, J. C. Perry, P. H. and M. H. S., Chief Quarantine Officer, Ancon.
 Maj. John L. Phillips, U. S. A., Superintendent Ancon Hospital, Ancon.
 Capt. Alexander Murray, U. S. A., Assistant to Superintendent.
 Maj. C. C. McCulloch, jr., U. S. A., General Inspector, Ancon.
 J. F. Leys, U. S. N., Superintendent Colon Hospital, Colon.
 Surgeon Claude C. Pierce, P. H. and M. H. S., Quarantine Officer, Colon.
 Dr. Fleetwood Gruver, P. H. and M. H. S., Quarantine Officer, Panama.
 Dr. John B. Purnell, Health Officer, Panama.
 Dr. M. E. Connor, Health Officer, Colon.
 Joseph A. LePrince, Chief Sanitary Inspector, Ancon.

Disbursements.

Headquarters, Empire.
 Edward J. Williams, Disbursing Officer.
 Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.
 W. W. Warwick, Examiner of Accounts.
 Thomas L. Clear, Chief Clerk.

Purchasing Department.

Headquarters, Washington, D. C.
 Capt. F. C. Boggs, U. S. A., General Purchasing Officer.
 C. R. Dole, Chief Clerk.
 Capt. Courtland Nixon, Purchasing Agent on the Isthmus.
 Maj. Wendell L. Simpson, U. S. A., Purchasing Agent, 24 State Street, New York City.
 F. C. Nordsiek, Assistant Purchasing Agent, 24 State Street, New York City.
 S. B. Redfern, Assistant Purchasing Agent, Custom House, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
 (New York office, 24 State Street.)
 H. J. Slifer, Assistant to the President, and General Manager, Colon.
 G. E. Geer, Assistant to the General Manager.
 R. Budd, Chief Engineer.
 J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Finance	.....P. R. R. Saturday	.....Sept. 26
Prinz Joachim	.....H. A. Saturday	.....Sept. 26
Esperanza	.....P. R. R. Thursday	.....Oct. 1
Atrato	.....R. M. Saturday	.....Oct. 3
Advance	.....P. R. R. Wednesday	.....Oct. 7
Prinz Aug. Wilhelm	.....H. A. Saturday	.....Oct. 10
Allianca	.....P. R. R. Tuesday	.....Oct. 13
Trent	.....R. M. Saturday	.....Oct. 17
Colon	.....P. R. R. Saturday	.....Oct. 17
Esperanza	.....P. R. R. Thursday	.....Oct. 22
Prinz Joachim	.....H. A. Saturday	.....Oct. 24
Finance	.....P. R. R. Tuesday	.....Oct. 27

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK.

Prinz Aug. Wilhelm	.....H. A. Tuesday	.....Sept. 29
Allianca	.....P. R. R. Saturday	.....Oct. 3
Clyde	.....R. M. Tuesday	.....Oct. 6
Finance	.....P. R. R. Thursday	.....Oct. 8
Panama	.....P. R. R. Tuesday	.....Oct. 13
Prinz Joachim	.....H. A. Tuesday	.....Oct. 13
Advance	.....P. R. R. Monday	.....Oct. 19

FROM NEW ORLEANS TO COLON.

Heridia	.....U. F. C. Saturday	.....Sept. 26
Cartago	.....U. F. C. Saturday	.....Oct. 3
Parismina	.....U. F. C. Saturday	.....Oct. 10
Heridia	.....U. F. C. Saturday	.....Oct. 17
Cartago	.....U. F. C. Saturday	.....Oct. 24
Parismina	.....U. F. C. Saturday	.....Oct. 31
Heridia	.....U. F. C. Saturday	.....Nov. 7
Cartago	.....U. F. C. Saturday	.....Nov. 14

FROM COLON TO NEW ORLEANS.

Heridia	.....U. F. C. Tuesday	.....Oct. 6
Cartago	.....U. F. C. Tuesday	.....Oct. 13
Parismina	.....U. F. C. Tuesday	.....Oct. 20
Heridia	.....U. F. C. Tuesday	.....Oct. 27
Cartago	.....U. F. C. Tuesday	.....Nov. 3
Parismina	.....U. F. C. Tuesday	.....Nov. 10
Heridia	.....U. F. C. Tuesday	.....Nov. 17
Cartago	.....U. F. C. Tuesday	.....Nov. 24
Parismina	.....U. F. C. Tuesday	.....Dec. 1

FROM COLON TO BARBADOS, CALLING AT TRINIDAD.

Atrato	.....R. M. Tuesday	.....Oct. 13
Trent	.....R. M. Tuesday	.....Oct. 27
Tagus	.....R. M. Tuesday	.....Nov. 10

FROM COLON TO NEW ORLEANS VIA KINGSTON.

Mediau	.....Leyland Line	.....about Oct. 20
Mexican	.....Leyland Line	.....about Oct. 31

The Panama railroad steamships sail at 3 p. m from dock at Cristobal direct to New York.
 The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 11 a. m., and from Colon at 1.30 p. m., via Port Limon, for New Orleans. In addition to the above, the United Fruit Company dispatches a steamer about every ten days from Colon, via Bocas del Toro, for New Orleans.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.



The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Work on the Pacific Locks.

The hill near the northern end of the lock site at Miraflores has entirely disappeared, the last cut of the steam shovels having brought it to the level of the remainder of the lock site. Four shovels are at work continuing the excavation, and the material taken out is placed in the dam across the Cocoli River, or in the dyke on the east side of the lock site. This dyke is being built to form basins into which material will be pumped later by dredges. The suction dredge *Sandpiper* has been moved to the south end of the lock site, and it is expected that dredging will be begun at this point in a few days.

At the site of the Pedro Miguel Locks the excavation in the north approach is down to grade 40, which is the depth required for this approach, and is practically finished. In the lock site proper, one of the shovels is making a cut at the 25-foot level, which is 15 feet above the grade required at this point. Another shovel is working on the 18-foot level, which is only 8 feet above the grade required. An additional shovel was set at work last week, and the force now consists of two 95-ton and one 75-ton shovels, served by five American locomotives and trains of Oliver and Western dump cars. The amount of material to be excavated from the lock site and approaches at Pedro Miguel has been estimated at 2,742,804 cubic yards, of which amount 1,593,553 cubic yards have already been excavated. The Central Division has excavated 1,517,804 cubic yards from the northern approach, and the Pacific Division, up to the first of October, had taken out 75,749 cubic yards from the lock site, and 11,177 cubic yards from the accessory works. The work in the lock site began in June, 1908.

The dyke from Diablo along the prism of the Canal to Miraflores, under construction

for the purpose of retaining the material dredged from the channel, is nearing completion. It runs along the east side of the prism to the lower end of the lock. Sand and stone will be transported from La Boca over a railroad line running upon the embankment originally built as the west toe of the Sosa-Corozal dam, to Diablo, and from Diablo over the Panama railroad tracks to Riley's spur, which leads into the Miraflores lock site at the south end, where the line will branch off on both sides of the lock site, until it reaches the northern end of the locks. From that point the road will run as a single track to Pedro Miguel. The storage bins for material will be located on the branches of the railroad track on both sides of the locks. A considerable amount of the excavation from the lock site at Pedro Miguel has been used in building the roadbed for this railroad, and a dump has been opened alongside the tracks in which all of the excavation can be deposited.

The Canal Medals.

A ton of copper pipe collected from old French excavators and locomotives, some bronze bearings taken from cars, locomotives and excavators, and 200 pounds of tin found in one of the old French warehouses, have been collected and will be sent to the Philadelphia Mint, to be used in casting the bronze medals which are to be presented by the President to employes of the Commission, who have served two years or more on the Isthmus. It is expected that the medals will be ready for distribution early in 1909. The design of the medals and the method of their distribution have not yet been determined.

Money Order Business.

The report of the Chief of the Division of Posts, Customs and Revenues for the month of September shows that 14,822 money orders, amounting to \$429,990.47, were issued, a decrease of \$18,228.28 from the amount reported for August, which was the largest month's business of record in the Zone, and amounted to \$448,218.75. Of the \$429,990.47 in September there was drawn in orders payable in the United States and elsewhere \$317,617.34, and in orders payable in the Canal Zone \$112,373.13. The fees collected amounted to \$1,826.03, and the amount paid and repaid was \$130,670.93.

The largest number of orders, 2,805, was issued at Cristobal, and amounted to \$32,646.51. Empire was second with 2,007 orders, amounting to \$55,912.31; Ancon was third in the number of orders issued, 1,503, but fourth in the amount, \$38,348.45; Gorgona was fourth in orders issued, with 1,433, and third in the amount, \$47,635.23; and Culebra fifth, with 1,307 orders, aggregating \$38,253.99. The average amount of all the orders issued was \$29.01. The largest aver-

age for a single post-office was at Paraiso, with 575 orders, amounting to \$19,750.35, an average of \$34.35 per order, and the smallest was at Bohio, where 42 orders were issued, aggregating \$865.14, an average of \$20.60.

A comparative statement of the money order business transacted at the Zone post-offices for the quarter ending September 30, 1907 and 1908 respectively, is as follows:

	Orders issued.	Amount.	Fees and Stamps.
Quarter ending September 30, 1908....	43,494	\$1,320,011.73	\$22,199.53
Quarter ending September 30, 1907....	32,191	992,086.14	20,228.17
Increase in 1908.....	11,303	\$327,925.59	\$1,971.36
Percentage of increase	35	33	9.75

Office Building for Quartermaster's Depot.

A permanent office building for the Quartermaster's Depot at Mount Hope has been authorized. It will be 100 feet long by 75 feet wide, of the Commission style of architecture, and connected with the storehouse by a covered passageway. In the center of the roof will be a skylight and ventilator, 15 feet by 20 feet. A private office for the Depot Quartermaster, and a record room will be partitioned off in two corners of the building, and the remainder of the office will be a large open room.

French and American Buildings.

An inventory of the buildings in the Canal Zone on August 1, 1908, shows that there were 3,338 of all kinds. When the Americans took possession of the effects of the old French company, 2,149 buildings of various kinds were included in the sale. Of this number it was found profitable to repair and use 1,536. Either because they were so badly out of repair that they were unsuited for any purpose or because they were in the way, 304 of the French buildings have been demolished. There remain unrepaired 337, some of which will be utilized, while others will probably be torn down. The Commission has constructed 1,494 buildings, so that there are now in use in the Canal Zone more old French buildings than American structures. This showing, however, is merely one of units. In general the buildings received from the French were small and ill-suited for other purposes than laborers' barracks, or storehouses. Some of them, however, were in good condition. Of the 91 buildings left by the French at Ancon, 88 were repaired, and some of them are serving as hospital wards. At La Boca 52 out of 65 were worth repairing; at Culebra, 87 out of 113; at Empire, 86 out of 92; at Cristobal, Colon, and Folks River, 159 out of 235.

The buildings constructed by the Americans, although less in number, are more commodious than those left by the French. The Americans have built 561 quarters for

NOTES OF PROGRESS.

(Continued).

gold employes, 93 being of miscellaneous types. Bachelor quarters, with 1,424 rooms, 104 buildings in all, and 360 quarters capable of accommodating 848 families, comprise the bulk of the "gold" quarters. Many of the old French buildings have been turned into quarters for European and negro laborers, and in addition the Commission has built 192 quarters for silver employes. Of this number 141 are barracks for negro bachelors, and some of them will accommodate 80 laborers. There have been constructed 741 buildings for miscellaneous occupancy and use. This number includes Commission hotels, clubhouses, commissaries, lodge rooms and chapels, all municipal buildings, mess halls and mess kitchens, range closets, lavatories, wash houses, 34 office buildings, 75 hospital buildings, 57 shop buildings, and 88 buildings for storage purposes.

Commission Dentists.

At a meeting of the Isthmian Canal Commission on April 27, 1908, the following action was taken:

The Sanitary Department is authorized to employ two competent dentists. These dentists shall be employes of the Commission, have all the privileges and allowances of an employe on the gold roll drawing \$1,800 a year, be furnished by the Commission with suitable instruments and office furniture, but shall receive no salary in money.

In return for these allowances said dentists shall be subject to all the rules and regulations of the Commission, and shall do dental work for employes of the Commission and the Panama railroad and their families at a tariff fixed by the Chief Sanitary Officer. The dentists shall furnish all necessary material for doing dental work, with the exceptions above mentioned.

In accordance with the above, two dentists have been appointed. One is Dr. J. E. Grant, who was graduated from the Louisville (Ky.) College of Dentistry several years ago, and who has been practicing his profession for the past year at Gorgona. He will be stationed there. The second is Dr. O. N. Ruben, who was graduated from the Atlanta (Ga.) Dental College in 1902, and practiced his profession for two years in Georgia. In 1904 he entered the Hospital Corps of the United States Army and served for several years as an assistant to the dental surgeons. Since he has been on the Isthmus he has practiced his profession in connection with his work in the dispensary at Empire. He will be stationed at Culebra.

September Police Report.

The September report of the Chief of Police shows that 639 persons, representing 39 countries, were arrested in the Canal Zone during the month. This is an increase of 151 for the month, there having been 488 arrests in August. Of the 639 persons arrested, 599 were men, and 40 were women, and they were for 45 different offenses. They were divided among the towns of the Zone as follows: Ancon 32, Las Sabanas 2, La Boca 25, Corozal 13, Miraflores 10, Pedro Miguel 7, Paraiso 19, Culebra 64, Empire 87, Las Cascadas 75, Bas Obispo 13, Gorgona 98, San Pablo 16, Tabernilla 24, Bobio 6, Gatun 48, Cristobal 100.

Seventy-one cases were tried in the courts, 14 of which were dismissed, 47 continued, and 10 in which convictions were procured. Of the 10 persons convicted, 5 were fined and 5 sentenced to the penitentiary, 2 for

one year each, 1 for six months, 1 for sixty days, and 1 for thirty days. Eight convicts were discharged from the penitentiary during the month, leaving a total of 112 in the penitentiary on September 30. The number of district prisoners on the same date was 220. The value of the work performed by convicts on roads, etc., amounted to \$1,790.45. The total effective police force on September 30 was 144, and the pay roll amounted to \$17,773.11.

There were 18 violent deaths requiring action by the coroner during the month. Six of these deaths were caused by railroad accidents and 2 by drowning.

Commission Action.

At the meeting of the Isthmian Canal Commission, held September 21, 1908, the following resolution was adopted:

Resolved, That except for causes manifestly beyond prevention by any action of the employe, no exception will be made to the rule embodied in the General Conditions of Employment adopted at the 129th meeting of the Commission, providing that employes not reporting for duty within fifteen days after expiration of leave will forfeit the right to pay for leave period. Employes are expected to report for duty on the expiration of their authorized leave, the additional fifteen days, return within which will preserve their right to pay during leave, being intended to cover all contingencies and not to be considered additional leave without pay.

The rule referred to in the above resolution is as follows:

Employes not reporting for duty within fifteen days after expiration of leave will forfeit the right to pay for leave period.

Transfer of Allotments.

The division engineers have been informed that there will be no transfer of allotments between the three construction divisions of the Department of Construction and Engineering on account of work performed by one division for another. For work performed for the Department of Civil Administration and Sanitation the construction divisions will receive credit by transfer of appropriation. The construction divisions will not, however, receive credit for work performed for the Quartermaster's Department such as the construction of corrals, storehouses and roads, as all of this work is paid for from the appropriation for the Department of Construction and Engineering. In dividing equally between the three construction divisions and the Quartermaster's Department the funds available during the present fiscal year for building construction and municipal improvements, it was the intention that these allotments should fix the amount of work of this character to be performed by each division, and consequently no transfer of allotment can be made.

Flag Stops for Sunday Night Train.

The General Manager of the Panama Railroad Company announces that beginning Sunday, October 11, train No. 30, which leaves Panama at 10 p. m., will stop at any station in the Zone upon request to conductor by a passenger holding a through ticket from Panama. Passengers boarding the train at a flag stop, holding tickets to a station that is not a scheduled stop, do so at their own risk as the train will stop at flag stations only for passengers from Panama.

HEALTH REPORT FOR SEPTEMBER.

Comparison for Three Years.

ANCON, C. Z., October 10, 1908.

To the Acting Chairman and Chief Engineer, Culebra, Canal Zone.

Sir—I herewith forward report of the Sanitary Department for the month of September.

The health conditions continue, I think, to be all that could be expected. I am disappointed that the sick rate had not begun to fall this September as it had done in all previous years. The rates for the past three years, comparing August and September, are as follows:

Month—	Force.	Constantly sick.	Rate per thousand.
1906—August.....	29,955	1,260	42.67
September.....	23,263	1,064	37.74
1907—August.....	40,443	1,174	29.02
September.....	41,062	1,141	27.78
1908—August.....	44,225	1,116	25.24
September.....	45,058	1,130	25.09

However we had the satisfaction of seeing from this table that the rate for this September is considerably less than the rate for the preceding September quoted. The sick rate for September, 1908, is nearly 12 per thousand less than the sick rate for September, 1906. This means, other conditions being the same, that we saved in September, 1908, over September, 1906, in our working force, 16,200 days of sickness.

Taking the death rate of our laboring force, the comparison is equally good:

Month—	Force.	Deaths.	Rate.
1905—September.....	19,655	65	33.52
1906—September.....	28,264	135	57.34
1907—September.....	41,062	98	28.63
1908—September.....	45,058	48	12.78

In our laboring force for the last six months the negro death rate has been almost as low, and in several months lower than the white. Up to three or four months ago the contrary had been the case, the negro death rate frequently being three or four times that of the whites.

During the past month the white death rate in our force was more than twice as great as that of the negroes. For some reason the whites seem very much more exposed to death by accident than do the negroes. Of the 19 deaths among the whites last month, 12 (more than half) were due to violence; of the 29 deaths among negroes, 5 were due to violence.

The death rates among the whites and negroes for the month of September for the past three years has been as follows:

Force.		1906.		Rates.	
White.	Colored.	White.	Colored.	White.	Colored.
5,603	22,661	7	128	15	67.81
11,662	29,400	25	73	25.72	29.79
12,370	32,688	19	29	18.43	10.65

In the three years, the negro death rate has fallen from 67 per thousand to 10 per thousand.

Upon the whole, in our present condition, I would consider the number of cases of malaria as the best index of the conditions of our sanitation. In August, we admitted to our hospitals, among employes, 1,525 cases of malaria; in September, 1,410; a satisfactory improvement for this time of the year. In September, 1907, we admitted in hospitals 1,811 cases of malaria among employes, showing this year an improvement of 401 cases, which indicates a considerable decrease in malaria cases during the year.

No case of yellow fever or bubonic plague has occurred in the Zone of the Canal within the past two years. Very respectfully,

W. C. GORGAS,
Chief Sanitary Officer

FATAL EXPLOSIONS OF DYNAMITE.

Thirty Casualties in Two Accidents.

Twelve men are dead and eighteen are injured as a result of two explosions of dynamite that occurred on the Canal work last week. The first explosion was in Culebra Cut near Empire where five men were killed and eight injured, and the second was near Mindi where seven were killed, ten injured, and one is missing, but it is believed he became frightened and ran away.

The explosion in Culebra Cut occurred about 1.15 o'clock in the afternoon of October 8. Steam shovel 210 was making a cut through some material recently blasted and, it is believed, a shovel tooth struck the cap of an unexploded charge of dynamite. In the explosion David R. Davies, the steam shovel engineer, William Colburn, and Samuel Sobers, pitmen, were killed instantly. William Goodley, who was acting as crane-man, was so badly injured that he died shortly after the accident, and Joseph Carter, a laborer, died from his injuries on October 10. Samuel Goddard, Thomas Trotman, Walter Archer, Aubrey Lane, and Edward Clarke, pitmen; and Adolph Samuels, William Christian, and John Benjamin, laborers, were injured, but it is believed they will recover. All the dead and injured were negroes except the engineer and the crane-man.

David R. Davies was 32 years of age and unmarried. His home was in Girard, Ohio, and he had been working on the Canal since March 9, 1908. A brother, John L. Davies of Culebra, survives him.

William Goodley, the crane-man, was 21 years of age, unmarried, and had been living on the Isthmus since February 2, 1907. His home was at 2544 Hope street, Philadelphia, Pa., where his mother lives. His father, Robert L. Goodley, is an employe of the Commission and lives at Empire.

The explosion near Mindi occurred about 10.30 o'clock in the morning of October 10. The dredges that are making the channel from Limon Bay to Mindi have worked their way into the shore of the bay where the material encountered, blue mud and coral rock, is so hard that it must be blasted before it can be handled economically.

During the morning the blasting party had practically completed its work of preparing a blast of 24,650 pounds of 60 per cent dynamite. One hundred and fifty-four holes, 15-foot centers, 50 feet deep in sand and rock, covering an area of 150 by 200 feet, were almost ready when a thunder shower came up. The men were ordered away and remained until after the shower, when they returned to complete their work. No connection had been made with the battery, although all the holes but two had been connected with the main wires. Without any known cause the blast was exploded, and therefore it is ascribed to a bolt of lightning.

Six negroes, Edward Lord, John Cyrus, Charles Henry, Samuel Archer, Edward Price, and Herbert Sandiford, were killed almost instantly. Benjamin Prescott, also a negro laborer, died at Colon hospital on October 12. One negro laborer, Samuel Brewster, is missing, but it is believed he was uninjured. Two white men, H. T. McCrabbe and J. A. Clark, were injured, but not seriously. Mr. Clark was thrown some distance and his ankle was sprained. Brown Beckles, Garnet Graves, George Eason,

Wesley White, Augustine Murphy, Richard Inness, Henry Best, and William Brewster, negro laborers, were also injured, but will probably recover.

The law providing compensation for employes injured in the service of the Commission was published in full in THE CANAL RECORD of June 17, from which the following extract is taken:

That when on or after August 1, 1903, any person in hazardous employment under the Isthmian Canal Commission is injured in the course of such employment, such employe shall be entitled to receive for one year thereafter, unless such employe, in the opinion of the Secretary of Commerce and Labor be sooner able to resume work, the same pay as if he continued to be employed, such payment to be made under such regulations, as the Secretary of Commerce and Labor may prescribe: Provided, That no compensation shall be paid under this Act where the injury is due to the negligence or misconduct of the employe injured, nor unless said injury shall continue for more than fifteen days. All questions of negligence or misconduct shall be determined by the Secretary of Commerce and Labor.

SEC. 2. That if any artisan or laborer so employed shall die during the said year by reason of such injury received in the course of such employment, leaving a widow, or a child or children under sixteen years of age, or a dependent parent, such widow and child or children and dependent parent shall be entitled to receive, in such portions and under such regulations as the Secretary of Commerce and Labor may prescribe, the same amount, for the remainder of the said year, that said artisan or laborer would be entitled to receive as pay if such employe were alive and continued to be employed: Provided, That if the widow shall die at any time during the said year her portion of said amount shall be added to the amount to be paid to the remaining beneficiaries under the provisions of the section, if there be any.

A decision of the Comptroller of the Treasury, published in THE CANAL RECORD of September 16, limits the benefit of this law to persons whose injuries "continue" fifteen days or more.

Canal Zone Treasury.

The Canal Zone Treasury was separated from the Disbursing Office on October 1, and all revenues under the postal service, the courts and regular taxes, such as license, land rents, and building permits, are now paid into the Treasury. These revenues amount to about \$300,000 a year. Congress directed in the Sundry Civil Appropriation Act of May 27, 1903, that these revenues be expended as follows:

The revenues derived from the postal service to the maintenance of that service; the remaining revenues after setting aside a miscellaneous and contingent fund of ten thousand dollars, to the maintenance of the public school system in the Zone; to the construction and maintenance of public improvements within the Zone; to the maintenance of the administrative districts, including payment of salaries and wages incident thereto; to the maintenance of Canal Zone charity patients in the hospitals of the Isthmian Canal Commission, and to the maintenance of administrative district prisoners.

Inspection by Newspaper Men.

The General Manager of the Panama railroad took a party of Isthmian newspaper men and the local correspondents of the Associated Press and United Press, on a tour of inspection of the Canal and railroad relocation work on October 11. On each of the three construction divisions an engineer acquainted with the various phases of the work joined the party and assisted in explaining the various features.

The steamship *Silvia*, from Baltimore, arrived at Colon October 7 with 1,000,000 pounds of dynamite; 300 tons of pipe and pipe fittings; 400 cases and 600 drums of gasolene; 1,200 tons of steel bars and plates; 350 kegs of track spikes; 36,577 pieces of drain tile, and an assorted cargo of furniture, oil and machinery.

LETTERS FROM THE LINE.

(Communications to this column must be signed in each instance with the name and address of the writer.)

Memorial Resolutions.

THE CANAL RECORD:

Will you kindly publish the following resolutions.

E. M. PULLEN,

President, Local No. 5, A. U. of S. S. & D.

Whereas, Our Heavenly Father has removed from our midst Brother David R. Davies; therefore be it

Resolved, That Panama Local, No 5, Associated Union of Steam Shovel and Dredgemen has lost from its ranks a most worthy brother, respected and loved by his acquaintances and friends, and whose sterling qualities and noble character have endeared him to every member of our order; and be it further

Resolved, That we extend our sincere and heartfelt sympathy to his sorrowing relatives in their hour of bereavement; and be it

Resolved, That a copy of these resolutions be spread upon the records of our order and copies sent to each of his relatives.

COMMITTEE ON RESOLUTIONS,

Associated Union of Steam Shovel and Dredgemen.

Culebra, October 11, 1908.

Card of Thanks.

THE CANAL RECORD:

I wish to thank the steam shovel engineers and crewmen who participated in the funeral of my son on October 9.

R. L. GOODLEY.

Empire, C. Z., October 11, 1908.

Notice to Steam Shovel Men.

THE CANAL RECORD:

President George Buchan, of Local No. 19, requests all members of the I. B. of S. S. and D. M. to attend a meeting on Sunday, October 18, at 2 p. m., at the Panazone, Panama.

S. I. LYONS,

Secretary-Treasurer.

Empire C. Z., October 5, 1908.

Ohio Club.

THE CANAL RECORD:

A temporary organization for an Ohio Club at Empire has been effected, and a meeting to form a permanent organization is called for Friday, October 16, 1908, at the Commission Clubhouse, at 8 p. m. Buckeyes turn out please.

J. P. MEAD,

Temporary Chairman.

Empire, C. Z., October 9, 1908.

Notice to Kangaroos.

All Kangaroos in good standing desiring to become charter members Ancon Court, No. 7, are requested to meet on Sunday, October 18, at 1 p. m., in the hall over the office of the District Quartermaster in Ancon (near Hotel Tivoli), for the purpose of electing its officers. By order of

SAM. B. DANNIS.

Where Is John Lomasney?

THE CANAL RECORD:

I want to know the whereabouts of John Lomasney, of New York city. When last heard from, one year ago, he was employed as a cook in the I. C. C. hotel in Empire. Will anyone, who may know of his whereabouts, communicate with the undersigned.

A. O'DONNELL.

Tabernilla, C. Z., October 6, 1908.

THE WATER SUPPLY.

Billion and a Half Gallons for the Dry Season.

Water is flowing over the spillway at Rio Grande and Carabali, two of the four reservoirs that supply most of the settlements in the Canal Zone. That at Brazos Brook is almost full; and the fourth, Camacho, already contains 130,000,000 gallons. Until the end of the rainy season the daily consumption will be much less than the amount collected by the almost daily rains. The amount of water actually impounded in the four big reservoirs at their capacity is 1,513,537,000 gallons, and the average daily consumption in the fiscal year 1908, was 1,249,625 gallons. These reservoirs will be full at the beginning of the dry season, and on the basis of daily consumption remaining the same as it was in 1908, the supply will be twice as great as the consumption.

Whenever the population is sufficient to justify or make necessary the maintenance of a reservoir, one has been built. The city of Panama and the group of American settlements near it, including Ancon, La Boca, East La Boca, Corozal, Miraflores, Pedro Miguel, Paraiso, and Culebra, are supplied from the Rio Grande reservoir, which is located between Culebra and Paraiso. Camacho reservoir, in the hills west of Empire, supplies Empire, Las Cascadas, and Bas Obispo. Carabali reservoir, near Gorgona, supplies Matachin, Bas Matachin, Gorgona, Juan Grande, and Mamei. From Mamei north to Gatun most of the Canal prism lies in Gatun Lake, and no American settlements of sufficient size to require a reservoir supply of water are located in this territory. Colon, Cristobal, and Mount Hope, are supplied from Brazos Brook reservoir. Other American settlements, such as San Pablo, Tabernilla, and Gatun, are supplied by water pumped from nearby streams.

The water in the reservoirs is drawn from territory carefully watched by inspectors, whose duty it is to see that the basin is kept clean. Vegetation is cut to the water's edge before the beginning of the rainy season, and a bacteriologist from the Bureau of Plant Industry in Washington keeps constant watch to discover evidences of infection and to anticipate any unpleasant odor, or taste, that might be given to the water by alga growth.

Rio Grande reservoir is a lake 65 acres in area, formed by building a dam across the mountain stream known as the Rio Grande. It has a drainage area of 2,015 acres and the surface of the water, when level with the spillway, is 238 feet above mean sea-level. Its storage capacity is 496,670,000 gallons, and the average daily consumption from this source in the fiscal year 1908 was 2,574,000 gallons. At the close of the dry season, when the water had reached its lowest level, on May 1, 1908, there remained in this reservoir 228,423,000 gallons of water, an amount sufficient for three months more had the supply not been replenished by the heavy rains from that time forth. Water from this reservoir is supplied by pumping to the higher levels in the villages of Culebra, Paraiso, Cucaracha, and

Ancon. A pressure filter located at Ancon filters the water that is supplied to the city of Panama, and an additional unit for this plant is contemplated in order that filtered water may be supplied to the American settlements at Ancon and La Boca.

Camacho reservoir is formed by impounding the Camacho River, the spillway of the dam being at an elevation of 365 feet above mean sea-level. The watershed from which the supply is collected, is 592 acres in area, and the area of the reservoir at the elevation of the spillway is 38.36 acres. The capacity at this elevation is 295,867,000 gallons, all but about 16,000,000 of which is available for distribution through the main which taps the reservoir at elevation 325. The annual consumption from this reservoir in 1908, was 131,765,000 gallons, and when the water was at its lowest point, at the close of the dry season, there remained a supply sufficient for 75 days. Water is supplied by gravity to all points except the higher levels of Empire, which are supplied by pumping.

Carabali is the smallest of the Zone reservoirs, its capacity being only 80,000,000 gallons. It is formed by a dam across Carabali River, and the spillway is at elevation 75.3. Its drainage area is 1,552 acres, and the area of the water at spillway elevation is 23 acres. It is adequate to supply the present demands, but the growth of Gorgona and the hamlets near it has been so great that an additional reservoir has been located in the valley immediately above the present reservoir at an elevation of 110 feet. The new reservoir, if constructed, will have a capacity of 153,000,000 gallons.

The reservoir which supplies Colon, Cristobal, and Mount Hope is located in the valley of Brazos Brook, near Mount Hope, at an elevation of 48.5 feet above mean sea-level. It has a drainage area of 640 acres and a lake area of 120 acres. The capacity is 641,000,000 gallons, and the consumption for the fiscal year 1908 was 457,544,000 gallons. Water from this reservoir is filtered before being delivered, and on account of the large amount of vegetable matter which it carries in suspension, it will be passed through a sedimentation basin before going to the filters.

At Tabernilla a pumping station is maintained, from which water taken from the Frijoles River, a hill-fed stream, is pumped to the hamlets between San Pablo and Frijoles. A distillation plant at the pumping station furnishes 1,000 gallons of distilled water daily to the American residents at Tabernilla, and the pumping station supplies in all 500,000 gallons each day. A similar pumping station near Gatun supplies that village with water taken from the Gatuncillo River, from which it is pumped to a tank located on one of the hills in the village.

For general purposes it is sufficient to say of the water that tests show it is healthful. For those who may inquire more deeply, the following chemical and bacteriological data show the differences in the chemical and bacterial content at the end of the wet and dry seasons. The data given for the end of the dry season 1908, are compiled from samples taken at Rio Grande, Camacho, and Carabali on May 20, and at Brazos Brook on May 21. The data for the end of the rainy season are for samples taken on

November 16, 1907, at Rio Grande, Camacho, and Brazos Brook, and on November 20, at Carabali.

PERIOD OF GREATEST DILUTION—END OF WET SEASON.

	PARTS PER MILLION.			
	Rio Grande	Camacho.	Carabali.	Brazos Brook.
Color.....	30	20	25	23
Alkalinity.....	45	54	62	28
Chlorine.....	1.0	1.5	3.0	3.5
Oxygen Cons.....	4.3	3.8	3.7	4.3
Nitrogen As—				
Free Amm.....	0.047	0.043	0.028	0.027
Alb. Amm.....	0.231	0.214	0.388	0.324
Nitrites.....	None	None	None	None
Nitrates.....	Trace	Trace	Trace	0.07
Total solids.....	103	111	137	90
Loss on ignition.....	41	46	47	48
Iron.....	0.3	0.1	0.1	0.1

PERIOD OF GREATEST CONCENTRATION—END OF DRY SEASON.

	PARTS PER MILLION.			
	Rio Grande	Camacho.	Carabali.	Brazos Brook.
Color.....	20	15	25	100
Alkalinity.....	67	73	61	30
Chlorine.....	4.0	4.0	6.0	5.5
Oxygen Cons.....	4.1	4.2	6.3	5.3
Nitrogen As—				
Free Amm.....	0.072	0.064	0.180	0.292
Alb. Amm.....	0.280	0.403	0.428	0.456
Nitrites.....	0.003	Trace	0.003	0.001
Nitrates.....	None	None	Trace	Trace
Total solids.....	113	115	139	89
Loss on ignition.....	26	29	35	37
Iron.....	0.2	0.3	0.3	2.0

BACTERIOLOGICAL DATA.

Date.	Source.	Bacteria per C. C.
Nov. 16, 1907....	Rio Grande Reservoir....	950
Nov. 16, 1907....	Camacho Reservoir.....	1,900
Nov. 20, 1907....	Carabali Reservoir.....	3,300
Nov. 16, 1907....	Brazos Brook Reservoir...	13,500
May 20, 1908....	Rio Grande Reservoir....	130
May 20, 1908....	Camacho Reservoir.....	250
May 20, 1908....	Carabali Reservoir.....	300
May 20, 1908....	Brazos Brook Reservoir...	3,500

University Club Election.

The annual meeting for the election of officers of the University Club will be held in the clubhouse, Panama, on Sunday, October 18. The ballot box will be open from 9 a. m. to 3 p. m., Panama railroad time. On Saturday evening, October 17, a smoker will be given in the clubhouse, and a special train for the free use of members along the line of the Canal will leave Colon at 5.50 p. m., stopping at Gatun, Bohio, Tabernilla, San Pablo, Gorgona, Bas Obispo, Las Cascadas, Empire, Culebra, Pedro Miguel, Miraflores, and Corozal. This train will not return from Panama on Saturday night, inasmuch as the annual meeting occurs on the following day, and it is thought that members who attend the smoker will desire to remain over night in Panama.

Commission Clubhouses.

On Tuesday evening, October 6, the Culebra indoor baseball and basketball teams visited Empire. Culebra won the baseball game, but Empire took the basketball by a score of 28 to 13. During the intermission gold medals were presented to the Empire basketball team of last season in honor of their winning the first championship of the Canal Zone. Members of the team were: G. M. MacAdam, captain; R. B. Potter, G. W. Lyon, O. J. Reech, J. M. LaRose and D. Fletcher.

Thursday evening, October 8, an association smoker was held at Gorgona. The program was made up of vocal and instrumental solos, selections by the orchestra, a boxing bout, wrestling bout, basketball game and a supper consisting of coffee, sandwiches, pie and cake.

Saturday evening, October 10, a billiard and pool team, consisting of five men from Cristobal, played a tournament with Gorgona's team. An interesting feature of the match was the close scores—81-100, 86-100, 97-100, 98-100. Cristobal won two out of three in pool; the teams broke even on billiards, each taking a game.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

Monday, October 12, was the first anniversary of the organization of the Canal Zone Federation of Women's Clubs, which was effected at the Hotel Tivoli. At that meeting delegates were present from seven of the eight clubs which had been organized at the different towns in the Zone, as were also a number of visitors. The organization was created under the direction of Miss Helen Varick Boswell, and some of the officers elected by the delegates are still holding office, notably the president, Mrs. Lorin C. Collins, and two vice-presidents, Mrs. W. C. Gorgas and Mrs. Chester Harding. A number of new officers have been elected, as many of the charter members have left the Isthmus. During the year the organization has been placed on a working basis and divided into departments for the unification of club effort.

Three meetings of the Federation have been held. The first was at Cristobal on January 4. The morning session was devoted to reports and general Federation business, and in the afternoon a social session was held with music and addresses, followed by a reception. The second meeting of the Federation was held at Empire on the invitation of the local Woman's Club on April 18. The business meeting was followed by a reception tendered to the honorary president, Mrs. George W. Goethals, at which more than 300 women were present. The third meeting was held on September 28, at Gorgona, and was attended by about 100 women, including guests.

The Federation includes at present eight clubs, Ancon, Pedro Miguel, Culebra, Empire, Las Cascadas, Gorgona, Gatun, and Cristobal, and has a total membership of about 500.

The Cristobal Woman's Club opened its regular session with a meeting on October 7, in the Commission clubhouse, with a good attendance. In the absence of the president the second vice-president, Mrs. Hiram J. Slifer, presided, and gave a short address of welcome to the members. Mrs. W. J. Rodman was elected treasurer, and seven new members were admitted. The report of the delegate to the biennial meeting in Boston was read by Mrs. Thomas E. Brown, Jr. At the close of the business meeting a concert program was given, in which Mrs. Frank Wright, Mrs. Frank Ulrich, Miss Anne Palmer, and Miss Ulrich took part. Tea was served and the social half hour was enjoyed by the members and their guests.

The Culebra Woman's Club announces the arrival of the books ordered for the course of study which is to be the winter's work. The course provides for a study of Continental countries, and England, Ireland, and Scotland. The next regular meeting of the club will take place on Thursday, October 15. It is desired that all members and prospective members who are interested in the course should be present to arrange the time of meeting and the work for the year.

The Isthmian Dancing Club of Culebra gave its regular monthly dance at the clubhouse on Saturday evening, October 10.

The wedding of Miss Mamie Calvit, daughter of the president of the Gorgona Woman's Club, to Mr. Theodore Sundquist took place at the residence of the bride's

parents on Wednesday evening, October 7, the ceremony being performed by the Rev. J. H. Sobey. A large number of guests were present. Mr. and Mrs. Sundquist will live at Gorgona.

The annual meeting of the Ancon Woman's Club was held at the Hotel Tivoli on Wednesday afternoon, October 7, when there was a large attendance. Among the important reports was that of the chairman of the library committee who placed the books in circulation. The books are exchangeable only on club days, and the usual fine of five cents a week will be imposed for the retention of a book over the period between the two meetings. Mrs. A. R. Bennett was appointed permanent chairman of the library committee, and Mrs. A. R. Stroup, assistant librarian. A standing rule will be adopted which will make the librarian a member of the governing board. The club library is small, but contains some of the most recent popular works of fiction, as well as a small selection of standard works. It is hoped that this department of the club will be increased as the year advances.

Interest in the election of officers for the year ran high and the voting by ballot resulted in the following selections: President, Mrs. C. C. McCulloch, Jr.; first vice-president, Mrs. H. R. Trask; second vice-president, Mrs. B. W. Payne; recording secretary, Mrs. Charles W. Boxer; corresponding secretary, Mrs. W. T. Dozier; treasurer, Mrs. R. W. Fenn. Meetings of the different departments for the purpose of electing their chairmen are being held and the governing board, which includes the officers, heads of departments and one director from each department, will meet before October 21 to arrange its work for the year. It has been decided to unite the educational and literary departments, at least during the first half of the year, and meetings of these combined departments will be held regularly.

The members of the Ancon Nurses' Library have decided to sell their books in favor of the projected Ancon Library Association, and the four hundred or more volumes of which it is composed will be sold at a private auction among the members of the hospital staff, and later will be open to outside purchasers.

Election of officers for the Pedro Miguel Woman's Club for the next six months was held at the meeting on October 7 at the club rooms. The following were elected: President, Mrs. A. L. Waters; secretary, Mrs. W. I. Barnes; treasurer, Mrs. W. J. Piper. During the meeting several matters of public importance were taken up for discussion. Twenty-five dollars was voted for the piano fund as a result of the recent entertainment. The meeting on Wednesday, October 14, will be entirely social, a reception being given to the retiring and to the newly elected officers.

A dance was given by the hospital staff at Colon Hospital on Friday evening, October 9, to which a number of residents of Cristobal were invited.

The Cristobal Bachelors' Club will give a dance at the Commission clubhouse on Saturday evening, October 17.

The Panama Railroad Company has completed the furnishing of its quarters for bachelor employes in Panama. The quarters will accommodate forty men.

PERSONAL.

Surgeon H. R. Carter, P. H. and M. H. S., Director of Hospitals, accompanied by his wife and daughter, sailed from Colon on the *Heredia*, October 6, for a leave of absence of six weeks, to be spent in Costa Rica. During Dr. Carter's absence Maj. C. C. McCulloch, Jr., will act as Director of Hospitals.

Mr. Caleb M. Saville, assistant engineer, of Culebra, accompanied by his wife and son, returned to the Isthmus on the R. M. steamship *Atrato* on October 11.

Lieut. Frank O. Whitlock, 14th Cavalry, U. S. A., arrived on the *Esperanza* on October 8, and has been assigned to duty as assistant to the Subsistence Officer. Mr. Whitlock was graduated from the Military Academy at West Point in 1900, and since then has served at Columbus Barracks, in the Phillipine Islands, and as an instructor at the Military Academy, where he has been since 1903. For a short time in 1905 he was assigned to duty on the Isthmus.

Mr. Henry Goldmark, designing engineer, and a force of ten assistants who have been transferred from the Washington office to Culebra, arrived on the *Esperanza* on October 8. They will be under the Direction of the Assistant Chief Engineer.

Mr. G. B. Strickler, Resident Engineer at Corozal, accompanied by Mrs. Strickler, sailed for the States on the *Finance*, October 8.

Among the passengers returning to the Isthmus on the *Esperanza*, which arrived at Cristobal on October 8, were: Maj. Edgar Jadwin and family of Gatun, A. B. Nichols of Culebra, Dr. Perry B. Preston of Paraiso, and Dr. Albert R. Warner of Colon Hospital.

Among the passengers on the *Cartago*, which arrived at Colon on October 8, from New Orleans, were: Dr. Robert E. Noble and wife, and Dr. James M. Melton of Ancon, and Mrs. A. S. Zinn and family of Empire.

Obituary.

William J. McKee, of Paraiso, died at Ancon hospital on October 8, of pernicious malarial fever. He was a naturalized American citizen, having been born in Ireland in 1863, and had been on the Isthmus for four months. He was unmarried. His nearest relative was a brother, Robert McKee, who lives at Newcastle, England.

Cristobal Union Sunday School.

The Cristobal Union Sunday School, which was organized about a year ago, was reorganized on Sunday, October 4, with the following officers: M. J. Stickel, acting superintendent; C. L. Van Zant, secretary; Miss Florence Fuller, Miss Goodrich, Mrs. M. C. Smith, Miss May Hammond, and Messrs. Riddle, Stickel and Judge Thomas E. Brown, Jr., teachers; Miss Louise Kurath, Mrs. Thomas E. Brown, Jr., Mrs. J. A. Smith and Mr. A. A. Simka, substitute teachers. The International lessons are used, and the school is intended for the benefit of all children not enrolled in other Sunday schools. The annual rally took place on October 10, when an address was made by Mrs. Hiram J. Slifer.

The steamship *Eastfields*, from Gulfport, arrived at Colon October 8 with 54,975 linear feet of piling and 167,009 feet of lumber.

STEAM SHOVEL RECORDS.

Work of the Shovels in September.

The steam shovels at work on the Canal excavated 1,714,995 cubic yards of material in September. A new record for excavation in one day was made on the last day of the month, when the 52 shovels at work in the Central Division took out 63,418 cubic yards, an average of 1,220 cubic yards per shovel. The high record for the month was made by shovel 217, at work in the Culebra District, which took out 52,892 cubic yards in 25 days, an average of 2,116 cubic yards a day. The best record for a shovel in the 70-ton class was made by shovel 102, which excavated 36,842 cubic yards of rock from the lock site at Gatun. Shovel 134 at work at the same place took out 35,560 cubic yards. Shovel 209, at work in the Central Division at Pedro Miguel, made the highest record for one day by excavating 3,100 cubic yards of soft rock on September 28.

Monthly records are computed by place measurement, while the daily records are based on car measurement. The best records for the month and for one day in each section of the work are shown below:

Best Records for the Month.

CENTRAL DIVISION.

TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
114	21,282	11,971	33,252	25
253	6,629	26,517	33,146	25

GORGONA DISTRICT.

256	33,884	13,840	47,724	25
255	Not cls'f'd	Not cls'f'd	31,781	25

BAS OBISPO DISTRICT.

211	4,099	36,889	40,988	25
116	16,712	16,712	33,424	25

EMPIRE DISTRICT.

207	3,178	38,613	41,791	25
262	1,722	32,716	34,438	24

CULEBRA DISTRICT.

217	7,400	45,492	52,892	25
259	.....	45,723	45,723	25

PEDRO MIGUEL.

209	3,166	36,412	39,578	24
264	6,526	16,790	23,316	18

OBISPO DIVISION.

126	22,829	22,829	21
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ATLANTIC DIVISION.

MINDI.

133	5,173	18,195	23,368	25
101	5,586	3,153	8,744	20

GATUN LOCKS.

102	.....	36,842	36,842	25
134	6,219	29,341	35,560	25

SPILLWAY—GATUN DAM.

251	1,807	16,313	18,120	23
135	6,792	7,433	14,225	23

PACIFIC DIVISION.

MIRAFLORES LOCKS.

118	Not cls'f'd	Not cls'f'd	18,410	22
151	Not cls'f'd	Not cls'f'd	18,700	24
153	7,021	12,349	19,370	23
258	Not cls'f'd	Not cls'f'd	32,125	24

PEDRO MIGUEL LOCKS.

130	10,610	.....	10,610	21
222	3,523	12,097	15,620	19
50	1,745	.....	1,745	4

Best Records for One Day.

CENTRAL DIVISION.

Shovel No.	Location	Date.	Character material.	Cubic yds.
253	Tabernilla	Sept. 23	Rock	2,220
115	Tabernilla	Sept. 4	Rock and earth	2,070
256	Gorgona	Sept. 29	Rock and earth	2,550
255	Gorgona	Sept. 4	Earth	2,320
211	Bas Obispo	Sept. 29	Earth	2,360
252	Bas Obispo	Sept. 31	Earth	2,040
219	Empire	Sept. 8	Earth	2,480
207	Empire	Sept. 15	Rock and earth	2,400
259	Culebra	Sept. 30	Rock and earth	2,670
266	Culebra	Sept. 15	Earth	2,600
209	Pedro Miguel	Sept. 28	Soft rock	3,100
257	Pedro Miguel	Sept. 1	Soft rock	1,480

ATLANTIC DIVISION.

134	Gatun Locks	Sept. 1	Clay	2,430
102	Gatun Locks	Sept. 2	Rock	2,344
251	Gatun spillway	Sept. 19	Clay and rock	1,700
135	Gatun spillway	Sept. 10	Clay and gravel	1,640
133	Mindi	Sept. 17	Clay and rock	1,505
101	Mindi	Sept. 25	Clay and rock	791

PACIFIC DIVISION.

153	Miraflores Locks	Sept. 26	Not classified	1,360
258	Miraflores Locks	Sept. 11	Not classified	2,570
130	Pedro Miguel	Sept. 25	Not classified	830
222	Pedro Miguel	Sept. 19	Not classified	1,280
157	Cardenas Hill	Sept. 15	Not classified	1,170

NOTE—Shovels in the one-hundred class are 75-ton Bucyrus and Model 60 Marions with dippers of a capacity of 2½ cubic yards. Shovels in the two-hundred class are 95-ton Bucyrus and Model 91 Marions with dippers of a capacity of 5 cubic yards. Shovels in the fifty-class are 45-ton shovels with dippers of a capacity of 1¾ cubic yards. These shovels are under steam for eight hours per day, but are not actually worked during this entire period. Time being lost by the necessity of moving the shovel forward, blasting stone too big for the shovel to handle, keeping the shovel supplied with cars, etc.

OFFICIAL CIRCULARS.

Changes in Department of Civil Administration.

CULEBRA, C. Z., September 17, 1908.

Under authority of the Executive Order of the President of January 6, 1908, the Department of Revenues, in the Department of Civil Administration of the Isthmian Canal Commission, shall hereafter be known as the Division of Posts, Customs and Revenues of the Department of Civil Administration.

The fire department shall hereafter be known as the Division of Fire Protection of the Department of Civil Administration.

The Department of Police and Prisons shall hereafter be known as the Division of Police and Prisons of the Department of Civil Administration.

The title of the head of the Division of Fire Protection shall be Fire Chief.

Effective September 1, 1908.

GEO. W. GOETHALS,
Chairman.

Approved:
LUKE E. WRIGHT,
Secretary of War.

Assistant Subsistence Officer.

CULEBRA, C. Z., October 8, 1908.

CIRCULAR No. 216.

First Lieutenant Frank O. Whitlock, Fourteenth Cavalry, having reported for duty, in accordance with S. O. No. 208, current series from the War Department, is hereby appointed Assistant Subsistence Officer, reporting to Major E. T. Wilson, Subsistence Officer.

H. F. HODGES,
Acting Chairman.

Economy in Foundry Operation.

CULEBRA, C. Z., October 8, 1908.

CIRCULAR No. 215.

Under present conditions of operating the foundry at Gorgona necessitating the use, in large part, of new pig iron, it will be more economical hereafter to purchase in the United States grate bars and similar small castings, the need for which can be anticipated. Requisitions should be prepared and forwarded to the Chief Quartermaster for from six months' to a year's supply of such castings as will be required. The foundry at Gorgona will turn out

only such of these castings as will be necessary to fill requirements until the receipt of castings on order.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Correspondence on Requisitions.

CULEBRA, C. Z., October 10.

CIRCULAR No. 217:

Whenever it becomes necessary for officials on the Isthmus to enter into correspondence relative to requisitions covering purchases in the United States such correspondence shall be conducted through the Chief Quartermaster, in order that proper records may be kept in his office, and the practice of corresponding with the General Purchasing Officer or contractors direct is prohibited. The Chief Quartermaster will also be furnished copies of all communications relating to purchases passing between the Chairman and the General Purchasing Officer direct.

H. F. HODGES,
Acting Chairman.

Transfers and Appointment of District Quartermasters.

CULEBRA, C. Z., October 6, 1908.

TO ALL CONCERNED:

The following transfers and appointment are announced, effective October 10:

J. B. Jeffries, District Quartermaster at Empire, to District Quartermaster at Culebra.

C. P. Allen, District Quartermaster at Culebra, to District Quartermaster at Empire.

J. A. Simmons is appointed Assistant District Quartermaster at Culebra.

C. A. DEVOL,
Chief Quartermaster.

Auction of Public Animals.

OFFICE OF THE CHIEF QUARTERMASTER,
CULEBRA, C. Z., October 7, 1908.

Notice is hereby given that there will be sold at public auction at the Ancon corral, at 3 o'clock p. m., October 24, to the highest bidder, the following described public animals, which have been condemned and ordered sold:

- Dark brown American mare mule, No. 280.
- Light bay American gelding mule, No. 279.
- Black American gelding mule, No. 240.
- Dark brown American mare mule, No. 321.
- Brown American mare mule, No. 281.
- Light brown American mare mule, No. 330.
- White native stallion, No. 93.
- Dun native stallion, No. 102.
- Black Chilean mare mule, No. 194.
- Mouse-color American mare mule, No. 164.
- Black native stallion, No. 46.
- Gray native stallion, No. 56.
- White native stallion, No. 79.
- Bay native gelding, No. 51.
- Two American colts, aged 5 months.

There will be sold, under same conditions, at the Cristobal corral, on the same day and at the same hour, the following described public animals, which have been condemned and ordered sold:

- Light brown native gelding mule, No. 138.
- Dark brown American gelding mule, No. 235.
- Dark bay native gelding mule, No. 28.
- White native stallion, No. 83.
- Bay American gelding, No. 1.

The animals may be seen at the corrals named, and full information may be obtained from the District Quartermasters at Ancon and Cristobal, respectively.

C. A. DEVOL,
Chief Quartermaster.

Misdirected Letters.

Division of Dead Letters,
Ancon, C. Z., October 13, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

- | | |
|--------------------|--------------------|
| Bartley, J. J. | Kelly, M. J. |
| Bork, F. A. | Ingowski, Julius |
| Buckingham, Chas | Lyons, Patric |
| Caldwell, John | Manning, Chas. S. |
| Cantor, Mrs. C. | Mayer, J. |
| Chambers, John W | Metzger, Frederick |
| Colechester, C. C. | Montague, Chas. H |
| Cornish, L. D. | Muller, Henry |
| Curtis, A. S. | McLeod, John |
| Day, Ed | Peters, Carl |
| Ellis, David E. | Rogers, Ernest L. |
| Eppley, C. Dean | Sands, F. W. |
| Foster, W. F. | Smith, Chester K. |
| Fritzsche, P. A. | Souther, Alex |
| Glass, Lulu V. | Smythe, Thos. A. |
| Haggerty, John | Swain, B. E. |
| Hausser, Ernest | Thompson, Wm. G. |
| Hurley, W. W. | Wilson, Geo. Frank |

The following steamers have recently arrived at La Boca: October 5, *Rameses*, from northern ports; October 5, *Indiana*, from San Francisco. Departures were: October 3, *U. S. S. Buffalo*, for San Francisco; October 5, *Tucapel* and *San Juan*, for Valparaiso; October 7, *Rameses*, for southern ports.

PERFORMANCE OF STEAM SHOVELS

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS

The subjoined tables show the monthly records of steam shovel work in Canal excavations since American occupation

ATLANTIC DIVISION

COLON DISTRICT					GATUN LOCKS					GATUN SPILLWAY							
Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
1907—					1907—					1907—							
July	1	13	56	731	11.12	August	3.70	27	784	21,176	16.37	July	1.33	26	423	10,998	11.12
August	2	27	283	7,629	16.37	September	4.12	24	884	21,219	8.03	August	2.00	27	498	13,433	16.37
September	2	24	601	14,419	8.03	October	5.00	27	1,013	27,355	19.27	September	2.00	24	757	18,158	8.03
October	2	27	571	20,539	19.27	November	5.00	24	1,014	24,327	14.27	October	2.00	27	745	20,118	19.27
November	2	24	833	20,002	14.27	December	5.00	25	1,286	32,159	5.53	November	2.00	24	854	20,494	14.27
December	2	25	939	23,473	5.53	1908—					December	2.00	25	1,395	34,878	5.53	
1908—					1908—					1908—							
January	3	26	1,218	31,418	3.18	January	5.72	26	1,302	33,840	3.18	January	3.00	26	1,264	32,863	3.18
February	3	24	1,368	32,816	1.29	February	6.01	24	1,223	29,333	1.29	February	3.75	24	1,183	28,402	1.29
March	3	26	1,574	40,925	2.81	March	7.00	26	1,206	31,366	2.81	March	4.54	26	1,311	34,149	2.81
April	3	25	1,349	33,718	1.47	April	5.25	25	1,288	32,210	1.47	April	5.00	25	1,184	29,598	1.47
May	3	25	1,087	27,167	17.30	May	4.88	25	1,156	28,891	17.30	May	4.42	25	908	22,701	17.30
June	1.8	26	684	17,790	13.33	June	5.76	26	1,129	29,364	13.33	June	3.50	26	1,117	29,045	13.33
July	1.54	26	587	15,269	13.67	July	3.77	26	1,396	36,291	13.67	July	3.00	26	981	25,514	13.67
August	.88	26	741	18,532	15.88	August	3.50	26	1,431	37,218	15.88	August	2.85	26	783	20,351	15.88
September	1.80	25	713	17,840	8.52	September	3.44	25	1,218	30,459	8.52	September	2.08	25	792	19,812	8.52

CENTRAL DIVISION

CULEBRA SECTION						CHAGRES SECTION							
Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cubic yards).		Rainfall (inches).		Maximum temperature in sun at Empire (degrees Fahrenheit).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
			Per day.	Per month.	Empire.	Culebra.							
1906—						1906—							
January	12.83	26	363	9,430	1.28	1.19	104	August	0.15	27	716	19,333	12.20
February	12.48	23	587	13,494	0.57	0.64	108	September	0.92	24	976	23,420	14.71
March	12.37	27	716	19,335	0.45	1.34	110	October	2.22	27	428	11,544	13.62
April	12.33	24	720	17,289	11.42	8.43	118	November	3.00	24	612	14,681	9.85
May	12.41	27	581	15,684	7.54	7.25	118	December	6.12	25	630	15,756	2.26
June	14.81	26	539	14,026	6.92	8.94	123	1908—					
July	16.64	25	378	9,441	14.61	20.26	127	January	8.11	26	797	20,720	0.20
August	16.93	27	536	14,461	11.84	12.97	132	February	10.33	24	798	19,144	0.11
September	21.35	24	568	13,664	7.41	6.22	130	March	11.47	26	1,082	28,094	0.41
October	22.67	27	532	14,373	3.97	8.46	128	April	11.76	25	1,121	28,018	1.81
November	20.46	24	459	10,833	21.05	19.19	120	May	11.63	25	608	20,197	13.18
December	22.68	25	491	12,267	8.15	9.09	108	June	12.23	26	1,013	26,341	6.55
1907—						1907—							
January	31.04	26	702	18,248	0.08	0.00	104	*July					
February	39.87	23	674	15,966	0.13	0.49	108	*After July 1, 1908, the old Chagres and Culebra divisions were consolidated in the Central Division. No separate record for steam shovels in the old divisions has been kept since that date. Figures for July and August under "Culebra Section" include work done in the whole Central Division.					
March	43.88	25	741	18,530	0.16	0.08	105	Summary for the month of September, 1908: Average number of shovels at work, 63.59. Average output per shovel per day, 885 cubic yards. Average output per shovel per month, 22,134. The working day for steam shovels is eight hours.					
April	44.12	26	765	19,884	0.09	0.04	110						
May	31.70	26	833	21,674	6.22	7.45	118						
June	38.28	25	651	16,266	13.53	14.74	118						
July	43.38	26	680	17,670	9.85	9.42	118						
August	39.70	27	729	19,680	11.28	11.81	120						
September	38.50	24	811	19,468	10.86	11.38	123						
October	37.63	27	813	21,963	15.44	15.27	123						
November	41.88	24	784	18,818	10.40	6.91	123						
December	42.72	25	965	24,113	1.47	2.30	124						
1908—						1908—							
January	43.42	26	1,084	28,177	0.75	0.91	125						
February	43.67	24	1,186	28,475	0.00	0.01	124						
March	42.19	26	1,171	30,451	0.41	0.13	125						
April	41.28	25	1,202	30,031	1.36	1.67	127						
May	41.56	25	918	22,948	12.91	12.63	129						
June	42.92	26	1,011	26,281	8.21	8.76	126						
July (old Chagres Division included)	52.57	26	1,071	27,848	11.79	13.23	121						
August do do	52.58	26	1,122	29,184	8.11	7.74							
September do do	49.68	25	1,178	29,443	9.76	13.74							

PACIFIC DIVISION

PEDRO MIGUEL LOCKS					MIRAFLORES LOCKS, DAMS AND SPILLWAY					LA BOCA DISTRICT							
Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
1908—					1908—					1908—							
June	0.50	26	600	19,134	4.98	March	3.50	26	746	19,418	0.00	March	1.00	26	476	12,360	0.00
July	1.00	26	626	16,282	9.53	April	4.50	25	820	20,502	0.76	April	1.00	25	452	11,300	9.76
August	1.00	26	816	21,203	9.31	May	5.73	25	487	12,174	8.65	May	1.00	25	688	17,200	8.65
September	1.84	25	608	15,204	7.56	June	3.80	26	695	18,077	4.98	June	1.00	26	562	14,630	4.97
						July	3.80	26	930	24,179	5.66	July	1.00	26	623	16,200	5.66
						August	3.70	26	947	24,612	9.31	August	0.92	26	739	19,214	10.48
						September	3.78	25	938	23,440	7.56	September	0.97	25	750	18,743	5.93

COMMISSARY DEPARTMENT.

SUPPLY OF OYSTERS.

The steamship *Advance*, which sailed from New York on October 7, due at Cristobal October 14, has the first consignment of fresh oysters for the Commissary Department. They will be selected oysters, and are put up in one-half gallon kits. The department expects to keep oysters on sale regularly until the oyster season closes.

COMMISSARY PRICES

For week beginning October 13:

FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	6
Shoulder and neck (not under 6 pounds).....per lb	7
Entire forequarter (not under 10 pounds).....per lb	8
Leg (8 to 10 pounds).....per lb	16
Short-cut chops.....per lb	20
Lamb—Stewing.....per lb	6
Entire forequarter.....per lb	8
Leg (6 to 8 pounds).....per lb	27
Veal—Stewing.....per lb	10
Entire forequarter (15 to 20 lbs.).....per lb	11
Loin.....per lb	22
Short-cut chops.....per lb	23
Cutlets.....per lb	23
Pork—Cuts.....per lb	20
Beef—Suet.....per lb	4
Soup.....per lb	8
Stew.....per lb	12
Corned.....per lb, 12, 14, 16	16
Pot roast (from sirloin butt).....per lb	17
Rib-roast, second cut (not under 3 pounds).....per lb	19
Rib-roast, short cut (not under 3½ pounds).....per lb	23
Sirloin roast.....per lb	29
Rump roast.....per lb	29
Porterhouse roast.....per lb	29
Steak, round.....per lb	23
Rib.....per lb	24
Sirloin.....per lb	29
Porterhouse.....per lb	29
Rump.....per lb	29
Tenderloin.....per lb	30

MISCELLANEOUS.

Livers—Calf.....each	65
Sausage—Pork.....per lb	19
Frankfurter.....per lb	17
Leberwurst.....per lb	17
Bologna.....per lb	17
Sweet bread—Veal.....each	1.20
Ox tongues.....each	90
Pigs' feet, pickled.....per lb	14
Pigs' tongues, pickled.....per lb	15
Eggs, fresh.....dozen	34

POULTRY AND GAME.

Chickens—Dressed (milk-fed).....each	1.30
Large (milk-fed).....each	1.50
Capons.....each	2.40
Broilers.....each	.60
Fowls, medium and large.....each, 80c. and 1.10	
Ducks, fatted (fancy).....each	1.00
Turkeys.....per lb	30
Squabs.....each	.45
Suckling pigs (whole).....each	3.50
Suckling pigs (one-half).....each	1.75

CURED AND PICKLED MEATS.

Bacon—Strips.....per lb	23
English, breakfast sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Ferris.....per lb	20
Beef, salt, family.....per lb	16

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	35
Cheese—Neufchatel.....each	6
Young America.....per lb	22
Swiss.....per lb	33
Edam.....each	1.05
Camembert.....per lb	28
McLaren's.....jar	15
Pinxter's.....tin	22
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....tin	20
Milk, Briarcliff.....quart	25

VEGETABLES AND FRUITS.

Tomatoes (local only).....per lb	8
White potatoes.....per lb	3½
Sweet potatoes.....per lb	2½

Cabbage.....per lb	4
Onions.....per lb	3½
Beets.....per lb	3
Carrots.....per lb	3
Turnips.....per lb	3
Onions (Spanish).....per lb	5
Lima Beans.....per lb	8
Lemons.....dozen	24
Oranges.....dozen	18
Apples.....per lb	5
Cantaloupes.....each	3
Grapes, California, Tokay and Malaga.....per lb	8

§ Sold only from cold-storage and not from Commissaries.

NEW ARTICLES.

	Price.
Chocolate, Fry's Caracas, ¼-lb cakes.....cake	10
Hats, straw, E. P. 2095.....each	\$1.90
Half hose—Black lisle.....pair, 30 and 35	
Black silk.....pair	50
Colored cotton.....pair	20
Fancy lisle.....pair, 60 and 65	

Rainfall, October 1 to 10, 1908, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total.
<i>Atlantic Division—</i>		
Cristobal.....	2.35	4.85
Brazos Brook.....	2.09	5.89
Gatun.....	2.13	4.31
Bohio.....	1.75	4.94
<i>Central Division—</i>		
Tabernilla.....	1.62	4.91
San Pablo.....	1.12	3.32
Bas Obispo.....	1.29	3.38
Gamboia.....	Abolished.	
Empire.....	1.40	3.59
Camacho.....	.55	1.72
Culebra.....	1.56	3.58
Rio Grande.....	1.32	2.91
<i>Pacific Division—</i>		
Pedro Miguel.....	1.70	3.30
La Boca.....	.70	1.95
Ancon.....	.82	1.61
<i>Upper Chagres.</i>		
Alhajuela.....	1.38	3.15

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, October 10, 1908:

	STATIONS.				
	Vigia.	Alhajuela.	Gamboia.	Bohio.	Gatun.
Height of low water above mean sea level, feet.....	129	92	46	0	0
Maximum height above low water, feet.....					
Sunday, Oct. 4.....	2.70	2.35	4.30	8.15	3.35
Monday, Oct. 5.....	1.60	2.08	4.00	8.30	3.10
Tuesday, Oct. 6.....	1.20	1.80	2.80	6.54	2.50
Wed'n'sday, Oct. 7.....	2.00	1.79	2.65	5.64	1.90
Thursday, Oct. 8.....	10.60	8.06	9.80	6.40	3.30
Friday, Oct. 9.....	8.00	7.69	11.40	13.90	5.60
Saturday, Oct. 10.....	1.90	2.38	4.20	9.13	4.70
Maximum for week.....	10.60	8.06	11.40	13.90	5.60

Concert by the I. C. C. Band.

PARAISO, C. Z.

Sunday, October 13, 1908, at 2.30 p. m.:

PROGRAM.

1 March— <i>Society Saving</i>.....Frantzen
2 Selection— <i>Mill's Merry Melodies</i>.....Mills
3 Waltz— <i>Golden Wedding</i>.....St. Clair
4 a Intermezzo— <i>Ruralistic</i>.....Bagley
b Tone Poem— <i>Lilacs</i>.....Roberts
5 March— <i>Happy Days</i>.....Levi
6 Selection— <i>The Red Mill</i>.....Herbert
a Excerpts from the <i>Merry Widow</i>.....Lehar
b Schottische— <i>When a Boy Says "Will You?"</i>.....Allen
8 Overture— <i>Lustspiel</i>.....Kelar Bela
9 Descriptive— <i>A Hunting Scene</i>.....Bucalossi
10 March— <i>The New Colonial</i>.....Hall

CHAS. E. JENNINGS, Musical Director.

A concert will be given at Culebra, C. Z., Sunday, October 25.

Empire defeated Gorgona at bowling on the Empire alleys Saturday night in three straight games. Score: Empire, 776, 792, 867; Gorgona, 681, 718, 825.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Allianca.....P. R. R. Tuesday	Oct. 13
Trent.....R. M. Saturday	Oct. 17
Colon.....P. R. R. Saturday	Oct. 17
Esperanza.....P. R. R. Thursday	Oct. 22
Prinz Joachim.....H. A. Saturday	Oct. 24
Finance.....P. R. R. Tuesday	Oct. 27
Tagus.....R. M. Saturday	Oct. 31
Advance.....P. R. R. Monday	Nov. 2
Allianca.....P. R. R. Saturday	Nov. 7
Prinz Aug. Wilhelm.....H. A. Saturday	Nov. 7
Colon.....P. R. R. Thursday	Nov. 12
Magdalena.....R. M. Saturday	Nov. 14
Panama.....P. R. R. Tuesday	Nov. 17
Prinz Joachim.....H. A. Saturday	Nov. 21
Finance.....P. R. R. Monday	Nov. 23
Orinoco.....R. M. Saturday	Nov. 28
Advance.....P. R. R. Saturday	Nov. 28
Allianca.....P. R. R. Thursday	Dec. 3
Prinz Aug. Wilhelm.....H. A. Saturday	Dec. 5
Colon.....P. R. R. Tuesday	Dec. 8
Atrato.....R. M. Saturday	Dec. 12

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK.

Esperanza.....P. R. R. Tuesday	Oct. 13
Prinz Joachim.....H. A. Tuesday	Oct. 13
Advance.....P. R. R. Monday	Oct. 19
Tagus.....R. M. Tuesday	Oct. 20
Allianca.....P. R. R. Saturday	Oct. 24
Prinz Aug. Wilhelm.....H. A. Tuesday	Oct. 27
Colon.....P. R. R. Thursday	Oct. 29
Magdalena.....R. M. Tuesday	Nov. 3
Esperanza.....P. R. R. Tuesday	Nov. 3
Finance.....P. R. R. Monday	Nov. 9
Prinz Joachim.....H. A. Tuesday	Nov. 10
Advance.....P. R. R. Sunday	Nov. 15
Orinoco.....R. M. Tuesday	Nov. 17
Allianca.....P. R. R. Friday	Nov. 20
Prinz Aug. Wilhelm.....H. A. Tuesday	Nov. 24
Colon.....P. R. R. Wednesday	Nov. 25
Panama.....P. R. R. Monday	Nov. 30
Atrato.....R. M. Tuesday	Dec. 1
Finance.....P. R. R. Sunday	Dec. 6
Prinz Joachim.....H. A. Tuesday	Dec. 8
Advance.....P. R. R. Friday	Dec. 11
Trent.....R. M. Tuesday	Dec. 15

FROM NEW ORLEANS TO COLON.

Heredia.....U. F. C. Saturday	Oct. 17
Cartago.....U. F. C. Saturday	Oct. 24
Parismina.....U. F. C. Saturday	Oct. 31
Heredia.....U. F. C. Saturday	Nov. 7
Cartago.....U. F. C. Saturday	Nov. 14
Parismina.....U. F. C. Saturday	Nov. 21
Heredia.....U. F. C. Saturday	Nov. 28

FROM COLON TO NEW ORLEANS.

Parismina.....U. F. C. Tuesday	Oct. 20
Heredia.....U. F. C. Tuesday	Oct. 27
Cartago.....U. F. C. Tuesday	Nov. 3
Parismina.....U. F. C. Tuesday	Nov. 10
Heredia.....U. F. C. Tuesday	Nov. 17
Cartago.....U. F. C. Tuesday	Nov. 24
Parismina.....U. F. C. Tuesday	Dec. 1

FROM COLON TO BARBADOS, CALLING AT TRINIDAD.

Trent.....R. M. Tuesday	Oct. 27
Tagus.....R. M. Tuesday	Nov. 10
Magdalena.....R. M. Tuesday	Nov. 24
Orinoco.....R. M. Tuesday	Dec. 8
Atrato.....R. M. Tuesday	Dec. 22
Trent.....R. M. Tuesday	Jan. 5

FROM COLON TO NEW ORLEANS VIA KINGSTON.

Median.....Leyland Line.....about.	Oct. 20
Mexican.....Leyland Line.....about.	Oct. 31

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m. via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

CANAL



RECORD

Volume II.

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No. 8.

The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

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THE CANAL RECORD

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Acting Chairman of the Isthmian Canal Commission for September is published in other columns of this issue of THE CANAL RECORD. The work of re-organization was continued, and, effective September 1, the Division of Material and Supplies was merged with the Quartermaster's Department. A summary of the construction work done by three construction divisions shows that the material excavated in September amounted to 3,237,751 cubic yards, of which 1,789,348 were taken out by steam shovels, 1,437,885 by dredges, and 10,518 cubic yards by hand excavation. Of the 3,237,751 cubic yards 3,089,851 were removed from the Canal prism; 1,707,947 by steam shovels; 1,374,856 by dredges, and 7,048 by hand. The remaining 146,900 cubic yards were from accessory works. Rock drilling to the amount of 348,609.2 feet was done, 11.6 miles of old track were removed, and 7.18 miles of new track were laid, and 379.72 tons of explosives were used. The averaged number of laborers employed daily was 13,040. The rainfall in the Atlantic Division was 11.57 inches, in the Central Division, 9.75, and in the Pacific Division, 7.56 inches.

In the Atlantic Division there were removed from the site of the Gatun Locks and from the site of the spillway 153,194 cubic yards; by the dredges in Limon Bay, 624,776 cubic yards, all from the Canal prism; by the dredge at the site of the dock for the handling plant 48,974 cubic yards, and by steam shovels at Mindi 32,112 cubic yards. At Gatun Dam 42,857 cubic yards of Bas Obispo rock and 4,096 cubic yards of material from the spillway were dumped on the south toe of the dam, and 57,374 cubic yards from the spillway and Mindi were dumped

on the north toe. During the month 1,288 linear feet of trestle were constructed.

The excavation in the Central Division amounted to 1,476,323 cubic yards, of which 421,139 cubic yards were earth and 1,055,184 were rock. In the same territory in September, 1907, 773,095 cubic yards were removed. In September, 1907, however, the average number of steam shovels at work during the month was 39.91, while in September, 1908, the average number at work was 49.68. The rainfall in September, 1907, was 10.61, and in 1908, 9.75. The output per shovel per day in September, 1907, was 807 cubic yards, while in September, 1908, it was 1,180 cubic yards, an increase of 46 per cent.

In the Pacific Division, on the lock site at Pedro Miguel 28,833 cubic yards of material were excavated, and from the lock site at Miraflores 89,106 cubic yards. The excavation from the site of the Miraflores Dam amounted to 1,817 cubic yards, and from the prism at Cardenas Hill, 18,181 cubic yards. The dredging at La Boca amounted to 750,080 cubic yards, all from the Canal prism.

On the relocation of the Panama railroad 2,831 linear feet of permanent track were laid, making a total of 43,576 feet. The force of laborers during the month averaged 989.

In the Subsistence Department the net profit in September for the operation of hotels and mess halls, not including the Tivoli hotel, was \$9,535.20. The net loss on the Tivoli hotel was \$2,002.33, making a net profit for the Department of \$7,532.87.

The Division of Public Works of the Department of Civil Administration reported that during the month 30,052,000 gallons of water were used in the city of Panama, and 26,631,923 in the city of Colon. The health conditions continued to be satisfactory during September.

Mindi Magazine.

The storage magazine for explosives at Mindi has been completed and the work of storing dynamite there has begun. The railroad from the main line of the Panama railroad to the magazine is being straightened and the old French tracks which were originally laid have been replaced by 70-pound steel rails.

The magazine is located one and one-half miles southeast of the Mindi spur, and is so surrounded by hills that an explosion would not seriously affect the nearby villages of Cristobal, Colon, Mount Hope, and Gatun. It is built into the hillside in such manner that at the back and sides it is surrounded by earth. Hollow concrete blocks 12 inches thick and bullet proof have been used for the walls, and the roof is composed of concrete reinforced with old Belgian rails and waterproofed. The magazine is 112 feet long, 48 feet wide, and 9 feet high inside.

The concrete roof keeps the interior dry and cool. Ventilation has been provided by air flues which open under the roof. Six hundred thousand pounds of dynamite can be stored in this building. Near the magazine, and yet so far away that an explosion in one would not affect the other is a detonator house. It is 33 feet 6 inches long, 17 feet 3 inches wide, and 10 feet high inside. It also is built of concrete blocks and has a ceiling of reinforced concrete with a corrugated iron roof above it.

In the magazine reservation is a frame house for a watchman who will have charge of the station. A neutral zone, in which no shooting will be allowed, will probably be established.

Unloading Dynamite.

The first shipment of dynamite under the contract for the fiscal year 1909 arrived at Cristobal on October 10, and was unloaded at Dock 14. It consisted of 1,000,000 pounds in 20,000 boxes of 50 pounds to a box. Every box was taken from the hold of the ship *Sylvia* by hand and sent down a skid to the wharf. Such care was taken in handling the explosives that only one of the 20,000 boxes was broken open.

Dredging at Pacific Entrance.

Dredge No. 17, one of the old French ladder dredges, struck rock in the channel of the Canal at La Boca on the night of October 6. Before the dredgers realized the unexpected nature of the material they were handling, the end of the bucket ladder had been broken and the tumbler wheel lost. The disabled dredge was taken to the docks, where a new ladder was put in, and work in the channel was resumed just one week after the accident. Prompt repair and quick return to work were possible, because a ladder taken from one of the two old dredges at Gorgona was on the ground ready for such an emergency. The ladder of the second dredge at Gorgona is being taken down and will be brought to La Boca to be held in readiness as a "spare."

The Pacific dredging fleet has been considerably strengthened by the addition of the old French ladder dredge A-2, now known as the *Mole*, which was put back in commission a few days ago. The fleet now consists of three old French ladder dredges, one of them a sea-going dredge, one sea-going suction dredge, one 20-inch suction dredge, and a dipper dredge. It was hoped that this fleet would bring the monthly excavation for the Pacific dredges from its present point (about 750,000 cubic yards), up to a million cubic yards or over. This may be accomplished ultimately, but if present conditions continue and the dredges at La Boca are obliged to keep on scraping mud off the stratum of rock that underlies the channel of the old French canal, it is

NOTES OF PROGRESS.

(Continued).

not likely that a new record will be made for some time to come.

The sea-going ladder dredge *Gopher* is working its way up the channel, making a cut 26 feet deep at mean tide. The cut will be continued to Corozal, thus giving access at low water to the Miraflores lock site. The sea-going suction dredge *Ancon* is dredging from the end of the La Boca wharf out to deep water, making a cut from -26 to -45.

Requisition has been made for four additional dump barges for use with the Pacific dredges. They will be of steel, 400 cubic yards capacity, and will be erected at the La Boca marine shops.

Lands for Canal Purposes

The cases arising from the expropriation of Canal Zone property for Canal purposes have been settled in accordance with the decision of the Joint Commission published in THE CANAL RECORD of August 12, 1908. Deeds to the United States have been executed covering the lands in question. Formal possession of the hacienda Andrade at Gorgona was taken on October 17.

Accidents at Gorgona Foundry.

The American Foundrymen's Association has reported the following accident statistics for Gorgona foundry during the year ended June 30, 1908: Total accidents 14; average

total number of employees, 100; number injured through their own fault, 12; number injured through the fault of co-employees, 2; number injured through burns, 13; number injured through bruises, 1. No deaths resulted from injuries sustained in the foundry.

New Unloading Station for Oil Steamers.

An iron pontoon, 18 feet square, used by the French as a diving bell in building the foundations of the La Boca wharf, has been sunk 1,400 feet south of the wharf at La Boca, as an anchor for the end of the Union Oil Company's pipe line. The company's ships will unload their oil at this pontoon, whence it will be piped to the pumping station for delivery at various points along the Canal. At present the unloading intake of the Union Oil Company projects into the channel and is in the way of the dredging operations.

New School Building at Corozal.

A school building for white children has been authorized for Corozal. It will be built by contract. The plans call for a building 53 feet by 66 feet over all, divided into two rooms each 35 by 37 feet; the ceiling to be 13 feet above the floor. Separate toilets for boys and girls will be built at opposite ends of the building. The construction will be of the Commission style, with a veranda running around the building.

High Water in Limon Bay.

After the heavy storm that swept the Caribbean sea last week the water in Limon

Bay was very high. Thursday and Friday the waves were breaking on the beach road at Cristobal and Colon, notwithstanding that a stiff breeze was blowing from the south. At one place it was necessary for the Panama Railroad Company to dump two car loads of rock in order to keep its waterfront intact.

Family Quarters.

When the family quarters authorized up to October 8 have been constructed, there will still be on the list of applicants 361 people eligible for quarters. Of these, 73 are on the 1907 list, and entitled to prior consideration. A statement of the conditions in each village follows:

VILLAGES.	Application on file as of September 1, 1908.		Total	Accommodations available on completion of work authorized to Oct. 8, 1908.
	1907.	1908.		
Ancon.....	16	17	33	13
Ancon Hospital....	3	.....	3	2
Bas Obispo.....	2	3	5	.....
Corozal.....	4	10	14	13
Cristobal.....	86	60	146	16
Cniebra.....	1	11	12	.....
Empire.....	36	33	69	24
Gatun.....	21	40	61	28
Gorgona.....	23	53	76	22
La Boca.....	3	23	26	.....
Las Cascaidas.....	11	14	25	.....
Paraiso.....	1	6	7	.....
Pedro Miguel.....	7	9	16	8
Porto Bello.....	.....	.....	.....	18
San Pablo.....	2	8	10	.....
Tabernilla.....	1	1	2	.....
Total.....	217	288	505	144

University Club Election.

At the annual meeting of the University Club, held on October 18, the following officers were elected: President, Arnold Shanklin; first vice-president, J. G. Holcombe; second vice-president, Ernesto Lefevre; treasurer, E. C. McFarland; secretary, J. E. Marsh; assistant secretary, R. G. Castel. Governors: Joseph Bucklin Bishop, Hiram J. Slifer, Malcolm Elliott, M. B. de Putron, A. S. Cooper, J. C. Perry, H. G. Prescott. Honorary president, Hon. José Domingo de Obaldia; honorary vice-president, Hon. Charles E. Magoon; honorary vice-president, Col. W. C. Gorgas.

Cornerstone Laying at Empire.

The cornerstone of the new Episcopal St. Mary's Church, Empire, will be laid next Sunday afternoon, October 25, at 3 o'clock, by Lieut.-Col. H. F. Hodges, Acting Chairman and Chief Engineer of the Isthmian Canal Commission. The address will be made by Archdeacon Bryan. Music will be furnished by the Marine band of Camp Elliott. Invited officials, organizations, and guests will assemble at the court house in Empire at 2.30 p. m., and proceed to the site of the new church, where the ceremonies will take place. The public is cordially invited to attend.

The rock crusher and quarry at Rio Grande have been transferred from the Central Division to the Pacific Division. The maintenance of Rio Grande reservoir has also been transferred to the Pacific Division.

The old interlocking switch system at Miraflores has been replaced by a modern system which will go into operation October 22. The station will control seven switches.

The tug *La Boca* has been laid up for repairs after an unbroken year of work in the Pacific entrance to the Canal, and the *Cocoli* has been put back in commission.

LABOR FORCE AND QUARTERS.

There were 346 additions to the Canal force and 392 separations in the month of September, a net decrease of 46. Of the separations 158 voluntarily left the service, 146

were discharged, 78 resigned, 2 were changed to a silver basis, 4 died, and 2 resigned. A statement of the force actually at work on September 30 follows:

DEPARTMENT.	Gold Men.	SILVER MEN.							Total Silver.	Total Gold and Silver Men.
		Monthly.	Artisans.		European Laborers.		West Ind'n Laborers.			
			32c. & over.	26c.	40c.	32c.	26c.	20c.		
Construction and Engineering.....	3,137	1,868	4,341	1,100	4,503	347	1,173	2,923	16,255	19,392
Quartermaster's Department.....	303	1,113	375	9	362	30	83	921	2,893	3,196
Department of Sanitation.....	387	665	80	.....	.....	.....	7	259	1,011	1,398
Subsistence Department.....	72	787	2	.....	.....	.....	.....	.....	789	861
Department of Civil Administration.....	287	140	25	.....	.....	.....	.....	.....	165	452
Disbursements.....	89	15	.....	.....	.....	.....	.....	.....	15	104
Examiner of Accounts.....	53	1	.....	.....	.....	.....	.....	.....	1	54
Totals.....	4,328	4,589	4,823	1,109	4,865	377	1,263	4,103	21,129	25,457

STATEMENT OF CLASSIFIED EXPENDITURES TO AUGUST 31, 1908.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1907. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Civil Administration.	Sanitation.	Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.....	\$1,446,287.74	\$4,626,716.39	\$13,445,607.23	\$4,282,865.16	\$19,483,757.66	\$43,285,234.18
July.....	51,183.84	149,270.94	962,477.19	146,131.93	580,562.68	1,889,626.58
August.....	67,548.53	214,018.03	1,196,803.45	192,227.75	767,153.24	2,437,751.00
September.....	63,239.62	253,108.77	1,194,304.85	107,840.85	1,068,300.58	2,686,794.67
October.....	53,227.97	189,196.38	1,372,311.81	123,939.88	1,131,450.91	2,870,126.95
November.....	54,529.02	166,381.82	1,217,120.31	115,625.44	1,105,590.16	2,659,246.75
December.....	64,903.04	213,725.16	1,369,822.79	125,420.96	591,298.02	2,365,169.97
1908—						
January.....	66,802.92	221,866.30	1,468,021.44	156,956.22	1,584,821.98	3,498,468.86
February.....	72,514.14	174,076.77	1,523,011.72	100,700.40	889,405.82	2,759,708.85
March.....	63,653.60	165,311.77	1,460,229.91	110,232.15	1,307,321.82	3,106,749.25
April.....	74,046.55	178,041.65	1,580,416.19	138,115.21	797,137.63	2,767,757.23
May.....	73,340.26	184,381.35	1,580,369.11	69,824.83	955,405.12	2,863,320.67
June.....	379.34	200,833.07	1,755,771.69	107,940.79	905,767.19	2,969,933.40
July.....	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August.....	77,019.80	145,870.37	1,599,556.90	60,798.76	517,046.09	2,400,291.92
Total.....	\$2,312,815.84	\$7,280,761.84	\$33,178,523.47	\$5,930,521.50	\$32,229,102.13	\$80,931,724.78

PANAMA RAILROAD QUARTERS.

Improvements and Additions on Colon Beach.

Extensive repairs and additions are being made to the quarters provided by the Panama Railroad Company for its employes in Colon, and it is thought that by the beginning of the year 1909 the majority of the railroad colony will be occupying new or renovated quarters. For several years past the lack of buildings has been pronounced, and the throwing open of railroad quarters to employes of the Isthmian Canal Commission has made the building of new quarters a necessity. On September 1 there were on the waiting list 68 employes of the railroad company who could not be given quarters.

To those not familiar with the history of Colon, it may be illuminating to know that the city exists because the Panama Railroad Company, in 1850, decided to make Limon Bay the Atlantic terminus of the transcontinental line. Manzanillo Island was built up on a coral reef, and on the made and reclaimed land the general offices and terminal shops of the railroad were erected. The quarters for employes were built near the offices, and from a few straggling buildings they have increased, until a line of houses stretches along the north beach for a mile or more. The old shops of the Company were located where some new quarters are now being erected.

Washington House is the largest of the old quarters. It was built prior to 1861, and a third story has since been added to the original two-story building. The present structure is 173 feet long and 44 feet wide, and contains accommodations for fifty people, two in a room. Along the full length of the front of the house are two verandas, one on each floor, and from them one may look across a grass parkway, through palm trees, over Limon Bay, and beyond it to the Caribbean. There are few, if any, days on which a refreshing breeze does not blow in from the sea. The remodeling of Washington House has been confined to the interior. On the ground floor the dining-room has been made into one long room. The rooms on the west end, now occupied by the Washington Reading Room Club, are to be made into a private dining-room and a modern barber shop.

A modern kitchen has been built in the rear of the hotel. The floor is concrete, the roof is ventilated, and all the furniture is raised above the floor so that the kitchen can be flushed with a hose every day. A circulating coffee urn of three units, in which coffee is made with sterilized water, a 12-foot steam table, a 12-foot portable range, steam heated pots for stock and vegetables, a charcoal stove for broiling meats, an ice box for fish, a serving pantry, all arranged so that the waiters may fill their trays in regular succession, entering the kitchen by one door and leaving by another, and never doubling on their tracks, are the principal furnishings of the kitchen. There is also a steam and hot water dish-washing machine. Adjoining the kitchen is the ice box, specially constructed after the plan of the more recent of the line commissary coolers. It is filled once a week, has an ice capacity of eight tons and consumes five tons a week. In it a week's supply of meats and vegetables is kept at a temperature of from 46 to

50 degrees. A bit of sentiment connected with the a la carte meals is that all planked meats and fish are served on lignum vitæ planks cut from ties used for half a century on the Panama railroad. Washington House serves 200 meals daily.

The house directly west of Washington House, known as the Bennington, is being remodeled. The ground floor will be divided into two one-family quarters, and the second floor into twelve rooms about 11 feet by 10 feet, arranged in suites with baths. Garfield House, which is east of Washington House is also to be remodeled, the work to be begun as soon as the present occupants move into the new building named Lincoln House. On each floor there will be six two-room, non-housekeeping suites with baths, each room to be about 13 feet square.

Lincoln House is nearing completion, and an effort is being made to have it ready for occupancy the first week in November. It fronts on E street, about three hundred yards from the beach, and although two new houses for married people are between it and the water, a glimpse of the sea may be had from the north veranda, and the breeze is almost unchecked. The house is of a special type, being really three oblong buildings with gable roofs, forming the front and sides of a large hall. This hall is 50 feet square, two stories high, is roofed with a skylight, and has a hardwood floor finished for dancing. Around three sides of this hall on the second floor runs a balcony, while the fourth side opens on to the ground floor and second story verandas. The house is two stories high, 125 feet long and 116 feet deep, and a screened veranda on each floor runs completely around it. In addition to living quarters for 80 men, the house will contain a billiard room, reading room, four drying rooms and four baths and toilet rooms.

Similar in type to Lincoln House, but smaller, will be McKinley House, which is in process of construction on E street, opposite Lincoln House. It will be 97½ feet long by 40 feet wide, two stories high, and will have screened verandas. On the ground floor will be six rooms, a reception room, and family quarters consisting of four rooms and a bath. A matron will occupy the family quarters. The second floor will contain twelve rooms, each 10 feet by 12 feet. It is intended for the woman employes.

Between the beach and the new quarters for men and women new family quarters are being constructed. One house, recently completed, is already occupied. It is a type C, two-story, four-family house, 69x57 feet. Each quarters contains three bedrooms, a parlor, dining-room, kitchen and bath. A type B house is nearing completion. It is also a two-story four-family house, and is 69 feet by 47 feet 4 inches. Each quarters consists of a parlor, dining-room, kitchen, two bedrooms and a bath. Two type D, four-family, two-story houses will complete the additions now authorized. These houses will be 68 by 36 feet, and each quarters will contain a parlor, dining-room, bedroom, kitchen and bath. This is the only type of house built by the Panama Railroad Company in which the stairways leading to the second floor are on the outside of the building. All the quarters have screened verandas.

For years before the American occupation

Washington House was the center of the social life of Colon, and it has continued to be so up to the present time. Now the center is about to change to Lincoln House. The old Washington Reading Room Club at a meeting held last week decided to transfer its books and billiard tables from Washington House to Lincoln House. The control of the dancing hall and social features at Lincoln House has been placed in the hands of an executive committee elected at that meeting and consisting of R. Budd, chairman; G. E. Geer, representing the general manager's office; P. T. Murphy, representing the married quarters on the beach and Washington Hotel; John Purdum, representing Lincoln House, and D. E. Richard, representing Garfield House. The officers elected are: H. J. Slifer, president; J. S. Stewart, vice-president; H. B. Warren, secretary, P. G. Hoyt, treasurer. Membership in the Washington Reading Room Club is not confined to employes of the Panama Railroad Company or of the Isthmian Canal Commission, and the dancing floor at Lincoln House may be used by all persons to whom the executive committee sees fit to assign it.

Memorial Resolutions.

At a meeting of Culebra Lodge, No. 3, Knights of Pythias, October 14, 1908, the following resolutions were adopted:

Resolved, That as the great and all-merciful God has seen fit to remove from our midst our esteemed and honored brother, James H. Averill; and, while our loss has been great, we bow in accordance with His will, and look forward to the meeting in that world of everlasting sunshine, when we shall be once more together, never more to part, for we shall know each other there; be it further

Resolved, That we extend to his dear wife and little ones our sincere sympathy in this their great hour of sorrow; be it further

Resolved, That a copy of these resolutions be sent to his family; also to THE CANAL RECORD and press for publication, and to become part of the minutes of this lodge.

Resolutions of Sympathy.

WHEREAS, Our Heavenly Father and Great Commander has removed from our midst Comrade Lewis B. Mickle; be it

Resolved, That the General Henry W. Lawton Garrison, No. 40, Regular Army and Navy Union of the U. S. A., has lost from its rank a most worthy comrade, whose excellent qualities and noble character have cemented the ties of fraternity and good fellowship with every member of our order; and be it further

Resolved, That a copy of these resolutions be spread upon the records of our Garrison, a copy sent to the National Commander of the Regular Army and Navy Union, Washington, D. C., and to the wife of our departed comrade, Mrs. Alzadia Grace Mickle, Germantown, Columbia County, N. Y.

By direction of the Garrison.

WM. M. RIDPATH,
Adjutant and Quartermaster.

The three Lidgerwood unloaders at work on the La Boca dumps during September unloaded 11,293 cars of material brought from the Culebra Cut. As there are about 20 cubic yards on each car, this makes an aggregate of about 225,860 cubic yards added to the La Boca dumps during the month.

CANAL WORK FOR SEPTEMBER.

Monthly Report of the Chairman to the Secretary of War.

CULEBRA, C. Z., October 17, 1908.

The Honorable
The Secretary of War,
Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of September, 1908:

The work of reorganization as outlined in the report for July was continued. Effective September 1, the Division of Material and Supplies was merged with the Quartermaster's Department.

Department of Construction and Engineering

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
Steam Shovel Excavation—					
In prism.....	Cubic yards.....	136,892	1,435,519	135,536	1,707,947
Auxiliary.....	Cubic yards.....	48,414	30,286	2,701	81,401
Total.....	Cubic yards.....	185,306	1,465,805	138,237	1,789,348
Dredge Excavation—					
In prism.....	Cubic yards.....	624,776	.....	750,080	1,374,856
Auxiliary.....	Cubic yards.....	63,029	.....	.....	63,029
Total.....	Cubic yards.....	687,805	.....	750,080	1,437,885
Hand Excavation—					
In prism.....	Cubic yards.....	.....	7,048	.....	7,048
Auxiliary.....	Cubic yards.....	.....	3,470	.....	3,470
Total.....	Cubic yards.....	.....	10,518	.....	10,518
Total excavation.....	Cubic yards.....	873,111	1,476,323	888,317	3,237,751
Explosives used.....	Tons (2240 lbs).....	43.36	324.65	11.71	379.72
Drilling.....	Feet.....	69,592	260,088	18,929.2	348,609.2
Track removed.....	Miles.....	.....	11.6	.....	11.6
New track laid.....	Miles.....	3.98	.....	3.2	7.18
Material placed in dam.....	Cubic yards.....	37,369	.....	1,985	39,354
Rock crushed.....	Cubic yards.....	.....	16,555.5	988	17,543.5
Cement used.....	Barrels.....	2	.....	200	202
Concrete placed.....	Cubic yards.....	.....	.....	145	145
New roads built.....	Miles.....	.....	.586	.14	.726
Water mains laid.....	Feet.....	6,380	3,500	2,100	11,980
Sewers laid.....	Feet.....	.....	5,023	765	5,788
Open drains and ditches dug.....	Feet.....	.....	16,725	2,010	18,735
Daily average number of laborers.....	.....	1,690	8,035	3,315	13,040
Rainfall.....	Inches.....	11.57	9.75	7.56	.....

Atlantic Division.

GATUN LOCKS.

During the month the total amount excavated from the lock site was 111,984 cubic yards, place measurement, of which 104,780 cubic yards were from the Canal prism, and 7,204 cubic yards from the site for the new powder-house.

Seepage tests were continued during the month in bore holes in and around the locks.

The power-house and storehouse were staked out.

GATUN DAM.

Dredge No 82 excavated 48,974 cubic yards of earth and soft rock from the slip leading to the proposed dock for the handling plant.

On the south toe of the dam 42,857 cubic yards of Bas Obispo rock and 4,096 cubic yards of material from the spillway were dumped. On the north toe of the dam 57,374 cubic yards of material from the spillway and Mindi were dumped.

During the month 1,288 linear feet of trestle were constructed.

SPILLWAY.

Three steam shovels worked on the spillway during the month, and removed a total of 41,210 cubic yards.

MINDI.

Two shovels were at work at Mindi dur-

ing the month, excavating a total of 32,112 cubic yards.

PORTO BELLO.

Work was actively pressed, consisting of preparing a site for the power-plant, current repairs to equipment, stripping the earth from the quarry, and various municipal and building work.

NOMBRE DE DIOS.

Investigations were made at Nombre de Dios by the Chief Engineer of the Republic of Panama and the Assistant Engineer at Cristobal, as a committee to consider a report upon the effect of removal of sand on the town of Nombre de Dios, and the value of the sand.

FLOATING EQUIPMENT.

The tug *Luckenbach* arrived on September 30 with rock barges 13 and 14. With the exception of the stern wheel tow-boat, all

cubic yards were classified as earth, and 1,055,184 cubic yards as rock.

Of this quantity 1,455,805 cubic yards were removed by steam shovels, 7,048 cubic yards by hand at the Bas Obispo quarry, and 3,470 cubic yards by hand at the new powder house site up the Chagres River.

The quantity of material removed from the Canal prism was 1,442,567 cubic yards, while 27,241 cubic yards were removed from the Obispo Diversion, and 6,515 cubic yards at the new powder house up the Chagres River.

The daily average number of steam shovels at work during the month was 49.68 as compared with 52.58 for the month of August.

For comparison with the work done during the corresponding month of the previous year, in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels	Classification of material.		Av. No. of steam shovels working during month	W'kg days in month	Av. amount excavated per steam shovel per 8-h'd'y.
		Rock	Earth			
1907, Sept....	cu. yds. 773,095	cu. yds. 525,513	cu. yds. 247,582	39.91	24	807
1908, Sept....	1,465,805	1,048,136	417,669	49.68	25	1,180

Rainfall during the month: 1907, 10.61 inches; 1908, 9.75 inches.

The above table shows that the average output per shovel day was over 46 per cent greater in September, 1908, than in the corresponding month of the previous year.

The output of the Bas Obispo rock crusher for the month was 10,218½ cubic yards, and that of the Rio Grande crusher 6,337 cubic yards.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

The total excavation in this district during the month amounted to 138,237 cubic yards, as follows:

	Cubic yards.
From Pedro Miguel lock site.....	28,833
From Miraflores lock site.....	89,106
From west dam at Miraflores.....	1,817
From Canal prism at Cardenas Hill.....	15,181
Outside of Canal prism (on line to Miraflores spillway).....	300
Total.....	138,237

At Pedro Miguel the work is largely preparatory, and consists of excavating for tracks leading from the lock site to the dumps, and excavating for trenches for drainage purposes below the lock site. The dump tracks on the west side were extended to lead to the west dam. This work has heretofore been delayed on account of the 16-inch water main, the location of which was changed on the 24th of the month.

At Miraflores the excavated material was deposited as backfilling for the locks, and in the toe of the west dam.

DISTRICT NO. 2—DREDGING, AND LA BOCA SHIPWAY.

Five dredges have been operated during the month, as follows:

Dredge	Type.	Cubic yards.		Remarks.
		In pr'm	Auxil'y	
Culebra	Suction	432,312	.....	Scow measurement
Gopher	Ladder	138,757	.....	Place measurement
No. 14.	Ladder	129,608	.....	Place measurement
Dipper.	Dipper.	21,309	.....	Place measurement
Sand-piper	Suction	28,094	.....	Place measurement
Total.....	.....	751,080	.....	.....

floating equipment for securing sand and stone is now in commission.

CRISTOBAL.

During the month seven dredges were operated, four being operated the entire month, and three a part of the month, excavating 624,776 cubic yards of material from the Canal prism. There were also dredged 14,055 cubic yards of loose coral for filling in the new corral site.

At the dry dock, various equipment was repaired, and work was continued on the assembling of the stern wheel towboat.

MUNICIPAL ENGINEERING.

A large amount of grading, road building, construction of sewers and water works was accomplished at Gatun and Cristobal. The maintenance of municipal improvements was also given the necessary attention.

BUILDING CONSTRUCTION.

Satisfactory progress was made on all buildings under construction.

The powder house at Mindi hills and the detonator house at that point were 90 per cent completed at the end of the month.

During the month the powder house at Mindi cut and the detonator house at the same point were completed.

Central Division.

During the month, the total amount of material excavated in the Central Division was 1,476,323 cubic yards, of which 421,139

Current repairs were made on dredges, clapets, launches, tugs and barges, including also erection of new plant.

Additional borings are being taken at Chamé Point to determine the depth and amount of sand available. The borings have shown a good quality of sand for a depth of from 30 to 40 feet below low water.

A force has been employed during the month in clearing the Canal line, over which the dredges will operate between La Boca and Miraflores Locks.

DISTRICT NO. 3—MUNICIPAL ENGINEERING AND BUILDINGS.

The principal items of new construction accomplished in the District during the month are given in a table included in the foregoing part of this report. Roads, water-works and sewers, drains and other municipal improvements were maintained as usual.

Mechanical Division.

The usual work was performed in this Division in maintaining and operating equipment, electrical work, and the manufacture of repair parts and various material required in the construction of the Canal.

Division of Meteorology and River Hydraulics.

The usual observations and measurements were continued during the month.

Relocation of Panama Railroad.

Satisfactory progress was made in the construction of connecting tracks from the present operated line of the railroad, in grading, the construction of trestles for filling, and the construction of bridges and culverts.

On the night of September 21, the Miraflores tunnel caved in from station 116-95 to the south portal, completely blocking the bore of the tunnel for a distance of about 200 feet. A hole of about 360 cubic yards capacity opened up at the surface of the ground, about 130 feet north of the original location of the south portal. The hill showed a perpendicular drop of 20 feet at the line of cleavage, about 50 feet west of this hole. There are about 130,000 cubic yards of material in motion in a direction deflecting from the axis of the tunnel about 30 degrees in a southeasterly direction. The location of the south portal has been changed to 100 feet farther south, and the concrete side walls for this 100 feet have been finished to the springing line of the arch. Work was stopped on the south end on the 22d, as the arch might interfere with future excavation. Two hundred and forty linear feet of the concrete lining in the rock section was completed, 1,585 cubic yards of concrete being placed. The location of the north portal has been changed to 50 feet farther north.

During the month 2,831 linear feet of permanent track were laid on the relocated line, making a total of 43,576 feet to date.

The force of laborers during the month averaged 989 men.

Quartermaster's Department.

On September 1, the Division of Material and Supplies was merged with the Quartermaster's Department, and the executive office of that division, formerly located at Cristobal, has been moved to Culebra. The Mount Hope storehouse has been made the general depot in charge of the Depot Quartermaster, who will also have charge of the planing mill at present located at Culebra, and the Stationer and Printer's plant, now

located at Panama, both of which plants will be moved to Cristobal, where they will be directly under his supervision.

During September there was a decrease of over 1,500 in the number of West Indian laborers occupying Commission quarters as compared with the previous month. In January, of this year, with a West Indian force slightly smaller than in September, there were nearly 4,000 more West Indian laborers in quarters than in September. From the commencement of the work there has been a marked tendency on the part of West Indians, as soon as they become settled and familiar with conditions on the Isthmus, to leave Commission quarters and go to "the brush" or to independent quarters in the native villages. The unusually large movement in September is believed to have been due to the fact that during the month the rule that unattached West Indians who do not subsist at Commission kitchens cannot have accommodations in Commission barracks, was strictly enforced. It was thought that the strict enforcement of this rule would cause an increased patronage of the kitchens; on the contrary, the effect has been to cause numbers of the men to leave quarters.

The following is a comparative statement of the force actually at work on the last day of August and the last day of September:

	Gold Men.		SILVER MEN.							Total Gold and Silver.	
			Month-ly.	Artisans.		European Laborers.		West Ind'n Laborers.			Total Silver.
				32c. & over.	26c.	40c.	32c.	26c.	20c.		
August.....	4,396	4,644	4,920	1,076	4,505	411	1,374	4,556	21,486	25,582	
September.....	4,328	4,559	4,823	1,109	4,865	377	1,263	4,103	21,129	25,457	

At the present time there is a surplus of labor on the Isthmus.

During the month the horticulturist of the Department distributed from the Ancon propagating garden to different points on the line 2,434 decorative and economic plants.

Subsistence Department.

The net profit in September for the operation of the hotels and mess halls, not including the Tivoli hotel, was \$9,535.20. The net loss on the Tivoli hotel was \$2,002.33, making a net profit for the Department of \$7,532.87.

The profits accumulating to the Subsistence Department to the present time will be used to counterbalance the loss which is ordinarily sustained during the winter months, when the price of such products as butter and eggs will be very high.

Department of Civil Administration.

COURTS.

In the Supreme Court, three cases were settled during September. One attorney was admitted.

In the circuit courts, seven civil cases and 18 criminal cases were disposed of, and in the district courts 33 civil and 553 criminal cases were disposed of.

ZONE TREASURY.

A Treasurer of the Canal Zone was appointed, to enter upon his duties on October 1, and on that date the moneys and accounts of the Zone Treasury in the hands of the Disbursing Officer (acting as Treasurer) will be transferred to the Treasurer of the Canal Zone.

DIVISION OF REVENUES.

The general revenues of the Canal Zone, collected by the Division of Revenues, amounted to \$10,538.54.

Eleven vessels entered at and eleven cleared from the port of Ancon, and sixteen vessels entered at and seventeen cleared from the port of Cristobal during the month.

DIVISION OF POLICE AND PRISONS.

During the month 630 arrests were made, as compared with 483 for August. This increased number of arrests is due principally to the arrest of 114 Italians on September 29, who had entered the Canal Zone and were occupying Commission quarters, although they were not employes. As Coroner of the Canal Zone, the Chief of Police investigated eighteen deaths. Of these six were due to railroad accidents, two to drowning and one to suicide.

DIVISION OF PUBLIC WORKS.

The usual business of this Division was conducted during the month, including the installation of new connections, the issuance of permits for the installation of plumbing, and the inspection of plumbing and sewers.

During the month 30,052,000 gallons of water were used in the city of Panama, and 26,631,923 gallons in the city of Colon.

DIVISION OF FIRE PROTECTION.

No loss from fire was sustained during the month.

DIVISION OF SCHOOLS.

During the month preparation was made

for the opening of the schools on October 1. Forty-two teachers were appointed, twenty-four of whom are white Americans, and eighteen colored West Indians.

Department of Sanitation.

[The substance of the report of this department was published in THE CANAL RECORD last week.]

Respectfully,

H. F. HODGES,
Acting Chairman and Chief Engineer.

Soldiers, Sailors, and Marines.

All ex-soldiers, sailors, and marines, regulars and volunteers, now residing on the Isthmus, are requested to send in their names, to be included in the roster or directory of ex-service men on the Isthmus of Panama, which is being compiled by Birt S. Starkevart Garrison, No. 41, Regular Army and Navy Union, U. S. A. Full name, Isthmian address, United States address, date of enlistment, date of discharge and rank, name of organization in which service was rendered and remarks in regard to any noteworthy event with which identified, should be furnished. All communications may be sent to the undersigned.

PAUL D. MAY, *Commander,*
Culebra, Canal Zone.

Jackson Lee Hammond.

Information is wanted in regard to Jackson Lee Hammond, of Jones county, North Carolina, who was in the employ of the Isthmian Canal Commission as late as March, 1908. His family have had no word from him since that time. Anyone having knowledge of him is requested to communicate with J. J. Gilbert, Matchin, C. Z.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Isthmian Canal Rebekah Lodge, No. 1, was instituted by B. R. Sisson, district deputy grand sire, in Fraternity hall, Gorgona, on Saturday evening, October 10. Thirty-one were initiated and the following officers were elected: Mrs. B. F. Henkle, noble grand, and Mrs. Henry Lotz, vice-grand. The members of the order are entering with enthusiasm into their work which they are prepared to take up at once. A part of the specific work of the order is the visiting of the sick and caring for the widows and orphans. Regular meetings will be scheduled at once and the lodge will probably be increased in numbers within a short time. On institution night refreshments were served and the social part of the evening was greatly enjoyed by the members and their guests.

The business meeting of the Gorgona Woman's Club was held on Thursday, October 15, when the organization of the departmental work was the main feature of the discussion. A circular letter has been sent out by the chairman of the educational committee of the Zone Federation which was presented for consideration at this meeting. It is the desire of this department to keep the clubs in touch for the purpose of working along the same lines, in study as well as in any public work that may be taken up. At a recent talk before the club the use of year books of other clubs was urged, and it is announced that a supply of such year books is in the hands of the reciprocity committee of the Federation and copies may be had upon application to the representative of the committee in each club. Postage both ways is to be paid by the club making requisition for the books, which must be returned within one month from the time requisition is made. The toys remaining from the 1907 Christmas celebration have been made over to the philanthropy committee for such disposition of them as it sees fit. Plans for the coming Christmas celebration are already in hand, and the woman's club, having taken the initiative, will ask the assistance of the Young Men's Christian Association and the Gorgona Sunday school.

The entertainment for the festival of All Hallow-e'en in Gorgona is being arranged by the Young Men's Christian Association. There will be an old fashioned dance, and an entertainment of unique character is promised. On election night, November 3, there will be an entertainment at the clubhouse, followed by a smoker.

The Las Cascadas Woman's Club had an unusually interesting meeting on Thursday, October 15, when Mrs. R. W. Fenn, of Panama, was the guest of honor and gave a talk on the work that is being done by the philanthropy department of the Ancon Woman's Club, of which she is chairman, and on the Leper colony at Palo Seco. Much of the attention of the department is devoted to the insane wards of the Ancon Hospital, and an exhibit of basket and needle work by the patients was a feature of the talk. The meeting was held at the residence of Mrs. W. B. Green. There was an unusually large attendance. The club will be entertained October 23 by Mrs. W. L. Thompson.

The Cristobal Woman's Club will hold its

regular meeting on Wednesday afternoon, October 21, the program being in charge of the home department. Mrs. Hiram J. Sliker, recently appointed chairman of that department, will make an address.

The Pedro Miguel Woman's Club enjoyed a social afternoon October 15, when a reception was given by the members to the out-going and in-coming presidents. Games were enjoyed and elaborate refreshments were served. The club presented Mrs. F. B. Roberts, the retiring president, with a souvenir spoon in token of appreciation of her work during the last year. A gift was also presented to Mrs. Livingston, an active member of the club, who is leaving for her home in Jamaica. The business meeting, October 21, will be held at the residence of the president, Mrs. F. W. Waters.

Social interest in Paraiso seems to be centered in the card club which meets regularly, the members greatly enjoying the diversion.

The Culebra Woman's Club will begin its regular study course at the next meeting, October 29. The club has met with a great loss in the death of the treasurer, Mrs. W. H. Bogart, which occurred at San Jose, Costa Rica, October 13. Mrs. Bogart had been an active member of the organization during the past year and was greatly interested in the work. Her death, due to gastritis, was sudden and quite unexpected.

The governing board of the Ancon Woman's Club held its first meeting at the residence of the president on Saturday, October 17. The work for the year was scheduled and committees appointed. The regular meetings of the club will be held as heretofore, on the first and third Wednesday of each month, and the departments will arrange their own meetings. The merging of the educational and literary departments will result in the organizing of study classes, and a magazine club is contemplated. The resignation of the chairman of the art department was tendered, but not accepted, and the department will take up the work as scheduled. This will include a study class, which will embrace a survey of Panamanian art, pottery, basketry, and architecture. The regular art section of the Ancon Woman's Club, incorporated into organization last year, will, it is believed, separate from the club, and an art league, to extend across the Isthmus, will be formed. The scope is too broad for such a movement to be confined within the limits of a single organization. The bazaar in aid of the library fund proposed by the home department, will be turned over to the club, and will be held early in December. The next regular meeting of the club will be at the Tivoli, October 21.

The members of the Woman's Guild of Trinity Church, Culebra, were entertained by the Guild of St. Luke's Church, Ancon, on Monday, October 19, the reception being given at the residence of the chaplain. St. Luke's Guild is contemplating a reception similar to the one given by the organization in February. The annual meeting, with election of officers, will take place November 2.

A new storehouse and spare-part warehouse for the Pacific dredging fleet is to be built at La Boca. It will be 50 feet by 100 feet and will be located on the water's edge in front of the machine shop.

PERSONAL.

Dr. and Mrs. Lloyd Nolan, of Colon Hospital, sailed on the *Cartago* on October 13, for a six weeks' leave of absence to be spent in Costa Rica. Dr. G. H. Putney, of Cristobal, sailed on the *Esperanza* on the same date, for a vacation of six weeks in the States.

Among the passengers returning to the Isthmus on the *Allianca*, which arrived at Cristobal on Monday, October 19, were: L. K. Rourke and wife of Empire; George D. Brooke and wife, and L. D. Cornish of Culebra, and Lieut. Frederic Mears and family of Colon.

Bas Obispo Sunday School.

A Sunday school with twenty-one members was organized on September 13, in the Bas Obispo club rooms, the membership having gradually increased since. On October 14 a very successful social and entertainment was given, about fifty people being present.

The school is now considering plans for an entertainment to raise a fund for a suitable instrument, either to purchase an organ or to assist the Bas Obispo Club in the purchase of a piano for the joint use of the two organizations.

Culebra Bachelor Girls' Club.

Invitations are being issued by the Bachelor Girls' Club of Culebra, for their "Hallow-e'en" dance, to be held in the Y. M. C. A. hall, Thursday evening, October 29, at 8.15. It is the desire of the club that as many ladies as possible appear in fancy dress.

Knights of Pythias Musicale

To all Knights of Pythias: You are invited to attend a musicale and entertainment to be given in K. of P. Lodge hall, Cristobal, on Saturday night, October 31, at 9 o'clock. Bring your ladies and friends.

O. C. KILGOUR,
Acting K. of R. and S.

The regular Tivoli Club dance will be given on Saturday evening, October 24, at Hotel Tivoli.

Concert by the I. C. C. Band.

CULEBRA, C. Z.,
Sunday, October 25, 1908, at 6.00 p. m.:

PROGRAM.

- | | |
|--|-------------|
| 1 March— <i>Waldmere</i> | Lozey |
| 2 Selection— <i>Mill's Merry Melodies</i> | Mills |
| 3 a— <i>Pilgrim's Song of Hope</i> | Batiste |
| 3 b Schottische— <i>When a Boy Says "Will You?"</i> | Allen |
| 4 Serenade— <i>La Paloma</i> | Xradier |
| 5 Selection— <i>The Sunny South</i> | Lampe |
| 6 Intermezzo— <i>After Sunset</i> | Pryor |
| 7 a Medley March— <i>I'm Afraid to Go Home in the Dark</i> | Van Alstyne |
| 7 b Characteristic— <i>Ruralistic</i> | Bagley |
| 8 Overture— <i>Four Aces of Man</i> | Lachner |
| 9 Descriptive— <i>The Racket at Gilligan's</i> | DeWitt |
- Synopsis*—The guests gather at Gilligan's; after their arrival Gilligan sings a song, which is followed by a country dance. The star singer then renders a touching ballad, after which the bagpipes strike up. "Are ye's all ready?" shouts Gilligan. "Yis." Then fire away. A regular "welt the floor" and "slip" time follows. A sand jig comes next, and the festivities close by all singing "Saint Patrick's Day in the Morning."

10 March—*Santiago Flynn*.....Morse
CHAS. E. JENNINGS, Musical Director.
A concert will be given at the Hotel Tivoli, Sunday, November 1.

The steamship *Thelma* sailed from Gulfport, Miss., on October 10, with a cargo of 1,232 piles for the Isthmian Canal Commission.

COMPENSATION FOR INJURIES.

Further Definition of Law by Comptroller of the Treasury.

The act of Congress providing compensation for injuries incurred by an artisan or laborer in hazardous employment under the Isthmian Canal Commission, as published in THE CANAL RECORD of June 17, 1908, and as defined by the decision of the Comptroller of the Treasury, published in the issue of September 16, has been further defined in the following decision:

WASHINGTON, D. C., Sept. 26, 1908.

The Chairman of the Isthmian Canal Commission.

Sir—I have received your letter of the 14th instant as follows:

I have the honor to acknowledge the receipt of your decision of September 1, 1908, in reference to the regulations of the Commission granting injury leave with pay to its employes, in connection with the provisions of the Act of Congress of May 30, 1908, (35 Stat., 556).

In view of the conclusions which you reached upon the quotation submitted in my letter of August 20, 1908, I request a decision upon other questions herein stated, brought to my attention by the Examiner of Accounts.

The contracts of employment with employes of the Commission on the Isthmus, and the regulations of the Commission, contain the following provisions as to sick leave with pay and hospital care and attendance. These regulations took effect July 1, 1907:

"To assist the Government in maintaining a skilled force on the Isthmus, all regular employes above the grade of laborer, unaccustomed to a tropical climate, may be granted fifteen days' sick leave with pay for each six months' service, on the certificate of an authorized physician in the service of the Department of Health of the Isthmian Canal Commission, that the employe has been unable to work on account of illness contracted through no fault of his own, or because of injury.

"This leave may be cumulative to an amount not exceeding thirty days, and payment for same shall be made the first pay period after the employe returns to duty; but no payment shall be made for time lost in excess of the sick leave due at the time of such illness or injury.

"All employes, in case of illness or injury, will receive free medical care and attention at the hospitals.

"In case of illness or injury, laborers shall receive free medical care and attendance at the hospitals."

These provisions are separate and distinct from the injury leave referred to in your decision.

The questions upon which I now wish your decision are the following:

1. Is an employe of the Commission who comes within the class of employes included in the Act of May 30, 1908, entitled to receive under his contract of employment, and the regulations of the Commission, pay for absence, not exceeding thirty days, when such absence is caused by sickness resulting from an injury incurred in the performance of his duties?

2. Is an employe of the Commission who does not come within the class of employes included in the Act of May 30, 1908, entitled to receive, under his contract of employment, and the regulations of the Commission, pay for absence, not exceeding thirty days, when such absence is caused by sickness resulting from an injury incurred in the performance of his duties?

3. Is the Commission authorized to furnish an employe, who is in the class referred to in question No. 1, free medical care and attendance at the hospitals as provided in his contract and the regulations of the Commission?

4. Is the Commission authorized to furnish to an employe who is in the class referred to in question No. 2, free medical care and attendance at the hospitals as provided in his contract and the regulations of the Commission?

5. Is the Commission authorized to pay the compensation of an employe, who is in the class referred to in question No. 1, for a period of time after July 31, 1908, and within the limits of its regulations and contract with the employe, if the injury was incurred prior to August 1, 1908?

6. Is the Commission authorized to pay the compensation of an employe, who is in the class referred to in question No. 2, for a period of time after July 31, 1908, and within the limits of its regulations and contract with the employe, if the injury was incurred prior to August 1, 1908?

I request that your decision on these questions be

sent to the Washington office of the Commission, in order that the substance of it may be cabled to me here.

THE DECISION.

I will answer your questions in the order stated.

In my decision of the 1st instant, upon your request of the 20th ultimo, the act of May 30, 1908 (35 Stat., 556), was construed as it applied to employes of the Isthmian Canal Commission. It was decided therein that:

"In the absence of Congressional enactment, the regulations of the Commission set out in your letter providing for the leave with pay for thirty days or a fractional part thereof to employes of the Commission for injuries incurred in the line of duty; and thirty days leave, or fractional part thereof, with pay to laborers of the Commission for injuries incurred while in the performance of duty and while incapacitated for duty by reason of such injury not exceeding thirty days, were undoubtedly made with authority at the time they were made, considering the broad authority granted the President by the provisions of the original Spooner Act, authorizing him to construct the Canal.

"But when Congress stepped in and enacted, as it did, the act of May 30, 1908, (35 Stat., 556) set out in your letter, providing just what kind of relief for personal injuries and exactly to whom and under what circumstances it should be given and included the employes of the Isthmian Canal Commission in such act, I am forced to the conclusion that the enactment is exclusive, after it came into effect, and that it is no longer in the power of the Commission by regulations, past or present, to enlarge or diminish the provisions of that act as to relief extended to employes of this Commission for injuries received in the line of their said employment.

"A different holding would be an attempt to broaden and modify an Act of Congress, and to make a discrimination in favor of a class, where Congress legislating concerning such class did not see fit to make such discrimination."

Your questions are answered as follows:

1. An employe who comes within the provisions of the Act of May 30, 1908, is not entitled to receive pay by virtue of the terms of his contract, but can only be paid under the terms and conditions and upon compliance with the Act of May 30, 1908. This question is therefore answered in the negative.

2. All regulations providing for payment to an employe not coming within the provisions of the Act of May 30, 1908, during absence on account of sickness resulting from injuries incurred in the performance of duty are unauthorized and of no effect since the passage of such act. Such an employe is not entitled to pay for and on account of absence occasioned as stated in this question.

3. The contingent benefit of hospital care and treatment furnished to an employe when authorized and contracted for as a part of the compensation for services rendered, is to be distinguished from the payments on account of injuries provided for in the Act of May 30, 1908. The hospital care and treatment is a payment for service already rendered, while the payment for injury is in the nature of damages for such injury and is governed by the Act of May 30, 1908.

The Commission is authorized to provide by contract for furnishing an employe such as is indicated in this question, free medical

care and hospital attendance as a part of his compensation for services rendered.

4. The answer to question 3 applies here, and for the same reason free medical care and attendance at hospitals may be provided as a part of the compensation for services rendered to the employe indicated in this question.

5. I am of the opinion that under the facts stated in this question, the rights of the employe to payment under his contract for an injury prior to August 1, 1908, for the period provided for in such contract, became vested at the time of the injury and that the right to payment thereunder is not affected by the Act of May 30, 1908.

The payment indicated in this question would therefore be authorized.

6. The answer to question 5 applies here and for the reasons therein given you would be authorized to make the payments indicated herein.

Congress has plenary power to regulate and control the compensation to be paid to employes of the Isthmian Canal Commission for services *in futuro* (*Crenshaw v. United States*, 134 U. S., 99), but it has no power to deprive an employe of the right to the compensation earned under his contract, or of a contingent benefit accrued prior to the passage of the act affecting such compensation as a part thereof.

The cases stated in questions 5 and 6 are, therefore, to be distinguished from the cases stated in questions 1 and 2, although each may arise under existing contracts.

This decision has been forwarded as requested to the Washington office.

Respectfully,

R. J. TRACEWELL,
Comptroller.

OFFICIAL CIRCULAR.

Division of Meteorology and River Hydraulics Abolished.

CULEBRA, C. Z., October 12, 1908.

CIRCULAR NO. 183K.

Effective this date: The Division of Meteorology and River Hydraulics is abolished, and the work heretofore performed by that division is placed in charge of Mr. C. M. Saville, Assistant Engineer. The records and office force will be transferred to the office of the Chairman.

H. F. HODGES,
Acting Chairman and Chief Engineer.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

EMPIRE.

On Thursday evening, October 15, a pool and billiard tournament was started with thirty contestants in pool and ten in billiards. On the same evening a bowling tournament was opened with thirty-five contestants. Much interest is manifested in each of the tournaments.

Plans are now being perfected for a great time on election day, November 3. A regular voting system for the United States' presidential candidates will be entered into, which will give every man of Empire a chance to vote—not only for President, but for Mayor of Empire. The mayoralty candidate is intended to add to the entertainment feature of the evening, when it is expected that the election returns from the States will be received at intervals. Other features of entertainment will be an orchestra concert, vocal and instrumental selections, etc.

On Thanksgiving Day the 1908 Isthmian championship bowling tournament, single and double, will be rolled off on the Empire Y. M. C. A. alleys. Full particulars later.

Mr. John C. Watts is the new manager of the pool room.

An indoor baseball team was organized Saturday evening, and John McCloud was elected captain. Games are wanted, and a league is hoped for.

COMMISSARY DEPARTMENT.

ICE CREAM ON SUNDAYS.

Beginning Sunday, October 18, the commissary at Cristobal will sell ice cream in packages suitable for carrying home, which will enable patrons of the commissary to purchase ice cream on Sundays. This is an experiment at the Cristobal commissary. If it proves successful, the same plan will be extended to other commissaries.

COMMISSARY PRICES

For week beginning October 20:

FRESH MEATS.		Price.
Mutton—Stewing.....	per lb	6
Shoulder and neck (not under 6 pounds).....	per lb	7
Entire forequarter (not under 10 pounds).....	per lb	8
Leg (8 to 10 pounds).....	per lb	16
Short-cut chops.....	per lb	20
Lamb—Stewing.....	per lb	6
Entire forequarter.....	per lb	8
Leg (6 to 8 pounds).....	per lb	27
Chops.....	per lb	29
Veal—Stewing.....	per lb	10
Entire forequarter (15 to 20 lbs).....	per lb	11
Loin.....	per lb	22
Short-cut chops.....	per lb	23
Cutlets.....	per lb	23
Pork—Cuts.....	per lb	20
Beef—Suet.....	per lb	4
Soup.....	per lb	8
Stew.....	per lb	12
Corried.....	per lb, 12, 14	16
Pot roast (from stion bath).....	per lb	17
Rib-roast, second cut (not under 3 pounds).....	per lb	19
Kio-roast, short cut (not under 3/2 pounds).....	per lb	23
Sirloin roast.....	per lb	29
Rump roast.....	per lb	29
Porterhouse roast.....	per lb	29
Steak, round.....	per lb	24
Rib.....	per lb	29
Sirloin.....	per lb	29
Porterhouse.....	per lb	29
Rump.....	per lb	29
Tenderloin.....	per lb	30
MISCELLANEOUS.		
Livers—Beef.....	per lb	12 1/2
Calif.....	each	65
Sausage—pork.....	per lb	19
Leocwurst.....	per lb	17
Sweet bread—Veal.....	each	1.20
Ox tongues.....	each	90
Pigs' feet, pickled.....	per lb	14
Pigs' tongues, pickled.....	per lb	15
Eggs, fresh.....	dozen	34
POULTRY AND GAME.		
Chickens—Dressed (milk-fed).....	each	1.30
Large (milk-fed).....	each	1.50
Capons.....	each	2.40
Broilers.....	each	60
Fowls, medium and large.....	each, 80c, and 1.00	
Turkeys.....	per lb	30
Squabs.....	each	45
Suckling pigs (whole).....	each	3.50
Suckling pigs (one-half).....	each	1.75
CURED AND PICKLED MEATS.		
Bacon—Strips.....	per lb	23
English, breakfast sliced.....	per lb	\$26
Ham—Sugar-cured, sliced.....	per lb	\$25
One-half, for boiling.....	per lb	\$21
Petris.....	per lb	20
Beef, salt, family.....	per lb	16
Salt pork.....	per lb	13
DAIRY PRODUCTS.		
Butter—Prints, prime quality.....	per lb	35
Cheese—Roquefort.....	per lb	45
Neufchatel.....	each	6
Young America.....	per lb	22
Swiss.....	per lb	33
Edam.....	each	1.05
McLaren's.....	jar	15
Pinner's.....	tin	22
Gonda.....	per lb	24
Philadelphia Cream.....	each	22
French cheese in tins—Camenbert, Roquefort, Brie, Neufchatel.....	tin	20
VEGETABLES AND FRUITS.		
Tomatoes (local only).....	per lb	8
White potatoes.....	per lb	3 1/2

Cabbage.....	per lb	4
Onions.....	per lb	3 1/2
Cucumbers.....	per lb	8
Squash (summer).....	per lb	3
Beets.....	per lb	3
Celery.....	bunch	15
Carrots.....	per lb	3
Turnips.....	per lb	3
Lemons.....	dozen	24
Oranges.....	dozen	18
Grapefruit.....	each	3
Grapes, Concord and Niagara.....	per lb	8
Grapes, California, Tokay and Malaga.....	per lb	8

§ Sold only from cold-storage and not from Commissaries.

Rainfall, October 1 to 17, 1908. Inclusive.

Stations.	Maximum in one day	Total.
Atlantic Division—		
Cristobal.....	2.35	5.73
Brazos Brook.....	2.09	7.62
Gatun.....	2.13	6.35
Bohio.....	1.75	5.97
Central Division—		
Taherilla.....	1.62	5.41
San Pablo.....	1.12	4.09
Ras Obispo.....	1.29	4.52
Gambao.....	Abolished.	
Empire.....	1.40	3.90
Camacho.....	.85	2.81
Culebra.....	1.56	3.85
Kio Grande.....	1.32	3.24
Pacific Division—		
Pedro Miguel.....	1.70	4.51
La Boca.....	.85	3.62
Ancon.....	1.39	3.74
Upper Chagres.		
Alhajuela.....	1.38	3.97

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, October 17, 1908:

	STATIONS.				
	Vigia.	Alhajuela.	Gambao.	Bohio.	G. tun.
Height of low water above mean sea level, feet.	129	92	46	0	0
Maximum height above low water, feet:					
Sunday, Oct. 11.....	2.32	1.88	3.90	8.90	4.40
Monday, Oct. 12.....	1.85	2.30	3.85	8.00	3.74
Tuesday, Oct. 13.....	1.70	2.08	3.10	6.70	3.00
Wednesday, Oct. 14.....	2.05	2.66	3.65	6.55	2.00
Thursday, Oct. 15.....	1.90	2.65	4.31	8.00	3.95
Friday, Oct. 16.....	1.00	1.63	2.70	6.90	2.85
Saturday, Oct. 17.....	1.13	1.73	2.65	5.90	2.10
Maximum for week.....	2.32	2.66	4.30	8.90	4.40

*Approximately.

Misdirected Letters.

Division of Dead Letters.

Ancon, C. Z., October 20, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

Agnew, Lulu	Jack, H. G.
Angle, Chas.	Johnson, Mr. J.
Barton, Robt.	Keller, Rev. John
Bell, Florence	Leibfritz, Herman
Brady, Mrs. Lucy	Lipsey, S. E.
Brown, J. F. (Engineer)	Miller, S. B.
Bunker, Mrs. J. H.	Mollenhaur, Egmont
Casey, Mrs. W. B.	Mollenhaur, Arnold
Chancy, R.	Needham, Mrs. E.
Clark, A. H.	Pettit, Wm. N.
Cooper, G. K.	Pierce, Palmer
Galliger, Wm.	Sheehy, Mrs. D.
Gronni, F. E.	Starts, Mrs. F. J.
Hart, Richard	Steers, C. A.
Henry, Mrs. Chas.	Strong, J. M.
Hill, Iver	Walker, W. R.
Hiscock, W. P.	Wells, G. M.
Howe, Wm. G.	Winder, Clarence

The following steamers have recently arrived at La Boca: October 10, *Huasco*, from Valparaiso; October 12, *Ecuador*, from Buenaventura; October 14, *City of Sydney*, from San Francisco. Departures were; October 13, *Guatemala*, for Valparaiso; October 14, *Indiana*, for San Francisco.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.	
Colon.....	P. R. R. Saturday...Oct. 17
Esperanza.....	P. R. R. Thursday...Oct. 22
Prinz Joachim.....	H.-A. Saturday...Oct. 24
Finance.....	P. R. R. Tuesday...Oct. 27
Tagus.....	R.-M. Saturday...Oct. 31
Advance.....	P. R. R. Monday...Nov. 2
Allianca.....	P. R. R. Saturday...Nov. 7
Prinz Aug. Wilhelm.....	H.-A. Saturday...Nov. 7
Colon.....	P. R. R. Thursday...Nov. 12
Magdalena.....	R.-M. Saturday...Nov. 14
Panama.....	P. R. R. Tuesday...Nov. 17
Prinz Joachim.....	H.-A. Saturday...Nov. 21
Finance.....	P. R. R. Monday...Nov. 23
Orinoco.....	R.-M. Saturday...Nov. 28
Advance.....	P. R. R. Saturday...Nov. 28
Allianca.....	P. R. R. Thursday...Dec. 3
Prinz Aug. Wilhelm.....	H.-A. Saturday...Dec. 5
Colon.....	P. R. R. Tuesday...Dec. 8
Atrato.....	R.-M. Saturday...Dec. 12
Panama.....	P. R. R. Monday...Dec. 14
Finance.....	P. R. R. Saturday...Dec. 19
Prinz Joachim.....	H.-A. Saturday...Dec. 19
All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.	
FROM COLON TO NEW YORK.	
Advance.....	P. R. R. Monday...Oct. 19
Tagus.....	R.-M. Tuesday...Oct. 20
Allianca.....	P. R. R. Saturday...Oct. 24
Prinz Aug. Wilhelm.....	H.-A. Tuesday...Oct. 27
Colon.....	P. R. R. Thursday...Oct. 29
Magdalena.....	R.-M. Tuesday...Nov. 3
Esperanza.....	P. R. R. Tuesday...Nov. 3
Finance.....	P. R. R. Monday...Nov. 9
Prinz Joachim.....	H.-A. Tuesday...Nov. 10
Advance.....	P. R. R. Sunday...Nov. 15
Orinoco.....	R.-M. Tuesday...Nov. 17
Allianca.....	P. R. R. Friday...Nov. 20
Prinz Aug. Wilhelm.....	H.-A. Tuesday...Nov. 24
Colon.....	P. R. R. Wednesday...Nov. 25
Panama.....	P. R. R. Monday...Nov. 30
Atrato.....	R.-M. Tuesday...Dec. 1
Finance.....	P. R. R. Sunday...Dec. 6
Prinz Joachim.....	H.-A. Tuesday...Dec. 8
Advance.....	P. R. R. Friday...Dec. 11
Trent.....	R.-M. Tuesday...Dec. 15
Allianca.....	P. R. R. Wednesday...Dec. 16
Colon.....	P. R. R. Monday...Dec. 21
Prinz Aug. Wilhelm.....	H.-M. Tuesday...Dec. 22
Panama.....	P. R. R. Sunday...Dec. 27
Tagus.....	R.-M. Tuesday...Dec. 29
Finance.....	P. R. R. Friday...Jan. 1
Prinz Joachim.....	H.-A. Tuesday...Jan. 5
Advance.....	P. R. R. Wednesday...Jan. 6
Allianca.....	P. R. R. Monday...Jan. 11
FROM NEW ORLEANS TO COLON.	
Cartago.....	U.F.C. Saturday...Oct. 24
Parismina.....	U.F.C. Saturday...Oct. 31
Heredia.....	U.F.C. Saturday...Nov. 7
Cartago.....	U.F.C. Saturday...Nov. 14
Parismina.....	U.F.C. Saturday...Nov. 21
Heredia.....	U.F.C. Saturday...Nov. 28
FROM COLON TO NEW ORLEANS.	
Heredia.....	U.F.C. Tuesday...Oct. 27
Cartago.....	U.F.C. Tuesday...Nov. 3
Parismina.....	U.F.C. Tuesday...Nov. 10
Heredia.....	U.F.C. Tuesday...Nov. 17
Cartago.....	U.F.C. Tuesday...Nov. 24
Parismina.....	U.F.C. Tuesday...Dec. 1
FROM COLON TO BARBADOS, CALLING AT TRINIDAD.	
Trent.....	R.-M. Tuesday...Oct. 27
Tagus.....	R.-M. Tuesday...Nov. 10
Magdalena.....	R.-M. Tuesday...Nov. 24
FROM COLON TO NEW ORLEANS VIA KINGSTON.	
Mexican.....	Leyland Line...about Oct. 31
The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.	
The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.	
All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.	
The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m. via Port Limon and Puerto Barrios, for New Orleans.	
Sailings of the French line (Cie. Générale Transatlantique) for Venezuela ports, Martinique and Guadeloupe on the 3d and 20th of each month.	



The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Ancon Reservoir.

The excavation for the new million-gallon reservoir on the east side of Ancon Hill is well under way. The inside dimensions of the reservoir will be 102 feet by 125 feet. It will have a concrete floor and reinforced concrete walls 13 feet high. A Decauville track is being laid up the hill from the road near the new Administration building, by which construction material will be taken to the reservoir.

313 Cars in 370 Minutes.

A record was made by shovel 253 at San Pablo on October 22, when 313 10-yard slump cars were loaded in 370 minutes, an average of one minute and eleven seconds per car. Assuming that the cars were loaded to their full capacity a cubic yard of material was placed on them every seven seconds. The only breaks in the day's work were occasioned by moving the shovel forward and cleaning the dipper.

Improvements at Colon Hospital.

A concrete floor is being laid in the kitchen of Colon hospital and the interior is being rearranged. A new refrigerating building, one-story high, is in course of erection in the rear of the kitchen. Like the rest of the building to which it is attached it projects over the water of Limon Bay, on concrete piers resting on the coral reef. The floor will be of concrete, as will also be the floor of the veranda connecting the new building with the present one. A new pantry, with running water and a dumb waiter to connect with the dining room of the "gold" mess in the upper story, is also being built.

The entrance to the hospital grounds has been moved 125 feet to the west and a new macadam road 20 feet wide will extend from end to end of the premises, a distance of about 1,700 feet, and there will be a con-

crete sidewalk 5 feet wide on the south side of the road. The space between the road and the hospital buildings will be set in grass. House No. 18, a two-family house, has been removed from its old location between houses 17 and 19 to a new site back of house 47 near the new thoroughfare known as Coconut alley. The old private stable at the corner of Second street and Coconut alley will shortly be moved and the site graded and enclosed by the new fence which will surround the hospital grounds.

Dredge at Nombre de Dios.

The 16-inch suction dredge, which made the fill for a corral on Folks River, and later underwent general repairs at Cristobal dry dock, was towed down the Atlantic coast last week to Nombre de Dios. The sand for the concrete work at Gatun is to be taken from this place, and the dredge will be used in pumping it from the banks into the scows. Nombre de Dios is in Panamanian territory, and an adjustment of the claims of the landholders to the sand that will be taken is in progress.

New Railroad Station at Colon

A new station has been authorized at Colon for the Panama railroad, and the work of construction will begin in the near future. It will be located on Front street, opposite Eighth street, about half way between the present stations at Cristobal and Colon, both of which will be torn down as the new structure will be the union station for the two towns.

The building will be one-story high and constructed of concrete blocks. It will be 30 feet wide and 450 feet long and the station platform will extend from Seventh street to Eleventh street with numerous turnstiles for exits. The ticket office will be directly opposite Eighth street. The second-class waiting room and the baggage room will occupy the south half of the building. The first-class waiting room will be in the north half of the building, together with the office of the cable company. The carriage stand will be at the north end of the platform.

There are at present six tracks on the site of the proposed station, three of which will be taken up. Of the three tracks left two will be used for freight traffic to the railroad company's docks and one will be used for passenger trains, the latter to be enclosed by a fence from Seventh to Eleventh street.

On the Obispo Diversion.

It has been decided to complete the work on the Obispo Diversion by putting three steam shovels on the last large cut. The track from the Canal prism opposite Buena Vista and Haut Obispo up to the summit of the divide is almost completed, and steam shovel work will probably begin on the last large cut within the next three weeks. Before the Diversion channel, which will drain the water from the east side of Culebra Cut into

the Chagres above Gamboa, is completed, a cut must be made through a ridge whose lowest point on the line of the diversion is 93 feet above the bottom of the proposed channel. It is estimated that 400,000 cubic yards must be excavated on the last mile of this drainage canal. An effort will be made to complete the work inside of eight months, or before the next rainy season is well begun.

Contracts for Supplies.

Contracts will presently be offered for a six-months' supply of such articles and materials as have become standard in the Canal work. The method now in use is to ask bids for a supply of one or more articles when the need becomes apparent, and up to the present time this method has been the most practicable.

Since the work has settled into a routine, however, and the division engineers know from experience the quantity of supplies that will be needed for any specified time, the method used for years in the Army and Navy and in many private establishments, of contracting for a six-months' or a year's supply has become the more economical. It is thought that lower prices can be procured on large contracts than on small ones, and it is known that the new method will do away with the expense of frequent advertising and of considerable clerical work in the Washington office, and will insure prompt delivery.

At present, months frequently elapse between the time when a requisition is made for supplies and their delivery on the Isthmus. It is proposed to make contracts for delivery of supplies needed between January 1 and July 1, 1909, on condition that the Commission be allowed to take 25 per cent less than the amount contracted for or be furnished with 25 per cent more. Only a few months' supply will be carried on the Isthmus, as a cablegram to the States will procure delivery of any article at Colon in twenty days. A list of the standard supplies has been prepared by the Chief Quartermaster, and the division engineers are now preparing their estimates.

Cristobal Cold Storage Plant

A new unit for the Cristobal cold storage plant has been authorized, and it will probably be installed within the next three months. It will have a compressing capacity of 150 tons, which, added to the present plant, will raise the capacity to 375 tons, and increase the efficiency 90 per cent. No increase in the size of the cold storage plant is contemplated at this time, the purpose of the new compressor being to relieve those now in service, and to act as auxiliary in case of a breakdown.

The Panama Railroad Company announces that its regular Sunday night train from Panama will leave at 10 o'clock according to schedule.

THE ATLANTIC ENTRANCE.

Progress of the Work from Gatun to Limon Bay.

From the veranda of the Atlantic Division office building at Gatun one can look down the line on which the ships will sail to the Gatun Locks from Limon Bay and can get an idea of what the Canal in this section will look like when completed. Where the line pierces the Mindi hills the cut has been completed to sea level, and the steam shovels are carrying the work below the level of the nearby water. Only a mile from where this cut is being made the Atlantic dredging fleet is carrying its channel into the land, the ladder and dipper dredges working near the shore, while the sea-going suction dredge *Ancon* is making a deep water channel out to the point where the bay merges into the sea.

From the appearance of the land bordering Limon Bay it might be inferred that the channel of the Canal lies through a swamip. The dredges have found it quite otherwise, for they are working in earth which, although only a few feet above mean sea-level is very firm. Underneath this earth at varying depths is a bed of blue rock, coming close to the surface in several places and in others lying ten feet or more below. The method of working in this material is to blast it with dynamite and then take it out by ladder and dipper dredge. A battery of nine Star drills precedes the dredges, keeping far enough in advance not to retard the work. The bottom of the Canal from the bay to Gatun Locks is to be forty-one feet below sea-level, and, as the surface of the ground is from one to five feet above sea-level, the holes for the dynamite are from 45 to 50 feet deep. They are sunk at 15-foot intervals in the form known by powder men as "staggered," and are not "sprung" before the charge of dynamite is put in. At present 60 per cent dynamite is being used and the charge varies according to the depth of the hole in rock, the object being to shatter the rock. There was some doubt as to whether the rock could be broken into pieces small enough for the dredges to handle, but so far this method has proved entirely successful. The channel has already been dug 1,000 feet into the bank the full width of 500 feet and the dredges are making a cut that varies in depth from 20 to 40 feet. All the ladder and dipper dredges are working in rock, and although some large pieces are brought up nothing has been encountered so far that the dredges can not handle.

Dredge *No. 6*, one of the old French ladder type, is working close to the bank. It is handling rock and the overlying strata of earth and is cutting to a depth of from 20 to 30 feet. The dipper dredge *Chagres* is doing the most interesting class of work, because it is taking rock up from 30 feet or more below sea-level. This dredge is capable of excavating to the full depth required, 41 feet, and up to the present time the rock encountered has been broken into sufficiently small pieces to be handled without much difficulty. The *Chagres* and dredge *No. 6* are the ones working farthest in toward land, following very closely on the heels of the powder men. As they advance they may strike harder rock and material more difficult to handle, so that the cost can not fairly be estimated, but at

present they are handling blue rock shattered by dynamite at a cost of only 80 cents a cubic yard.

Dredge *No. 85*, the new 20-inch suction, is "trying out" in the prism a few hundred yards back of dredge *No. 6*, and is working in silt. As it has been at work only a few days and has not yet "found itself" no fair idea can be obtained of its probable efficiency. The end of the pipe line rests on a small island near the mainland, several hundred yards away from the line of the channel. Behind this dredge is the old French ladder dredge *No. 1*, and back of this the dipper dredge *Mindi*. The *Mindi* is working in coral which has been broken by exploding dynamite on the surface of the rock in the manner known to powdermen as "bulldozing."

The sea-going suction dredge *Ancon* returned to its work of making the channel out to deep water on October 21, after having been at the Cristobal dry dock 18 working days for general repairs. The 20-inch suction dredge *No. 83*, of this dredging fleet, is laid up for repairs and will probably not be in service again until January. A defective casting in the pump broke about the first of October and the dredge can not return to work until the manufacturer has replaced it. The dredging record of the Atlantic fleet will be greatly reduced this month because of the loss of 18 days by the *Ancon* and the total loss of the service of dredge *No. 83*.

Waiting for High Water.

The two old French ladder dredges on the bank of the Cbagres at Frijoles, and the one at Chagrecito, have been lowered to the level of the water in the river and are waiting for a flood to carry them down to Cristobal dry dock. A hawser has been run from each dredge to trees on the opposite bank of the river so that they may be drawn into the stream at the first high water.

St. Mary's Church at Empire.

The corner stone of St. Mary's Protestant Episcopal church in Empire was laid on Sunday afternoon, October 25, at 3 o'clock by Lieut.-Col. H. F. Hodges, U. S. A., Acting Chairman and Chief Engineer of the Isthmian Canal Commission. Archdeacon H. B. Bryan, one of the Commission chaplains, conducted the services, and the executive

committee was composed of J. E. E. Armstrong, secretary; A. S. Zinn, treasurer; E. B. Hartley, W. B. Dorsey, L. H. LeNoue, W. P. Neal.

The new church is to be 26 feet wide, 64 feet long, and to have a seating capacity of 200 people. It is located in the center of the village, near the court house, on ground assigned by the Commission. The money needed to build it has been raised by private subscription in the Canal Zone and in the States.

March Examination for Clerk.

The Secretary of the Isthmian Civil Service Board has received the following letter from the President of the Civil Service Commission in Washington, under date of October 8, 1908:

Sir: The Commission is in receipt of your letter of September 23, and in reply you are advised that the rating of the March examination for Clerk in the Isthmian Canal Service will be completed within a day or two, and the applicants notified as promptly as possible.

The apparent delay in rating these papers is due to the very large number of applicants for all branches of the service during the winter and spring. At one time there were on hand for rating over 40,000 sets of examination papers, and with no corresponding increase in the force of examiners the Commission has been obliged to rate papers in the order required to meet the needs of the service. The surplus is being gradually reduced, and it is believed that within a short time the papers of all competitors in the recent examinations will be completed.

Trains on November Third.

As November 3, Panama Independence Day, has been officially declared a holiday in the Canal Zone the Panama Railroad Company will operate a passenger train service on that day, approximately the same as was run on July 4, as published on page 344 of Volume 1 of THE CANAL RECORD, with the exception that transportation will be required on all trains.

The average number of employes in the Mechanical Division in September was 2,381, as compared with 2,388 in August, and the amount of the pay-roll was \$186,579.82, as compared with \$194,204.59 in August.

Lincoln House, the new quarters for the men employes of the Panama Railroad Company in Colon, will be opened the night of October 31 with a ball. The quarters are already occupied.

VALUE OF FRENCH BUILDINGS.

A statement of the value of the buildings received from the new French Canal Company when the Americans took possession on May 4, 1904, is printed below. It is an estimate based on the appraised value of the buildings as received in 1904, plus the value of repairs, minus 10 per cent to cover depreciation.

In a statement prepared by the architect

of the Commission the number of buildings turned over by the French to the Americans is given as 2,149, of which 1,536 were in use on August 1, 1908. The estimate does not include the value of the Administration building in the city of Panama, formerly used as headquarters, nor the building also in the city of Panama, now used as the American legation.

	Present Value.	EXPENDED FOR REPAIRS.			Net value when received from French.
		Labor.	Material.	Total.	
1—Quarters, Gold.....	\$1,024,712.14	\$305,828.60	\$93,399.91	\$399,228.51	\$625,483.63
2—Quarters, Silver.....	646,287.05	146,085.87	56,400.88	202,486.75	443,800.30
3—Hotels.....	27,131.40	16,478.69	3,197.48	19,676.17	7,455.23
4—Hospitals.....	617,749.25	86,230.86	48,755.08	134,985.94	482,763.31
5—Jails.....	21,900.00	7,082.51	1,514.15	8,596.66	13,503.34
6—School houses.....	27,450.42	10,323.96	4,423.68	14,747.64	12,702.78
7—Shops.....	119,862.27	5,819.42	3,842.00	9,661.42	110,200.85
8—Storehouses.....	144,112.91	40,757.20	9,256.01	50,013.21	94,099.70
9—Structures.....	123,823.36	35,995.60	10,609.56	46,605.16	77,218.20
10—Miscellaneous buildings of old Department of Government and Sanitation.....	18,630.05	4,965.37	1,688.22	6,653.59	11,976.46
Totals.....	\$2,771,658.85	\$659,568.08	\$232,886.97	\$892,455.05	\$1,879,203.80

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Cristobal Woman's Club held its regular meeting at the Commission clubhouse on Wednesday afternoon, October 21, at 3 o'clock, the first vice-president, Mrs. E. Lewis Baker, in the chair. There was a short business meeting, at which the reports of the various departments were read. The meeting was then turned over to the home department, the chairman, Mrs. H. J. Slifer, reading a paper on essentials and non-essentials as related to the home and homemaker. The home department at its meetings during the season will consider a large number of practical subjects, including the making of tea and coffee, the evolution of the kitchen, a study of food values, and the esthetic side of home-making.

A question box was opened, the questions submitted being read from the chair, and included cooking, cleaning of curtains, destruction of insects and other tropical pests, and home decorations for Christmas. Replies were given to all of these from the floor. It is the intention of the department to reserve all the questions that are considered of general value and to publish them when a sufficient number have been obtained. Tea was served later, and the discussion of club work was carried on by the members informally during the social half hour.

The "Willing Workers," the title given to the sewing circle for young girls, which meets every Saturday from 3 to 5 at the home of the chairman of the educational department, has a membership of fifteen, the girls ranging from seven to fourteen years of age. The class is not confined to the children of club members, but is open to all young girls who are interested in learning to sew. The work at present is hand sewing, overcasting, hemming, and the more advanced girls have begun hemstitching. The work of the class is not entirely confined to sewing.

The scheduled meetings of the club for the season are as follows: Regular meetings, the first and third Wednesdays of each month; business meeting, every fourth Wednesday; home department, every second Monday; educational, every third Monday; art and literature, every fourth Monday. The philanthropy department has not yet arranged its meetings. The board of managers meet at the call of the president. The next meeting of the club will be the business meeting in the Commission clubhouse, on October 28, at 3 o'clock. The club is arranging to give its annual concert some time in January.

The Pedro Miguel Woman's Club met at the residence of the president, on Wednesday, October 21, when the following chairmen of committees were appointed to serve for the ensuing six months: Literature, Mrs. L. M. Vacher; home, Mrs. S. W. Jennings; social, Mrs. Mark White. The club gave a card party on Saturday evening, October 24, a small sum being charged to each player. Four prizes were given, the attendance was satisfactory and the evening was much enjoyed. Later a subscription dance will be given by the club. A play, in which Madams Waters, Vacher, White, and Barnes will appear, is being rehearsed. Further entertainment will be furnished by the Bachelors' Club, and preparation for a community

celebration of Christmas is under discussion. The Pedro Miguel Social and Recreative Club is arranging a Hallow-e'en party for the evening of October 31, and the Woman's Club has been asked to assist.

The members of the Gatun Woman's Club met informally on Friday afternoon, October 16, for a discussion of future plans. A study of Panama is contemplated.

The Ancon Woman's Club held its meeting, October 21, at Hotel Tivoli, the president, Mrs. C. C. McCulloch, Jr., in the chair. The literary and educational department has decided to take up the study of Italy and Greece as outlined by the Bay View reading course. Regular meetings will be arranged later. The art department will study the architecture, cathedrals, and ruins of Panama. The philanthropy department has arranged for monthly visits to the following institutions: Home for the Aged, Santa Tomas Hospital, and the San Blas Indian Industrial School in Panama; Ancon Hospital, and the leper colony at Palo Seco. Blank books are to be carried by each member on these visits, in which data regarding the institutions may be recorded and photographs kept for the individual interest. Special work is also planned for the leper colony at Christmas. The department work among the Panama bootblacks in the night school will be continued.

The program committee of the club met at the residence of the chairman, Mrs. R. E. Noble, on Friday afternoon, October 23, when the schedule for the year was made out. The literary and educational departments will meet at the residence of Mrs. H. C. Hanson, on Wednesday afternoon, October 28, at 3 o'clock; subjects, "Current Event" and "An Afternoon in Rome."

The Woman's Guild of St. Luke's Church will give a reception at Hotel Tivoli on Monday evening, November 2, from 8 to 10 o'clock, to which all members of the congregation of the Ancon Protestant chapel and residents of Ancon are cordially invited. The Guild's annual meeting will be held on the same day, at 3.30 in the afternoon, at the residence of Mrs. Bishop. A full number was present at the reception given by the Guild on Monday, October 19, the afternoon being greatly enjoyed by the members and their guests. The Guild is arranging for a sale of cakes, to take place at the residence of the chaplain later in the month.

The Chorus Club of Gorgona is rehearsing to give an Old Folks' concert early in November. This club, which was organized about two months ago, consists of about fifteen members of the Y. M. C. A. and their wives. Rehearsals are held in the Commission clubhouse every Monday evening, Mr. Jennings having charge of the work. The concert will consist of a program of old-fashioned songs, and will close with a medley of national songs and a tableau representing "Way Down Upon the Suwanee River."

The Gorgona Dancing Club gave a large dance recently and will give an old-fashioned dance and entertainment on All Hallow-e'en.

Celebration of Christmas is being arranged by the American residents of Cristobal and Colon, the initiative having been taken by the Y. M. C. A., Woman's Club, and the public schools. It is planned to outdo the observance of last Christmas, and to this end an early start has been made, in order

that such supplies as are necessary and are not available on the Isthmus may be purchased in the States.

The Wesleyan Methodist Missions in Panama, Colon, and Empire have been holding mission meetings during the past week, a missionary from Costa Rica having come to the Isthmus for the purpose. The meetings have been well attended. Work on the church in Panama has been resumed, and its completion is expected within a short time.

Opening of Panama National Theater.

The new National Theater in the city of Panama was opened on the night of October 22, with a performance of "Aida" by the Lamhardi Opera Company. In the audience that filled the theater were officials of the Government of Panama, members of the diplomatic corps, members of the Isthmian Canal Commission and many Americans from various parts of the Canal Zone. The theater is in the new Government building which overlooks Panama Bay, and which contains also the Panama government offices.

Personal.

Dr. A. B. Herrick and family and Judge S. E. Blackburn and family, of Ancon, sailed on the *Advance*, on October 19, for a visit of six weeks in the States.

Among the passengers returning to the Isthmus on the *Colon*, which arrived at Cristobal on October 23, were: G. B. Strickler, Resident Engineer at Corozal, and Dr. W. E. Deeks, of Ancon Hospital.

Maj. John L. Phillips and family, Judge H. A. Guder and family, H. D. Reed and wife and Miss Gorgas, of Ancon, and R. Budd, and H. L. Stuntz of Colon, are passengers on the *Esperanza*, due at Cristobal on October 28.

Obituary.

Information has been received of the death at Washington, on October 19, 1908, of William C. Eldridge, assistant examiner of accounts of the Isthmian Canal Commission. Mr. Eldridge was appointed to that position on August 15, 1907, after about twenty years' service in the office of the Auditor for the War Department. He came to the Isthmus on official business on the 21st of last September, and returned to Washington on the *Finance*, sailing from Colon on October 8. He was taken sick on the way, and although his condition was not regarded as serious, he died four days after reaching home. No information has been received as to the cause of death.

Mr. Eldridge was exceptionally well fitted by experience for the duties of the office which he held. He was a faithful public servant and a man of excellent character.

R. I. Richards, a conductor on the construction line of the Central Division, died at his home in Great Valley, N. Y., on October 6. He was on his annual leave. Mr. Richards came to the Isthmus, October 16, 1906, and his last place of residence here was Pedro Miguel.

The remains of Samuel Brewster, the negro laborer who was reported missing after the dynamite explosion at Mindi on October 10, were found under some earth near the scene of the accident on October 14.

TRANSPORTATION PROBLEM.

Traffic Handled Daily Over Panama Railroad and on Construction Lines.

The following letter has been received from the Hon. George A. Loud, a Representative in Congress from Michigan:

I am very much interested in the work connected with the Canal, and I read every number of THE CANAL RECORD carefully as it comes to me each week.

There is one subject, it seems to me, it would be desirable to present to the readers of THE CANAL RECORD at your convenience, and that is an article pertaining to the amount of traffic handled over the Panama railroad. In giving some lectures upon the subject of the Panama Canal, one naturally refers to this being a very busy railroad, but just how busy it is, it is hard to show. There is a presumption that the material from the steam shovels, excavated in August (1,876, - 515 cubic yards,) would give a daily average of 72,173 cubic yards. On the further presumption of 20 cubic yards to the carload and 17 cars to the train, it would give a daily average of 212 trains of spoil. Whether all of this material comes out on the main line of the Panama railroad or not is a question, and if it does not all come out on the main line, then what is the average number of trains per day?

In addition to the trailoads of spoil from the Canal excavation handled by the Panama railroad, there will be the regular traffic of the railroad and the incidental traffic of the Canal, made up of passenger, freight, spoil, work, and special trains. In all, how many trains are handled over the Panama railroad each day? It is obvious, of course, that the spoil from the Canal going to the different dumping grounds all passes over the railroad at different points. Then, one would like to ask how many trains do pass over the railroad at any given point in the eight working hours when the Canal work is in progress; also what number pass over a given point in the full twenty-four hours of the day.

These may be impossible questions to supply answers to, but they may lay the groundwork for an interesting resume along this line, which would be of interest to readers away from the Canal Zone. If it is obtainable, the average carload or trainload in cubic yards should be given. I have noticed in previous numbers of THE CANAL RECORD some fragmentary notes along this line, but nothing which seems to meet the desire which I have for a full and complete statement or estimate.

Mr. H. J. Slifer, General Manager of the Panama railroad, supplies the following information with regard to the traffic on that line:

The train movement from the Canal work originates at three main outlets, viz: Pedro Miguel, Bridge 52, (near Bas Obispo), and Gatun, the Pacific Division dumps being located off the Panama railroad tracks at present. These trains are made up of sixteen 20-yard cars each, except the rock trains from Bas Obispo to Gatun, which haul from 20 to 24 cars per train.

The average train movement passing Miraflores in the 8-hour working day is as follows:

Loaded spoil trains, south.....	80
Empty spoil trains, north.....	80
Labor, work and other I. C. C., north.....	10
Labor, work and other I. C. C., south.....	10
P. R. R. passenger and freight trains, south	5
P. R. R. passenger and freight trains, north	5
Total.....	190
P. R. R. trains balance of the day of 24 hours.....	16
Grand total, 24 hours.....	206

The maximum train movement at Miraflores is 252 trains per day, all within 8 hours except 16 Panama railroad trains.

The average train movement between Bridge 52 and Tabernilla and Gatun is as follows for 8 hours:

I. C. C. loaded trains, north.....	56
I. C. C. empty trains, south.....	56
I. C. C. work, labor and others, south.....	16
I. C. C. work, labor and others, north.....	16
P. R. R. trains, north.....	5
P. R. R. trains, south.....	5
Total.....	154
P. R. R. trains balance of 24 hours.....	16
Grand total, 24 hours.....	170

The maximum train movement between the points named above is 220.

The average train movement between Mindi, Gatun and Tiger Hill is as follows for 8 hours:

I. C. C. loaded trains, south.....	24
I. C. C. empty trains, north.....	24
I. C. C. work, labor and others, south.....	4
I. C. C. work, labor and others, north.....	4
P. R. R. trains, north.....	5
P. R. R. trains, south.....	5
Total.....	66
P. R. R. trains balance of 24 hours.....	16
Grand total, 24 hours.....	82

The maximum train movement between the points named above is 102.

Thus it will be seen there is a total average train movement over the Panama railroad in 8 hours of 410 trains, or a total for 24 hours of 458 trains, and a maximum movement of 574 in 24 hours, practically all of which is over double track.

The average trainload is sixteen 20-yard cars. There are, however, a number of 12 and 19-yard cars and where the grades are steep, as at Spur No. 2, Gatun, the trainload is cut down to ten cars.

There are in use some small French dump cars, but these do not run out on the Panama railroad and are therefore no factor in the figures submitted.

By official order published in THE CANAL RECORD of July 8, 1908, the car measurement of material is now based on the following rating:

	Cu. Yds.
1, Jiggerwood flats.....	20
Large Western dumps (20 yds.)	17
Small Western and Oliver dumps (12 yds.)	10
French dumps.....	5

Nearly all the spoil handled over the main line of the Panama railroad comes from Culebra Cut. An article "Transportation in Culebra Cut" was published in THE CANAL RECORD of August 12, 1908, which described conditions on an average day in the month of July, when the daily average of excavation was 55,427 cubic yards. This article, which filled almost a page is too long for citation here, but the following statement of the number of trains and amount of material sent over the Panama railroad tracks on an average day in July, is compiled from it:

North of summit near Culebra:	
58 trains of 16, 20-yard cars.....	18,560
15 trains of 25, 17-yard cars.....	6,375
15 trains of 15, 10-yard cars.....	2,250
South of summit near Culebra:	
50 trains of 16, 20-yard cars.....	16,000
6 trains of 30, 10-yard cars.....	1,800
Total.....	44,985

This statement is based on the average daily number of cars handled and the yardage is in car measurement, which is usually less than place measurement. This factor, with the additional one that the excavation

from the Obispo Diversion, about 1,000 cubic yards daily in July, does not go on to the Panama railroad, accounts for the apparent difference in the amount of material handled on the average day, which was 55,427 cubic yards place measurement, and only 44,985 cubic yards car measurement.

On an average day in September the excavation in the Central Division amounted to 58,632 cubic yards place measurement. The amount that went over the Panama railroad tracks was as follows:

North of Culebra:	Cu. Yds.
47½ trains of 16, 20-yard cars.....	15,200
5½ trains of 20, 17-yard cars.....	1,870
4 trains of 25, 17-yard cars.....	1,700
Total.....	18,770
South of Culebra:	
52½ trains of 16, 20-yards car....	16,800
Total.....	35,570

All the material handled does not go out on the main line of the Panama railroad. In September, of the 1,784,030 cubic yards of material handled by cars, that excavated from the lock sites at Miraflores and Pedro Miguel, on the Obispo Diversion, from the Canal prism at Matachin, Santa Cruz, Caimito and San Pablo, and from the spillway at Gatun Dam, in all 551,519 cubic yards, was not handled on the Panama railroad tracks. At Miraflores the spoil is being used in the construction of dykes to hold dredged material and in the dam across Cocoli River. At Pedro Miguel Locks the material is dumped behind one of the hills alongside the lock site. The excavation from the Obispo Diversion is used in dykes on the Diversion channel. The dumps at Santa Cruz, Matachin, Caimito, and San Pablo are adjacent to the work, and the excavation from the spillway at Gatun Dam is dumped on the toes of the dam.

In the first week in October the Central Division began to use the Gamboa-Juan Grande trestles on the relocated line of the Panama railroad as a dumping ground. The dumps at Gorgona and Mamei have been closed, so that the only spoil now hauled over the Panama railroad tracks north of Culebra is that used at Gatun Dam and wasted at Tabernilla and Culebra. The trains made up of 20-yard cars have been increased from 16 to 17 cars, and the average daily haul to Tabernilla in October is about 45 trains a day, a total of 15,300 cubic yards car measurement. The haul to Gatun continues as in September, namely, a daily average of four trains of twenty-five 17-yard cars. The trains to Gamboa dumps average ten a day, and are composed of 25 cars of 17 cubic yards capacity. By increasing the size of trains the number from the Central Division has been reduced by six trains daily.

Sale of Commission Animals.

The first general sale of condemned horses and mules held by the Isthmian Canal Commission was conducted at the Ancon and Cristobal corrals on the afternoon of October 24. Six mules, two horses, five ponies and two colts at the Ancon corral, that had been condemned as unsuitable for use by the Commission, were sold at public auction to the highest bidder, the net proceeds being \$778. The highest price paid was \$100 for a mule, and the lowest was \$15 for a pony. Two colts sold for \$16 and \$26. Some of the animals offered at auction were withdrawn as the bids made were not high enough to justify their sale.

COMPRESSED AIR.

Its Uses in Canal Work—The Compressor Plants.

Compressed air is used in the Canal work as motive power in rock drilling and in running tools of various kinds in the shops. One big system supplies air for the drills in Culebra Cut, at Pedro Miguel Locks, and Miraflores Locks, for the large shops at Empire, and the field repair shops along the Cut. Several small plants are located at convenient points on the Isthmus. Local conditions that affect the air compressing are the high percentage of moisture in the atmosphere during eight months of the year, and the constantly high temperature.

CULEBRA CUT SYSTEM.

The system that supplies air to the rock drills in Culebra Cut and to the shops at Empire extends from a point about 800 feet south of the Chagres River at Bas Obispo to the newly erected field machine shop at Miraflores Locks, a distance of approximately 13 miles. It parallels the Canal several hundred feet back from the slope line, out of danger from slides or blasting. The main line is made up of 38,800 feet of 10-inch pipe, 14,600 feet of 8-inch, 10,000 feet of 7-inch, and 4,000 feet of 6-inch pipe, a total of 67,400 feet of pipe. From the mains air is conveyed to various parts of the Cut by "leads," which aggregate over 34 miles, composed of 110,000 feet of 2-inch pipe, 5,000 feet of 2½-inch, 9,000 feet of 3-inch, 20,000 feet of 4-inch, 35,000 feet of 6-inch, 600 feet of 8-inch pipe.

Air for this system is supplied by compressors at Rio Grande, Empire, and Las Cascadas. The first plant started was that at Rio Grande on June 29, 1906, where two Rand-type, noncondensing compressors were installed. They have duplex steam cylinders, 18 inches in diameter, 24-inch stroke; air cylinders 18 and 29 inches in diameter, and 24-inch stroke, and the capacity of each compressor is 2,500 cubic feet of free air per minute. Steam was supplied from boilers taken from old dredges until the end of 1907, when new boilers, purchased in the States, were installed.

At the time the compressed air line along the Cut was begun, it had not been decided what type of canal would be built, and the locations of the plants were selected so that they would be adaptable to any type. While the Rio Grande plant was being built the main pipe-line was laid. Several months later work was begun on the Empire plant. Both the Rio Grande and Empire plants were completed before the Las Cascadas plant was begun. The line was extended along the Cut as far as Las Cascadas, and the demands on the system soon became so great that it was necessary not only to establish a plant at that place, but also to double the capacity of the Rio Grande and Empire plants.

At present the Culebra Cut system consists of three plants, each equipped with two Rand and two Laidlaw-Dunn-Gordon compressors, with a total maximum output of 1,800,000 cubic feet of free air per hour. During the month of September, 315,081,000 cubic feet of air were compressed at these three plants. In August the output totaled 328,988,000 cubic feet. To compress 1,000 cubic feet of free air to 105 pounds costs approximately 4.89 cents. The fixed charges per day for the three plants are \$65, and the cost per

day for coal is \$244. Oil-burning apparatus has been installed, and as soon as the plants begin to use oil as fuel the fixed charges per day will be reduced \$21 a day, and the fuel charge \$100 a day, making a total reduction of \$121 per day.

LA BOCA PLANT.

The La Boca air compressor plant is run in connection with the electric light plant at that place. There are two Laidlaw-Dunn-Gordon cross-compound, condensing, rolling-mill frame, two-stage compressors, the first stage compressing the air from atmospheric pressure to a pressure of 27 pounds, the second stage from 27 to 100 pounds. The high pressure steam cylinders are 16 inches in diameter, and the low pressure 30 inches; the low pressure air cylinders 30 inches in diameter, and the high pressure 18 inches. The stroke of each is 36 inches. The valve gear on these compressors is different from that at Rio Grande, Empire, and Las Cascadas plants, those compressors having Meyer valves, while La Boca plant has a Corliss valve gear. The capacity of each compressor, when running at 75 revolutions per minute, with a guaranteed steam consumption of 14½ pounds per indicated horse power hour, when a 26-inch vacuum is carried, is 2,200 cubic feet of free air per minute. The air from the compressors is delivered into two air receivers, 60 inches in diameter by 14 feet long.

Previous to the installation of these compressors five Manning vertical boilers were used at the electric light plant, and it has been necessary to install in addition two Sterling type water-tube boilers of 234 boiler horse-power each, with superheaters, each superheater being capable of superheating steam 150 degrees at 150 pounds pressure. The steam header of these boilers has been connected with the steam main of the five Manning boilers, thereby making a total unit of seven boilers, although the Manning boilers will not be used in connection with the air compressor plant, except in cases of emergency. The boilers use crude oil as fuel, which is supplied from storage tanks located on a small hill in the rear of the plant. This is the only plant on the Isthmus using superheated steam.

An efficient open type feed water heater is installed at this plant. The exhaust from the compressors is connected with the exhaust line from the four electric units, one large Worthington surface condenser being used for the entire power plant. The compressors will be operated in conjunction with the electric light plant, no increase in force being necessary. It is expected that a very considerable reduction in cost of air over other plants on the Isthmus will be made because of the high efficiency of the machines and the saving in fixed charges on account of combining the compressor plant with the electric power plant.

Up to the present time there have been laid at La Boca one 8-inch air main 2,000 feet in length, one 6-inch branch 500 feet long, and two 4-inch branches containing 800 feet, or a total of 3,300 feet. The 8-inch main conveys the air to the top of Sosa Hill, where connections will be made to the quarry that is to be opened for the purpose of furnishing rock for the concrete work at Miraflores and Pedro Miguel. From this point a 6-inch main runs to the La Boca shipways

and shops, supplying air for the various pneumatic tools in use there.

At La Boca machine shop is a Chicago Pneumatic Tool Company compressor with a capacity of 1,200 cubic feet of free air a minute. This machine was installed before the large compressors at the La Boca power plant were erected and is now available for other service.

PORTO BELLO.

At Porto Bello one Laidlaw-Dunn-Gordon air compressor, having a capacity of 2,200 cubic feet of free air per minute, and one Chicago Pneumatic Tool Company compressor, having a capacity of 1,200 cubic feet of free air per minute, are being erected. Both of these compressors are compound, condensing, two-stage. They are to be used in connection with the quarrying, which will be necessary to provide rock for the concrete for the locks and spillway at Gatun. Four Oswego-McNault water tube boilers are being installed, to furnish steam for the compressors and other equipment.

IN THE SHOPS.

Empire shops, the shop at Pedro Miguel, and the field repair shops along Culebra Cut are supplied by the general air system that extends from Bas Obispo to Miraflores Locks. The shipways and machine shop at La Boca are supplied by the La Boca plant; and Gorgona shops, the dry dock and machine shop at Cristobal, and the Cristobal shops of the Panama Railroad Company are supplied by independent plants. The pneumatic tools used in the shops may be classed broadly as air drills, air hammers, and air hoists.

Pneumatic drills are used in tapping, reaming and drilling holes in steel and iron plates, boilers, structural steel, etc., and also in boring holes of various sizes in all kinds of wood. There are in use on the Isthmus the "Little Giant" drills of various sizes, the "Thor" drills, Cleveland rotary breast drills, "Haeseler" drills, and Ingersoll-Sergeant drills. These tools are so constructed as to drill with the smallest or largest drill now in use. In a recent test made at Gorgona shops, fifty-four holes 15-16 of an inch in diameter were drilled in 70 minutes through ¾-inch boiler plates. To accomplish this by hand would require not less than eight hours. There are in use at the Gorgona shops 27 of these drills, 28 at the Empire shops, 3 at the Las Cascadas engine house and shops, 3 at the Pedro Miguel engine house and shops, and 1 in the car repair shops at Buena Vista, also a large number at other shops and shipways on the Isthmus.

Pneumatic hammers are used for the purpose of driving rivets of all sizes, chipping and caulking seams in boilers, beading flues, chipping castings, etc. The steel parts of the Gamboa bridge were put together by the use of these hammers. Many thousand feet of suction-dredge pipe have been built at the Gorgona shops by the use of these hammers, and likewise they have been used to great advantage in the erection of fuel oil tanks and water tanks. The kinds and makes of these tools in use on the Isthmus include the "Thor" chipping and rivetting hammers, "Boyer" hammers, "Haeseler" chipping hammers, "Imperial," "Monarch" and "Cleveland." These hammers vary in size, and the number of strokes per minute runs

from 1,800 for the smallest to 620 for the largest hammers. At the Gorgona shops there are in use 48 of these air hammers, 25 at the Empire shops, 3 at Las Cascadas, 3 at Pedro Miguel, and 2 at the car repair shop at Buena Vista.

Pneumatic hoists are used in different departments of the shops at Gorgona and Empire in handling heavy materials, such as large castings, repair parts for steam shovels, machinery, etc. There are 16 motor-gear hoists and two straight-lift hoists in use at the Gorgona shop. At the Empire shops there are eight motor-gear hoists and 13 straight-lift hoists.

At the Gorgona shops there are two air compressors, one made by the Rand Drill Company, and the other by the Franklin Air Compressor Company. These compressors are used to furnish air for the variety of pneumatic tools used at the shops, and for air hoists. An old French traveling crane of twenty tons capacity has been equipped for some considerable time with air as its motive power.

The Rand compressor is noncondensing, with duplex steam cylinders, 2-stage air cylinders, and a capacity of 1,050 cubic feet of free air per minute. The steam cylinders are 14 inches in diameter, the high pressure air 13 inches, and the low pressure 22 inches. The air inlet valves are of the Corliss type, while the outlet are Poppet valves. The steam valves are of the Meyer type. The Franklin air compressor is noncondensing, with duplex steam cylinders, 2-stage, with a capacity of 930 cubic feet of free air per minute. The steam cylinders are 14 inches in diameter, high pressure air 13 inches, and low pressure 22 inches, stroke 16 inches. This compressor is also equipped with a Meyer valve gear on the steam cylinders. The air inlet and outlet valves are of the Poppet type.

At the Cristobal shops of the Panama railroad there are two Rand-type noncondensing, duplex steam cylinders, 2-stage air cylinder compressors, each having a capacity of 1,050 cubic feet of free air per minute. Steam cylinders are 14 inches in diameter, high pressure air 13 inches, low pressure 22 inches, stroke 20 inches. The Meyer type of valve is used on the steam cylinders. These compressors furnish air for the various pneumatic tools used in the machine and boiler shops.

At Cristobal dry dock and marine shops a compressor, with a capacity of 1,200 cubic feet of free air a minute, furnishes air for the pneumatic tools used on the ways, at the dock, in the yard, and in the shops.

Concert by the I. C. C. Band.

HOTEL TIVOLI, ANCON

Sunday, November 1, 1908, at 7.30 p. m.:

PROGRAM

- 1 March—*The Old Sault*.....Hildreth
- 2 Selection—*Mills' Merry Melodies*.....Mills
- 3 Intermezzo—*After Sunset*.....Pryor
- 4 Waltz—*Thousand and One Nights*.....Strauss
- 5 March Espagnole—*Sovella*.....Gallini
- 6 Potpourri—*The Sunny South*.....Lampe
- 7 (a Characteristic—*Ruralistic*.....Bagley
- 7 (b Schottische—*When a Boy Says "Will You?"*.....Allen
- 8 Overture—*Four Ages of Man*.....Lachner
- 9 Descriptive—*Cavalry Charge*.....Luders
- 10 March—*Iron Regiment*.....Marie

Panamanian National Hymn.
Star Spangled Banner.

CHAS. E. JENNINGS, Musical Director.

A concert will be given at Bas Obispo, C. Z., Sunday, November 8.

Dedication Ball at Las Cascadas.

THE CANAL RECORD:

All members of the following organizations and their families are cordially invited to attend the fraternal hall dedication ball to be given at Las Cascadas on October 31, at 8 p. m. No special trains will be run, but visiting guests, both married and bachelor, will be provided with quarters if they will notify the secretary not later than October 28.

Masons, Knights of Pythias, Red Men, Kangaroos, Engineers, and Conductors.

A. E. WEISS,

Secretary, Las Cascadas, C. Z.

Purchase of Cold Storage Articles.

In the following table the net weight of cold storage articles imported by the commissary department from September 2 to October 25 is shown, together with the amount imported weekly:

Article.	Total Amt. Pounds.	Amt. per week. Pounds.
Beef, dressed, 800-pound hinds	88,356	11,045
Beef, dressed, 600-pound hinds.....	233,864	29,233
Beef, dressed, 600-pound fores.....	239,998	30,000
Veal, carcasses.....	37,347	4,840
Mutton, carcasses.....	27,730	3,720
Lamb, carcasses.....	7,110	920
Pork loins.....	15,438	2,000
Sirloin butts.....	30,929	4,005
Beef tenderloins.....	2,040	262
Beef's livers.....	503	65
Beef livers.....	3,796	490
Beef ribs.....	11,533	1,480

Sausage—

Bologna.....	800	115
Frankfurter.....	1,300	100
Lieberwurst.....	400	52
Pork.....	4,625	600

Poultry—

Broilers.....	3,247	420
Chickens, milk-fed.....	6,575	850
Fowl.....	25,690	3,330

Dairy Products—

Butter, No. 2 prints.....	25,250	3,260
Butter, tub.....	6,044	780
Cheese, Camembert.....	50	8
Cheese, Gouda.....	628	81
Cheese, Italian.....	679	88
Cheese, Neufchatel.....	525	68
Cheese, Philadelphia Cream.....	204	27
Cheese, Roquefort.....	100	13
Cheese, Swiss.....	3,080	400
Cheese, Young America.....	8,152	1,030
Cream, 10-gal. tins.....gallons	1,600	270
Eggs, 10-gal. tins.....dozen	68,500	8,900
Milk, 10-gal. tins.....gallons	6,300	815
Milk, quart-bottles.....quarts	1,500	192
Yeast.....pounds	2,800	362

Fruits—

Apples.....	54,843	7,100
Cantaloupes.....	24,305	3,150
Grapes.....	24,918	3,230
Lemons.....	13,300	1,720
Peaches.....	26,621	3,460
Plums.....	1,900	246
Pears.....	8,850	1,440
Watermelons.....	32,950	4,250

Vegetables—

Beans, Lime, green.....	1,622	210
Beets.....	11,039	1,470
Cabbage.....	154,944	20,100
Carrots.....	15,923	2,060
Cauliflower.....	4,082	530
Celery.....	11,760	1,520
Cucumbers.....	11,668	1,525
Corn, green.....	3,535	465
Lettuce.....	15,334	2,010
Onions.....	70,845	9,160
Parsnips.....	2,050	265
Potatoes.....	844,330	109,445
Squash.....	6,126	795
Tomatoes.....	36,876	4,750
Turnips.....	28,645	3,720

Shellfish—

Oysters.....gallons	100	100
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The steamship *Karen* sailed from Mobile, Ala., on October 15, with 703,000 feet B. M., of lumber, 60,000 feet of which is for stock, and the balance intended for car repairs at Gorgona.

OFFICIALS OF REPUBLIC OF PANAMA

President—J. D. de Obaldia.
Secretary of Government and Justice—Ramón M. Valdés.

Assistant Secretary—Aizpurn Aizpuru.
Secretary of Foreign Affairs—J. A. Arango.
Assistant Secretary—J. M. Fernández.

Secretary of Finance—Carlos A. Mendoza.
Assistant Secretary—Rodolpho Chiari.
Secretary of Public Works—J. E. Lefevre.

Assistant Secretary—Juan Navarro D. (temporarily in charge of the Secretaryship).
Secretary of Public Instruction—Eusebio A. Morales.
Assistant Secretary—Angel M. Herrera (temporarily in charge of the Secretaryship).

Governors of Provinces.

Panamá—Pedro A. Díaz.
Mayor (Alcalde)—Fabio Arosemena.
Chief of Police—Leonidas Pretelt.

Colón—Porfirio Meléndez.
Mayor (Alcalde)—Benigno Andrión.
Chief of Police—Ricardo Arango.

Bocas del Toro—Jenis E. Alfaro.
Veraguas—Adolfo J. Fábrega.
Chiriquí—Antonio Anguizola.
Los Santos—Mauricio Correa.
Coclé—Eligio Ocaña F.

DIPLOMATIC CORPS.

Ministers Accredited to Panama.

United States—H. G. Squiers.
George T. Weitzel, Secretary of Legation.
Belgium—E. Pollet, residing in Guatemala.
Brazil—Antonio da Fontana Xavier.
A. J. de Amaral Murtinho, Secretary of Legation.

Great Britain—Claude Coventry Mallet.
Netherlands—J. H. Rens, residing in Caracas.

Chargé d'Affaires.

France—Henri Arthur Marie Barré-Ponsignon.
Peru—Federico Alfonso Pezet.
Alberto Bresani Rossel, Attaché.
Nicaragua—Federico Boyd.

CONSULAR CORPS.

Consuls Residing at Panama.

United States—Arnold Shanklin, Consul-General (and in charge of interests of Greece and China).
Felix Ehrman, Vice-Consul General.
C. E. Guyant, Deputy Consul-General.

Belgium—B. D. Fidanque, Consul.
Morris B. Fidanque, in charge.

Bolivia—Samuel Boyd, Consul-General.
Brazil—Ramon Arias F., Consul.
Chili—Antonio B. Agacio, Consul-General.
Juan Ehrman, Vice-Consul.

Costa Rica—Luis Uribe, Consul.
Cuba—J. Gabriel Duque, Consul.
Denmark—J. L. Maduro, Consul.

Ecuador—Ramon Arias F., Consul.
Pedro Arias F., Vice-Consul.
France—Léon Hippeau, Vice-Consul.

Germany—Arturo Kohpeke, Consul.
Max Freundlich, in charge.
Great Britain—F. W. Manners, Vice-Consul.
E. S. Humber, Pro-Consul.

Guatemala—José Fernando Arango, Consul-General.
Italy—Arturo Kohpeke, Consul.
Lodovico Delpiano, in charge.

Mexico—Licenciado José Maria Aramendia, Consul.
Baldomero Méndez, Vice-Consul.
Netherlands—Dr. A. Jesurun, Jr., Consul.

Nicaragua—Dr. Augusto S. Boyd, Vice-Consul.
Norway—Edwin Hunter Melville, Vice-Consul.
Peru—Alberto B. de Obarrio, Consular Agent.

Salvador—Federico Boyd, Consul-General.
Ernesto A. Boyd, Vice-Consul.
San Domingo—Mauricio Fidanque, Consul.

Spain—Juan Potous y Martínez, Consul.
N. Perez-Petinto, Vice-Consul.
Sweden—R. B. de St. Malo, Consul.

Venezuela—Coronel S. McGill, Consul.
Consuls Residing at Colon.

United States—Dr. J. C. Kellogg, Consul.
J. M. Hyatt, Vice-Consul.
Belgium—C. H. R. Raven, Vice-Consul.

Costa Rica—T. R. Cowan, Consul.
Denmark and Santo Domingo—José Maria Fidanque, Vice-Consul.

France—M. Léon Huttinot, Vice-Consul.
Germany—L. Heuer, Vice-Consul.
Great Britain—W. Andrews, Acting Vice-Consul.

Italy—Alfonso Lomonaso, Consular Agent.
Mexico—A. M. Rojas, Consul.
Netherlands—E. J. Henriques, Consul.

Nicaragua and Salvador—J. C. Stevenson, Consul.
Norway—H. B. Parker, Consul.
Peru—A. D. Abello, Vice-Consul.
Spain—E. Bastar, Consul.

OFFICIAL CIRCULARS.

Panaman Independence Day.

CULEBRA, C. Z., October 21, 1908.

CIRCULAR No. 219.

Tuesday, November 3, 1908, the anniversary of the independence of the Republic of Panama, will be observed as a holiday in the Canal Zone. As far as possible, all public work will be suspended on that day.

H. F. HODGES,
Acting Chairman.

Leaves of Absence.

CULEBRA, C. Z., October 15, 1908.

TO THE HEADS OF DEPARTMENTS AND DIVISIONS:

This office has been requested, in numerous recent instances, to waive the rules covering leaves of absence, in favor of employes who have been misled by erroneous information given them by timekeepers, or subordinate officials, and have thus allowed their leave to become forfeited.

In future, no plea of ignorance of public rules, or of misunderstanding due to erroneous information, will be considered.

As far as may be practicable, the heads of departments and divisions will see that employes apply for their leave before it is forfeited, but this shall not relieve the individual employe of the responsibility of protecting his own interests.

Any case to which the application of the rules governing leaves of absence may not be perfectly clear, should be referred to this office for decision.

H. F. HODGES,
Acting Chairman.

Accounting of Fees by Notaries Public.

ANCON, C. Z., October 20, 1908.

CIRCULAR No. 82.

To all Notaries Public of the Canal Zone:

The following provisions of law respecting the accounting of fees collected by notaries public in the Canal Zone are brought to the attention of notaries for their information and guidance:

Sections 809 and 815 of the Code of Civil Procedure of the Canal Zone provide as follows:

SEC. 809. Lawful to Demand Specific Fees Only.

It shall be lawful for the clerk of the Supreme Court, the clerks of the Circuit Courts, referees, and commissioners appointed by the Circuit Courts, bailiffs, marshals, district judges, notaries public, and other officers and persons hereinafter mentioned, together with their assistants and deputies, to demand, and receive, the hereinafter mentioned fees and no more; but all fees collected by officers drawing a regular salary or fixed compensation from the Government of the Canal Zone shall be paid into the treasury thereof.

Sec. 815. *Notaries Public*—Notaries public shall receive the following fees only for their services:

For protesting bill or note for non-acceptance or non-payment and giving notice, seventy-five cents; for registering such protest and making record, twenty-five cents; for attesting letters of attorney with seal, twenty-five cents; for notarial affidavit to an account or other writing, with seal, twenty-five cents; for each oath or affirmation, with seal, twenty-five cents; for taking proof of debts to be sent abroad, twenty-five cents; for a certified copy of record and affidavit of its correctness, fifty cents; for writing depositions and affidavit, ten cents for each one hundred words; for taking proof or acknowledgment of any writing concerning real or personal estate and certificate thereof for each party, twenty-five cents.

Section 815 of the Code of Civil Procedure repeals Section 11 of Act No. 2 of the Laws of the Canal Zone, fixing fees to be charged by notaries public.

All notaries public who are regularly employed in the Department of Civil Administration, whether as circuit court clerks (ex-officio notaries public), district judges or in clerical capacities, must, under Section 809 quoted, account to the Canal Zone for all fees collected by them; notaries public who are employed in other departments of the Commission may retain fees collected by them subject to the provision of the following Executive Order:

WAR DEPARTMENT,
WASHINGTON, January 3, 1905.

ORDERS:

By direction of the President, the following order is issued for the information and guidance of all concerned:

It is hereby ordered that hereafter no officer, clerk, or employe in the executive service of the Government who is also a notary public, shall charge or receive any compensation whatever for performing any notarial act for an officer, clerk, or employe of the Government in his official capac-

ity, or in any matter in which the Government is interested, or for any person when, in the case of such person, the act is performed during the hours of such notary's service to the Government. Disobedience of this order shall be ground for immediate dismissal from the service.

WM. H. TAFT,
Secretary of War

WAR DEPARTMENT,
WASHINGTON, April 3, 1905.

ORDERS:

War Department orders of January 3, 1905, issued by direction of the President, prohibiting notarial charges by notaries public who are Government employes, is, by direction of the President, hereby amended by adding at the end thereof the following paragraph:

"This order shall not apply to oaths of disinterestedness, or other oaths required to be made by law, provided that the work in connection therewith is not performed during office hours."

WM. H. TAFT,
Secretary of War

JO C. S. BLACKBURN,
Head of Department of Civil Administration

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The Y. M. C. A. has arranged to receive the election returns by cable on election night. These returns will be transmitted direct to the four clubhouses where they will be announced by bulletin and on a stereopticon screen as they are received. Interesting programs are being arranged by all the associations to occupy the early part of the evening and to fill in between bulletins until as late an hour as the interest warrants.

At Culebra there will be a smoker on the night of November 2, with suitable program, a feature of which will be the balloting for U. S. President and a Mayor of Culebra. On election night there will be moving pictures, the announcing of election returns and the counting of ballots cast on the previous night. On the evening of November 4, there will be a "social" with a program of monologues, sketches and music and the announcing of any final election results not received the night before. For refreshments, homemade cake will be provided by the ladies. The general public is invited to this gathering, as well as on election night.

At Empire, the polls at the clubhouse will be open on election day from 11 a. m. to 8 p. m., and every man in Empire is requested to cast his ballot for U. S. President and Mayor of Empire. The counting of these ballots will be a feature of the evening. The announcing of election returns will be interspersed with music by the Marine band from Camp Elliott. Both men and women are cordially invited.

At Gorgona the early part of election evening will be given to voting for U. S. President and Mayor of Gorgona. The town has been divided into three wards and there are four tickets in the field. Primaries will be held on the evening of October 31, and polls will be open from 6 to 11.30. An entertainment program of local talent is being arranged for part of election evening. Refreshments will include cakes furnished by the ladies. The public is invited.

At Cristobal there will be a band concert on the evening of November 2, and on election night the entertainment and excitement incident to receiving election returns will be supplemented by a program of local talent, as well as a local election. Further details will be made known to the people of Cristobal by special announcement. The general public is invited.

On the day following election bulletins will be posted in all the clubhouses announcing any election results which may not have been received the night before.

The standing of the bowling league on October 26 was as follows:

	Played.	Won.	Lost.	Per cent.
Empire.....	57	36	21	.632
Cristobal.....	57	35	22	.614
Culebra.....	51	20	31	.392
Gorgona.....	51	16	35	.314

CULEBRA.

The indoor baseball team has recently won three games from Empire, the scores being 14 to 4, 17 to 8 and 28 to 13. The regular players on the team are George R. Herring, first base; Frank Roberts, second base; I. H. Fleishman, third base; Guy Ellis, catcher; E. C. Bath, pitcher; Willis Holstead (captain) left field; Albert Korsan, right field. The next game will be played at Cristobal on Wednes-

day, October 28. Plans are being discussed for an inter-association league, to be started about November 15.

The work among the Juniors has been reorganized, and the regular practice afternoons will be Monday, Wednesday and Friday of each week. Baseball, basketball, and bowling will be special features in addition to the regular calisthenics. Athletic meets between the Juniors of the four associations on the Isthmus will be arranged during the dry season. On Saturday, October 31, the Culebra Juniors will go to Cristobal for an all-day meet with the Juniors there. Indoor baseball, bowling, high jump, sprint races and a relay race will be among the features of the day.

Attention is called to all those interested in photography that a dark-room has been provided in the Culebra clubhouse, and a club will be formed to promote interest in photography. Regular monthly exhibits of pictures will take place, and at the end of six months the member winning the highest number of votes will be awarded a suitable prize for his work.

Twenty-five names have been handed to the secretary by members who wish to join the Choral Club. An organization will be effected in the near future.

A tournament is in progress in both billiards and pool to decide on the players who will represent Culebra in the inter-association matches to begin November 7.

A clothes pressing club will be in operation by November 1.

EMPIRE.

The medals for the winners in the recent duckpin tournament have arrived, and will be presented on the evening of November 3.

The Empire bowlers defeated the Gorgona team in three straight games Saturday, October 24, on the Gorgona alleys. As the Cristobal team lost one of its games to Culebra on the same evening, Empire is now in first place in the bowling league.

The standing of the pool tournament on October 24 was as follows:

	Played	Won.	Lost.	Per cent.
Duff.....	8	8	0	1000
Moeller.....	11	9	2	.818
Ruch.....	17	13	4	.764
Pulsifer.....	8	6	2	.750

GORGONA.

The gymnasium class has met five times since its reorganization with an average attendance of sixteen men.

Saturday evening, October 24, the Culebra basketball team defeated the Gorgona team at Gorgona by a score of 40 to 18. This was Gorgona's first game of the season.

An association "Sing" was held in the lobby on Sunday, October 25. A large crowd was present.

CRISTOBAL.

The "try-out" for the billiard and pool team to represent Cristobal in the Isthmian league is now on.

The orchestra from the *Prinz Joachim* will give a concert on Monday, November 2.

A committee is promoting the organization of a dramatic club.

A vaudeville show of local talent is scheduled for Thanksgiving Eve.

Election night "open house" will be held until the returns are in—all night, if necessary.

The standing in the individual bowling tournament October 21 was as follows:

Names—	Played.	Won.	Lost.	Pinfall.
Robertson.....	9	9	0	1,535
Morrill.....	9	8	1	1,329
Strong.....	6	5	1	980
Hembling.....	9	7	2	1,310
Gilmartin.....	9	7	2	1,476
Bullard.....	9	6	3	1,432
Scriber.....	9	5	4	1,434
E. Thomas.....	9	5	4	1,379
McKinley.....	9	4	5	1,259
Van Zant.....	9	4	5	1,223
Shipley.....	6	2	4	788
Burdge.....	9	3	6	1,262
Stickel.....	9	3	6	1,308
Moyer.....	9	1	8	1,088
Van Wagner.....	9	0	9	1,049
Hertel.....	9	0	9	948

The following steamers have recently arrived at La Boca: October 17, *Peru*, from Valparaiso; October 20, *Cecile*, from the north; October 22, *Quito*, from Guayaquil. Departures were: October 19, *Ecuador*, for Guayaquil; October 20, *Huasco*, for Valparaiso; October 23, *City of Sydney*, for San Francisco.

The steamship *Bertha* sailed from Gulfport, Miss., on October 15, with 610,000 feet B. M., of lumber and 193 piling. Five hundred and thirteen thousand feet of this lumber is for stock; the balance for car repairs at Gorgona. A portion of the piling is for the new Cristobal wharf and part for relocation work.

COMMISSARY DEPARTMENT.

VEGETABLES AND FRUITS.

As the fresh vegetable season in the States is over the Subsistence Department expects to receive few vegetables other than the staples from this time forth. A shipment of cranberries is expected on the *Esperanza*, which is due at Cristobal, October 28. Malaga grapes will be handled as long as they are in the market.

The hours during which the various commissaries are open for business are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.
 All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning October 27:

FRESH MEATS.		Price.
Mutton—Stewing.....	per lb	6
Shoulder and neck (not under 6 pounds).....	per lb	7
Entire forequarter (not under 10 pounds).....	per lb	8
Leg (8 to 10 pounds).....	per lb	16
Short-cut chops.....	per lb	22
Lamb—Stewing.....	per lb	6
Entire forequarter.....	per lb	8
Leg (6 to 8 pounds).....	per lb	27
Chops.....	per lb	29
Veal—Stewing.....	per lb	10
Entire forequarter (15 to 20 lbs).....	per lb	11
Loin for roasting.....	per lb	21
Chops.....	per lb	22
Pork—Cuts.....	per lb	20
Beef—Suet.....	per lb	4
Soup.....	per lb	8
Stew.....	per lb	12
Corned.....	per lb, 12, 14, 16	
Pot roast (from sirloin butt).....	per lb	17
Rib-roast, second cut (not under 3 pounds).....	per lb	19
Rib-roast, short cut (not under 3½ pounds).....	per lb	23
Sirloin roast.....	per lb	29
Rump roast.....	per lb	29
Porterhouse roast.....	per lb	29
Steak, round.....	per lb	23
Rib.....	per lb	24
Sirloin.....	per lb	29
Porterhouse.....	per lb	29
Rump.....	per lb	29
Tenderloin.....	per lb	30

MISCELLANEOUS.

Livers—Beef.....	per lb	11½
Calf.....	each	65
Sausage—Pork.....	per lb	19
Leberwurst.....	per lb	17
Sweet bread—Veal.....	each	1.20
Ox tongues.....	each	90
Eggs, fresh.....	dozen	34

POULTRY AND GAME.

Chickens—Capons.....	each	2.40
Broilers.....	each	60
Fowls, medium and large.....	each, 80c, and 1.00	
Turkeys.....	per lb	30
Squabs.....	each	45
Suckling pigs (whole).....	each	3.50
Suckling pigs (one-half).....	each	1.75

CURED AND PICKLED MEATS.

Bacon—Strips.....	per lb	23
English, breakfast sliced.....	per lb	26
Ham—Sugar-cured, sliced.....	per lb	25
One-half, for boiling.....	per lb	21
Ferris.....	per lb	20
Beef, salt, family.....	per lb	16
Salt pork.....	per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....	per lb	35
Cheese—Neufchatel.....	each	6
Young America.....	per lb	22
Swiss.....	per lb	33
Edam.....	each	1.05
McLaren's.....	jar	15
Piuxter's.....	tin	22
Philadelphia Cream.....	each	22
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....	tin	20

VEGETABLES AND FRUITS.

Tomatoes (local only).....	per lb	8
White potatoes.....	per lb	3½
Sweet potatoes.....	per lb	2½
Cabbage.....	per lb	4
Onions.....	per lb	3½
Cucumbers.....	per lb	25
Squash (summer).....	per lb	3
Beets.....	per lb	3
Celery.....	bunch	15
Carrots.....	per lb	3
Turnips.....	per lb	3
Lemons.....	dozen	24

§ Sold only from cold-storage and not from Commissaries.

NEW ARTICLES.

	Price.
Jams, assorted, fruit, California, 8-lb tins.....	tin 63
Catsup, "Griffon," quarts.....	bottle 28
Bonbons, chocolate, Cadbury's, ¼s.....	tin 25
Tobacco, "Steam Shovel".....	pkge 7
Bowls, soup.....	each 60
Boxes, bread, japanned—No. 5.....	each 50
No. 4.....	each 60
No. 3.....	each 70
No. 2.....	each 80
Shoes, molder's f resp; of.....	pair \$2.65
Buttons, pearl, 20-line.....	dozen 5
Dresses, night.....	each, \$1.35 to 1.95
Chemises.....	each, \$1.10 and 1.60
Ink, Carter's, No. 85, 2-oz. Lottle.....	bottle 5

Rainfall, October 1 to 24, 1908, Inclusive.

(MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total.
<i>Atlantic Division—</i>		
Cristobal.....	2.35	5.74
Brazos Brook.....	2.09	7.85
Gatun.....	2.13	7.36
Bohio.....	1.75	8.80
<i>Central Division—</i>		
Tabernilla.....	1.62	7.38
San Pablo.....	1.23	7.05
Bas Obispo.....	1.29	4.95
Empire.....	1.40	5.69
Camacho.....	1.24	5.23
Culebra.....	1.56	4.85
Rio Grande.....	1.32	4.48
<i>Pacific Division—</i>		
Pedro Miguel.....	1.70	6.17
La Boca.....	1.29	5.74
Ancon.....	1.71	7.00
<i>Upper Chagres.</i>		
Alhajuela.....	3.01	8.58

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, October 24, 1908:

	STATIONS.				
	Vigia.	Alhajuela.	Gatunboa.	Bohio.	Gratun.
Height of low water above mean sea level, feet.....	129	92	46	0	0
Maximum height above low water, feet:					
Sunday, Oct. 18.....	0.90	1.52	2.52	5.90	1.85
Monday, Oct. 19.....	0.66	1.33	2.05	5.00	1.48
Tuesday, Oct. 20.....	1.28	1.80	2.90	8.25	1.30
Wednesday, Oct. 21.....	2.70	3.00	6.00	8.15	2.70
Thursday, Oct. 22.....	2.70	2.73	5.33	9.05	4.07
Friday, Oct. 23.....	2.50	2.76	3.90	7.80	2.90
Saturday, Oct. 24.....	2.40	2.70	4.00	8.30	3.20
Maximum for week.....	2.70	3.00	6.00	9.30	4.07

LEGAL NOTICE.

EMPIRE, C. Z., October 22, 1908.

To any and all persons who may have any claim or claims against the estate of Philip F. Kramer, deceased, who met his death at the town of Paraiso, Canal Zone, on December 17, 1907: You will present the same on or before the 1st day of December, 1908, to Theodore C. Hinckley, administrator of the estate of P. F. Kramer, Panama, Panama, or E. M. Goolsby, Clerk of the Circuit Court, Empire, Canal Zone, properly verified, or the same will be forever barred according to law.

THEO. C. HINCKLEY,
Administrator.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.	
Finance.....	P. R. R. Tuesday.....Oct. 27
Tagus.....	R.-M.....Saturday.....Oct. 31
Advance.....	P. R. R. Monday.....Nov. 2
Allianca.....	P. R. R. Saturday.....Nov. 7
Prinz Aug. Wilhelm.....	H.-A.....Saturday.....Nov. 7
Colon.....	P. R. R. Thursday.....Nov. 12
Magdalena.....	R.-M.....Saturday.....Nov. 14
Panama.....	P. R. R. Tuesday.....Nov. 17
Prinz Joachim.....	H.-A.....Saturday.....Nov. 21
Finance.....	P. R. R. Monday.....Nov. 23
Orinoco.....	R.-M.....Saturday.....Nov. 28
Advance.....	P. R. R. Saturday.....Nov. 28
Allianca.....	P. R. R. Thursday.....Dec. 3
Prinz Aug. Wilhelm.....	H.-A.....Saturday.....Dec. 5
Colon.....	P. R. R. Tuesday.....Dec. 8
Atrato.....	R.-M.....Saturday.....Dec. 12
Panama.....	P. R. R. Monday.....Dec. 14
Finance.....	P. R. R. Saturday.....Dec. 19
Prinz Joachim.....	H.-A.....Saturday.....Dec. 19
Advance.....	P. R. R. Thursday.....Dec. 24
Trent.....	R.-M.....Saturday.....Dec. 26
Allianca.....	P. R. R. Tuesday.....Dec. 29

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK	
Colon.....	P. R. R. Thursday.....Oct. 29
Magdalena.....	R.-M.....Tuesday.....Nov. 3
Esperanza.....	P. R. R. Tuesday.....Nov. 3
Finance.....	P. R. R. Monday.....Nov. 9
Prinz Joachim.....	H.-A.....Tuesday.....Nov. 10
Advance.....	P. R. R. Sunday.....Nov. 15
Orinoco.....	R.-M.....Tuesday.....Nov. 17
Allianca.....	P. R. R. Friday.....Nov. 20
Prinz Aug. Wilhelm.....	H.-A.....Tuesday.....Nov. 24
Colon.....	P. R. R. Wednesday.....Nov. 25
Panama.....	P. R. R. Monday.....Nov. 30
Atrato.....	R.-M.....Tuesday.....Dec. 1
Finance.....	P. R. R. Sunday.....Dec. 6
Prinz Joachim.....	H.-A.....Tuesday.....Dec. 8
Advance.....	P. R. R. Friday.....Dec. 11
Trent.....	R.-M.....Tuesday.....Dec. 15
Allianca.....	P. R. R. Wednesday.....Dec. 16
Colon.....	P. R. R. Monday.....Dec. 21
Prinz Aug. Wilhelm.....	H.-A.....Tuesday.....Dec. 22
Panama.....	P. R. R. Sunday.....Dec. 27
Tagus.....	R.-M.....Tuesday.....Dec. 29
Finance.....	P. R. R. Friday.....Jan. 1
Prinz Joachim.....	H.-A.....Tuesday.....Jan. 5
Advance.....	P. R. R. Wednesday.....Jan. 6
Allianca.....	P. R. R. Monday.....Jan. 11

FROM NEW ORLEANS TO COLON.	
Parismina.....	U. F. C. Saturday.....Oct. 31
Heredia.....	U. F. C. Saturday.....Nov. 7
Cartago.....	U. F. C. Saturday.....Nov. 14
Parismina.....	U. F. C. Saturday.....Nov. 21
Heredia.....	U. F. C. Saturday.....Nov. 28

FROM COLON TO NEW ORLEANS.	
Cartago.....	U. F. C. Tuesday.....Nov. 3
Parismina.....	U. F. C. Tuesday.....Nov. 10
Heredia.....	U. F. C. Tuesday.....Nov. 17
Cartago.....	U. F. C. Tuesday.....Nov. 24
Parismina.....	U. F. C. Tuesday.....Dec. 1

FROM COLON TO BARBADOS, CALLING AT TRINIDAD.	
Tagus.....	R.-M.....Tuesday.....Nov. 10
Magdalena.....	R.-M.....Tuesday.....Nov. 24
Orinoco.....	R.-M.....Tuesday.....Dec. 8
Atrato.....	R.-M.....Tuesday.....Dec. 22
Trent.....	R.-M.....Tuesday.....Jan. 5

FROM COLON TO NEW ORLEANS VIA KINGSTON.	
Mexican.....	Leyland Line.....about Oct. 31

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.
 The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The steamship *Cecile* arrived at La Boca on October 20, with 1,400,000 feet B. M., of lumber for the 15th mian Canal Commission.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 4, 1908.

No. 10.

The Canal Record

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Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

October Excavation.

The grand total of excavation during the month of October was 3,224,638 cubic yards, the highest record for rainy-season excavation. All of this except 111,075 cubic yards was taken from the Canal prism. This is 65,752 cubic yards more than the record for September, and 255,632 cubic yards less than the highest record, that of March, 1908. There were 27 working days in October, two more than in September and one more than in March. Of the grand total for October, 1,271,136 cubic yards were taken out by dredges, and the remainder was dry excavation. The average rainfall for October for the territory in which excavation is in progress was 10.51 inches, as compared with 9.72 inches in September.

The excavation for October, 1908, as compared with that for the same month in 1907, when the work was less thoroughly developed, was about 60 per cent greater. A comparison of the amounts excavated from the prism of the Canal in the months already referred to shows:

	Cubic yards.
October, 1907.....	1,844,471
March, 1908.....	3,205,076
September, 1908.....	3,089,851
October, 1908.....	3,113,563

In the Atlantic Division the October record was kept below that of the four preceding months by the loss of the services of the sea-going suction dredge *Ancon*, which was undergoing general repairs during 18 working days. The dredges took out 505,260 cubic yards, as compared with 624,776 cubic yards in September, 638,217 in August, which is the high record, and 625,497 in July. Of the dry excavation in this division, 155,142 cubic yards were taken from the Canal prism, 109,667 of which was from the lock site.

The Central Division broke all previous

records for excavation from the Canal prism. A comparison for the excavation in this territory, including Culebra Cut and the old Chagres Division, in the prism, shows:

	Cubic yards.
March, 1908.....	1,541,637
September, 1908.....	1,442,567
October, 1908.....	1,551,409

In the Culebra section, known as Culebra Cut, the excavation amounted to 1,168,281 cubic yards, of which 33,603 cubic yards were from the Obispo Diversion, and 8,180 cubic yards from accessory works at Pedro Miguel. The excavation in the Chagres section was 62,017 cubic yards greater than the best previous record, that of August.

All previous records in the territory of the Pacific Division were broken by an excavation of 903,436 cubic yards. This is 17,236 cubic yards greater than the previous high record, that of September. Of the total, the dredges took out 765,876 cubic yards, which is 17,405 cubic yards less than the record for March. One of the dredges was laid up a week for repairs, and during a part of the month the material was not so easily handled, as it had been in previous months. On the other hand, the fleet was strengthened by a new 20-inch suction dredge, which excavated 24,593 cubic yards from the lock site at Miraflores.

A detailed statement of the excavation in the three divisions follows:

ATLANTIC DIVISION.

Locality.	Total excavation		
	From Canal Prism	Outside Canal Prism	cu. yds.
	cu. yds.	cu. yds.	cu. yds.
<i>Dry excavation—</i>			
Gatun spillway.....		44,397	44,397
Gatun Locks.....	109,667	17,422	127,089
Mindi.....	45,475		45,475
Total.....	155,142	61,819	216,961
<i>Wet excavation—</i>			
Limon Bay.....	505,260		505,260
Total.....	505,260		505,260
Total wet and dry excavation.....	660,402	61,819	722,221

CENTRAL DIVISION.

<i>All dry excavation—</i>			
Chagres section.....	424,911	5,789	430,700
Culebra section.....	1,126,498	41,783	1,168,281
Total.....	1,551,409	47,572	1,598,981

PACIFIC DIVISION.

<i>Dry excavation—</i>			
Miraflores Locks.....	71,201	497	71,698
Pedro Miguel Locks.....	47,188	1,187	48,375
Cardenas Hill.....	17,487		17,487
Total.....	135,876	1,684	137,560
<i>Wet excavation—</i>			
La Boca.....	741,283		741,283
Miraflores Locks.....	24,593		24,593
Total.....	765,876		765,876
Total wet and dry excavation.....	901,752	1,684	903,436

TOTAL EXCAVATION, ENTIRE CANAL.

Dry excavation.....	1,842,427	111,075	1,953,502
Wet excavation.....	1,271,136		1,271,136
Total.....	3,113,563	111,075	3,224,638

Mean rainfall along Canal (eleven stations), 10.51 inches.

Figures of monthly excavation are based upon telephone reports from the Division Engineers, and are subject to slight alterations when the official reports are received.

Vegetable and Flower Seeds.

The Isthmian Canal Commission has made arrangements with the Department of Agriculture at Washington to have a selected assortment of vegetable and flower seeds sent to the Isthmus. The shipment will consist of 500 packages of vegetable, and 250 packages of flower seed, each package containing five small packets of different varieties.

The seed is for free distribution in the Canal Zone and only seeds of plants that experience has shown to be suitable for cultivation on the Isthmus will be sent. They are expected to be shipped from the States the latter part of November. The distribution will be made by the horticulturist of the Commission, under the direction of the Chief Quartermaster.

October Rainfall for Two Years.

Stations—	1907.	1908.	Average since sta. estab'd.	No. of rainy days.
<i>Atlantic Division—</i>				
Cristobal.....	21.99	10.96	13.98	22
Brazos Brook.....	18.42	11.95	15.59	22
Gatun.....	19.27	12.22	17.47	25
Bohio.....	19.00	14.25	16.98	26
<i>Central Division—</i>				
Tabernilla.....	26.46	14.57	20.52	21
San Pablo.....	18.94	12.95	15.94	23
Bas Obispo.....	13.62	8.30	11.25	24
Gamboa.....	13.02		12.75	
Empire.....	15.44	8.87	12.83	24
Camacho.....	15.88	6.81	10.25	22
Culebra.....	15.27	9.03	10.93	25
Rio Grande.....	15.09	8.59	11.38	22
<i>Pacific Division—</i>				
Pedro Miguel.....		8.41		20
La Boca.....	10.18	7.51	8.83	17
Ancon.....	9.26	8.79	10.70	20
<i>Upper Chagres—</i>				
Alhajuela.....	10.89	15.09	12.77	23
Porto Bello.....		13.18		22

At Tabernilla, on the 29th, 2.57 inches in one hour.
At San Pablo, on the 29th, 3.10 inches in one hour.

Small Slide at Whitehouse.

A small slide has developed on the east side of Culebra Cut opposite Whitehouse, and although it is giving no trouble at present it is believed that continuous rains would result in washing most of the material into the Cut. The amount of material affected is estimated at from fifty thousand to one hundred thousand cubic yards. The slide is similar to that at Culebra and not comparable in amount with the Cucaracha and Paraiso slides.

The highest average record for one day by the steam shovels of the Central Division was made on October 28, when 49 shovels excavated 62,396 cubic yards of material.

CARE IN USE OF DYNAMITE.

Meeting of Steam Shovel and Powder Men of Central Division.

Ninety steam shovel and powder men of the Central Division met the Division Engineer and Assistant Division Engineer in Kangaroos Hall, at Empire, Sunday afternoon, November 1, for the purpose of discussing what additional means may be taken to guard against danger in the handling and use of dynamite. The meeting was called at the request of some of the steam shovel men and was the immediate outcome of the explosion which occurred in the Cut, near Empire, on October 8. Fifteen of the men, representing both the powder men and steam shovel men, offered suggestions, all of which have been taken under advisement by the Division Engineer.

In opening the meeting the Division Engineer said that he wished to thank the men in his own behalf and that of the Assistant Division Engineer for the interest evinced by their presence. This interest he assured them was reciprocal, because careless handling of dynamite in the Cut is a menace not alone to the powder men and the steam shovel men and their helpers, but to everyone who works in the Cut. He urged upon them the need for cooperation in order to lessen the danger and assured them that the Isthmian Canal Commission and the Government consider the question of yardage a secondary one to that of the safety of the men.

The conditions on the Isthmus are peculiar; in the first place, because of the magnitude of the work necessitating the handling in the Central Division of 700,000 pounds of dynamite and the exploding of 260,088 feet of holes each month; in the second place, because the material being excavated is not uniform, and the powder man and steam shovel man find themselves handling the hardest rock one hour, while the next hour they are likely to be working in earth or clay. These conditions should be a reason for greater caution on the part of the men, and it is advisable, therefore, that each steam shovel man take it upon himself to examine closely the work he is called upon to do. No one knows better than the steam shovel men who are working in the Cut day after day, and have been working there for months and years, when it is advisable to slow down in the work of excavation in order to proceed with safety.

In addition to the precautions already taken, the Commission has cabled for fifteen galvanometers, to be used in testing the fuzes, and for forty-eight additional Star drills. The galvanometers, added to those already in use, will make the number twenty-five for the Central Division, and each powder man in the Cut will be supplied with one. It will be his duty to test each fuze before it is placed in the dynamite cartridge; to test it after the hole is loaded; and finally, when wires have been strung to the battery, to test the circuit again in order to see that the current will enter every fuze. This will insure against defective fuzes. In order to fire charges which may escape explosion when the current from the battery is turned on, holes will be drilled twelve feet apart, after the arrival of the extra drills, instead of twenty feet, as is usual

at present, and thus each hole will be so close to its neighbor that, even though one of them should not explode when the current is applied, the detonation from the nearby hole will set off the charge of dynamite. There is now under consideration a plan to have a high-power live wire strung along the edge of the Cut from Pedro Miguel to the Chagres River, from which leads will be run at regular intervals into the Cut for the purpose of furnishing current to be used in exploding fuzes. There are both advantages and disadvantages to be considered in connection with this plan, but neither cost nor convenience will be allowed to weigh against the installation of a high-power electric line, if it is decided that the safety of the men at work in the Cut would be increased by the use of such a current in exploding the dynamite.

But all the precaution that the Commission may take will be futile if the men themselves do not assist. No workman should do any work that he knows will prejudice the safety of himself or his fellow workmen, even if his refusal involves a disobedience of orders. The question of disobedience can be taken up with the Division Engineer or the Assistant Division Engineer, either at the office or when they are on the work, as they are every day. The question of discipline, important though it be, will always be held secondary to that of the safety of the men.

After the ideas condensed in the above had been presented to the men by the Division Engineer and the Assistant Division Engineer, the men were asked to give their views. It appeared that the action of the Commission in ordering galvanometers and more drills had anticipated the chief suggestions that the men had to make, and the matter of installing a high-power electric line for use in exploding the dynamite was received with favor. It was suggested that greater care be enjoined on the powder men in keeping their batteries dry, in accounting for all unused dynamite and fuzes, and in giving timely warning when a blast is about to be set off or dobbing is to be done. It is the custom of the pitmen to take refuge under the dump cars when a doby is about to be made, and attention was called to the carelessness of some of the train crews in not giving sufficient warning when a spoil train is about to start, so as to allow the men who have taken refuge under the cars to crawl out before the train starts. Steam shovel men were warned not to dig off dynamite and to take sufficient time to make sure that material in which they are working is free from unexploded charges. The men were told that their efforts to make big records should not be allowed to jeopardize their own safety and that of the men under them.

It was the consensus of opinion that the greatest danger run by the steam shovel men

and their helpers comes from the digging up of unexploded dynamite. It is almost impossible to keep count of the number of holes that explode in a charge of from twenty to fifty holes and the steam shovels not infrequently dig up dynamite that has not exploded. Some question was raised as to the quality of the dynamite, and this was answered by the statement that every shipment of dynamite received by the Commission under its new contract is tested by the United States Testing Bureau, and that it has been uniformly up to the standard contracted for. It is fresh, unlike some of the dynamite used in the Cut a year or more ago. Almost invariably the trouble lies in the fuzes, which are so constructed that the platinum bridge in them which completes the circuit is liable to be broken, and the fuze is thus prevented from exploding, with the result that the dynamite charge is not set off. The principal danger lies in the steam shovels digging into one of these fuzes and setting off the charge of dynamite. These fuzes are tested before they are shipped from the United States, and are tested again on reaching the Isthmus. Hereafter they will be tested three times before the exploding current is turned into them, and the number of missfires will thus be reduced to a minimum.

Most of the matters discussed have been treated in official circulars, talked over time and again, and have been incorporated in the rules for handling explosives. The men were assured, however, that all their suggestions will be taken up at once and that with their help the rules already laid down and those about to be made will be strictly enforced. Further meetings will be held whenever the men desire, and meanwhile, the men were requested to make known any complaints they might have individually to the Division Engineer or Assistant Division Engineer.

Supplies for Pacific Fleet.

The Subsistence Department of the Isthmian Canal Commission has made arrangements with the United States Navy Department to supply 175,000 pounds of fresh meat, 150,000 pounds of potatoes, and 30,000 pounds of other fresh vegetables, to the vessels of the Pacific fleet that are expected to be at Panama between December 12 and 22.

Negro Boy Drowned at Matachin.

Friday afternoon the ferry across the Chagres River at Matachin was overturned in midstream and four men and a boy on it were thrown into the water. The men reached shore safely, and one of them carried the boy with him. On reaching the bank, however, it was found that the boy had drowned. He was a negro messenger, named Maxile Benjamin, and was 14 years old.

WEATHER CONDITIONS, CANAL ZONE, OCTOBER, 1908.

Stations.	Pressure (reduced to mean of 24 hours.)	Temperature.					Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.	Mean relative humidity.	Total.	Number of rainy days.	Station average per month.	Total movement (in miles).	Prevailing direction.	Max. velocity (in miles.)	Date.
Cristobal.....	29.85	79	90	6	70	26	90	10.96	22	13.98	5,054	s.e.	31	17
Bas Obispo.....	29.86	77	87	23	66	26	94	8.30	24	11.25	3,300	s.e.	23	17
Ancon.....	29.85	79	92	21	69	26	88	8.79	20	10.70	5,246	n.w	37	16

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Culebra and Gatun Women's Clubs will meet on Thursday and Friday, November 5 and 6, respectively for the purpose of electing officers for the ensuing year.

The Cristobal Woman's Club held its regular business meeting on Wednesday, October 28, the preparation for the Christmas celebration being taken up. The art and literature department commenced Shakespeare's study at its regular meeting, Monday, October 26. The class was led by Mrs. Claude C. Pierce.

The Cristobal Juvenile Library was opened on Tuesday, October 20, under the auspices of the educational department of the Woman's Club. The one hundred and fifty volumes which are placed in the study of the Union Church building, comprise a selection of standard juvenile literature, and include also twelve volumes of Dickens' works and some of Irving, George Eliot and Charles Kingsley. The library is open on Tuesday and Friday afternoons from 3.30 to 5 o'clock; a member of the educational department being in charge during these hours. A deposit of 75 cents is required in order to take books from the building; this constitutes membership, and is returned on removal of the member or in case he wishes to discontinue using the library. The Juvenile Library is the result of the combined efforts of the school, the Union Church and the Woman's Club, an entertainment having been given last year by these three organizations for the purpose of raising funds.

Cristobal has two organized whist clubs among the women which meet on alternate Thursdays. Both of these are the outcome of the club organized in the Woman's Club last year for the purpose of raising funds to assist the philanthropy department in the work which it was desirous of taking up. There are about twelve members in each club.

The Union Church gave a dance and Hollow-e'en entertainment in the church building on Friday evening, October 30. The hall was decorated with palms and the evening was much enjoyed.

The staff of the Colon hospital gave a costume ball on the evening of All Hollow-e'en.

The Kangaroos gave a large Hollow-e'en dance at Paraiso on Saturday evening. A large number of people from the line were present.

The Ancon Woman's Club is making elaborate preparations for the bazaar which will be given the first week in December. It is proposed to hold the sale on two afternoons and evenings. Each department will be responsible for a booth, and there will be many outside attractions. It is intended that the sale shall include many practical and desirable articles for Christmas gifts. The educational and literary department of the club met on October 28, the afternoon being spent in study in preparation for the course on Italy and Greece. The department will meet on the second and fourth Wednesday of each month at the residence of the members. At the next meeting the epic poems of Greece and Rome and their mythology will be taken up.

The general programs of the club will be devoted exclusively to Panama, the next three meetings being scheduled as follows:

November 4, the San Blas Indians, program under the philanthropy department; November 18, a general survey of the history of Panama, under the philanthropy department; December 2, native dishes and how to prepare them, under the home department; an exhibit of native needlework and dress by the art department on the afternoon of December 16. The meetings will all begin promptly on time and will be held in the sun parlor of the Hotel Tivoli. By action of the executive board the club has donated a sum of money to the Palo Seco colony for the purchase of fireworks for the celebration of the national holidays this week.

The annual meeting of St. Luke's Guild took place on Monday afternoon at the residence of Mrs. Bishop in Ancon. The guild was organized on December 2, 1907, at the residence of Mrs. Fleetwood Gruver, with 16 charter members. Meetings are held at the residence of the members, by invitation, on the first and third Monday of each month. There is at present a membership of thirty-five, including the three classes, active, associate and honorary. Beside the regular work of the organization in the care of the chapel, the guild is prominent in organizing entertainments and social functions. Similar guilds are organized in connection with the Episcopal church in the Canal Zone in Culebra, Empire, and Cristobal.

A costume dance was given by the Bachelor Girls' Club of Culebra at the Commission clubhouse on Thursday evening, October 29. The hall was decorated in accordance with the custom on All Hallow-e'en, green and yellow being the colors, and "Jack o' Lanterns" served as lights. Programs and favors suitable to the occasion were distributed. Some of the costumes worn were: Indian Maid, Merry Widow, Dutch Peasant, French Maid, Spanish Dancer, Colonial Maid, College Girl, Martha Washington, Night, Dresden Girl, Fluffy Ruffles, Sweet Lavender, Twenty Centry Girl, Summer Girl, Flower Girls, and Dolly Varden.

A feature of the evening was the electrical arrangement, introducing the "Moonlight Waltz," the idea being original with the Bachelor Girls. The lights were extinguished with the exception of an electric motto draped in green, and a very tropical moon, which gave the desired effect. About 80 couples participated. Five matrons acted as chaperons. Visitors from other clubs were the guests of the evening.

The Bachelor Girls' Club was organized September 22, 1908, with a membership of twenty. The following are the officers: President, Miss Katherine Pender; vice-president, Miss Eileen Reidy; secretary, Miss Wilda Wickham; treasurer, Miss Katherine Griley. The object of the organization is to bring the bachelor girls of the Isthmus together in social functions. The club will give dances at holiday times.

The Las Cascadas Woman's Club met at the residence of the president on Thursday afternoon, October 29. Mrs. Thomas E. Brown, of Cristobal, was the guest for the afternoon, and the program consisted of reading the report of the Boston biennial. The club hopes to hold its next meeting in the new club room.

The date of the cake sale for St. Luke's Altar Guild, Ancon, has been put forward from November 14 to November 21. The

sale will be held at the home of Archdeacon Bryan. It will begin at 4 o'clock in the afternoon and continue into the night, or until all the cakes are sold.

PERSONAL.

Mr. R. M. Arango, formerly head of the Division of Meteorology and River Hydraulics under the Isthmian Canal Commission, who has been appointed by President Obaldia Minister Plenipotentiary to the Court of St. James, sailed for England a few days ago.

Mr. Frederick Palmer, who holds high rank among American correspondents, and is also a successful writer of fiction, spent two days in the Canal Zone during the past week on his way from Central America to the States. He was returning from an extended trip through the Central American republics in search of information for a series of articles which he is about to write for the *Chicago Tribune*.

Mr. Benj. L. Jacobson, claim officer, has been transferred from the office of the Chairman at Culebra to the office of the Purchasing Officer at Washington.

Rev. John W. Holland has been appointed a chaplain in the service of the Commission. He will be stationed at Culebra.

Mr. R. M. Gamble, formerly acting quartermaster at Bas Obispo, has returned from his leave of absence and will be appointed District Quartermaster at Corozal.

Death of Dr. John H. Purnell.

Ancon, C. Z., October 27, 1908.

The Chief Sanitary Officer announces with great regret, to the officials and employes of this Department, the death of Dr. John H. Purnell, Health Officer of Panama, Monday, October 26, 1908, while on vacation leave in the States.

Dr. Purnell has for many years been engaged in yellow fever work in the southern part of the United States. His work in Tennessee, Mississippi, Louisiana and Texas, in fighting this disease was notable. The experience and knowledge gained in that work made him a valuable assistant to the Chief Sanitary Officer.

Dr. Purnell was appointed a physician in this Department on April 26, 1905, and on June 16 of the same year he was appointed Health Officer of Panama, which position he filled until his death. Under Dr. Purnell, Panama was made a healthy city, and it was largely due to his efforts that yellow fever was finally stamped out. The ability and tact with which Dr. Purnell handled the difficult situation, and the results accomplished by him are worthy of all commendation.

The Department extends its sympathy to the family of Dr. Purnell.

W. C. GORGAS,
Chief Sanitary Officer.

Missing Men.

The American Consul General at Panama has been asked for information as to the whereabouts of the following men and will be glad to hear from anyone who can supply it:

John or Julius Houseman or Houseman.

C. W. Fleck or Chester Wallace.

Dan or Daniel Brewer.

Edgar L. Rosselot.

Otis Eberhardt, formerly of Jacksonville, Florida.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION.
MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.
COLON—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	62,835	.....	62,835	.....
February.....	81,850	.....	81,850	.....
March.....	65,652	.....	65,652	.....
April.....	67,436	.....	67,436	.....
May.....	54,333	.....	54,333	.....
June.....	731	.....	731	.....
July.....	15,257	.....	15,257	.....
August.....	28,837	.....	28,837	.....
September.....	41,078	.....	41,078	.....
October.....	40,003	.....	40,003	.....
November.....	45,475	.....	45,475	.....
December.....	46,945	.....	46,945	.....
Totals.....	172,851	.....	172,851	.....

Total to November 1, 1908—654,370 cubic yards.

COLON—DREDGES.

Months.	1906*		1907		1908	
	Outside Canal Prism	From Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	90,700	.....	111,100	444,403	46,298	.....
February.....	105,500	.....	110,002	401,887	25,835	.....
March.....	126,650	.....	84,145	515,223	31,663	.....
April.....	87,200	.....	69,889	496,366	.....	.....
May.....	60,700	.....	64,875	133,847	564,386	.....
June.....	73,500	.....	107,118	572,749	.....	.....
July.....	58,050	.....	69,000	104,322	5,600	.....
August.....	53,183	.....	189,170	5,127	638,217	.....
September.....	48,837	.....	123,540	403,842	.....	.....
October.....	38,000	.....	111,020	409,632	5,488	.....
November.....	38,000	.....	63,260	417,297	5,500	.....
December.....	92,250	.....	58,400	423,053	14,782	.....
Totals.....	399,820	1,027,645	1,969,316	652,898	5,388,764	103,796

Total to November 1, 1908—9,541,939 cubic yards.

* No work done inside of Canal Prism.
There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Months.	1906*		1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	47,539	.....	70,177	193,567	98,588	.....
February.....	100,151	.....	100,151	176,291	106,506	.....
March.....	103,459	.....	103,459	202,763	171,835	.....
April.....	70,528	.....	70,528	196,109	177,347	.....
May.....	71,181	.....	71,181	138,815	127,932	.....
June.....	59,537	.....	59,537	116,998	127,953	.....
July.....	87,357	.....	87,357	146,628	136,816	.....
August.....	78,423	.....	78,423	26,866	76,543	.....
September.....	3,055	.....	3,055	130,263	57,999	.....
October.....	11,517	.....	11,517	104,780	41,210	.....
November.....	12,056	.....	12,056	109,667	61,819	.....
December.....	26,628	.....	26,628	69,756	.....	.....
Totals.....	1,107,559	232,620	1,107,559	1,506,069	1,047,732	.....

Total to November 1, 1908—3,920,608 cubic yards.

* No work done outside of Canal Prism.

CENTRAL DIVISION.
CULEBRA SECTION—STEAM SHOVELS.

Months.	1904		1905		1906		1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	70,650	.....	120,990	566,750	1,227,022	.....	639,112	1,248,265	.....	.....
February.....	132,840	.....	168,410	815,200	1,248,265	.....	815,270	1,290,885	.....	.....
March.....	27,556	.....	239,178	1,267,449	1,242,574	.....	960,840	.....	.....	.....
April.....	32,551	.....	196,209	690,365	1,242,574	.....	624,586	.....	.....	.....
May.....	31,599	.....	212,623	624,586	1,134,032	.....	770,570	.....	.....	.....
June.....	35,056	.....	159,789	78,570	1,121,325	.....	786,866	.....	.....	.....
July.....	25,220	.....	49,210	244,823	1,171,927	.....	753,468	.....	.....	.....
August.....	16,309	.....	44,085	291,452	1,122,860	.....	834,499	.....	.....	.....
September.....	32,112	.....	28,660	60,540	790,632	.....	1,168,281	.....	.....	.....
October.....	45,475	.....	70,630	307,689	1,025,485	.....	.....	.....	.....	.....
December.....	481,519	.....	243,472	914,254	2,702,991	9,177,130	11,698,011	.....	.....	.....
Totals.....	1,107,559	232,620	1,107,559	1,506,069	1,047,732	.....	.....	.....	.....	.....

Total to November 1, 1908—24,725,858 cubic yards.

CHAGRES SECTION—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	169,447	.....	200,145	.....
February.....	324,233	.....	324,233	.....
March.....	329,483	.....	329,483	.....
April.....	235,902	.....	235,902	.....
May.....	322,145	.....	322,145	.....
June.....	345,757	.....	345,757	.....
July.....	2,900	.....	2,900	.....
August.....	346,810	.....	346,810	.....
September.....	21,546	.....	21,546	.....
October.....	25,627	.....	25,627	.....
November.....	44,044	.....	44,044	.....
December.....	98,652	.....	98,652	.....
Totals.....	192,769	.....	192,769	.....

Total to November 1, 1908—3,266,212 cubic yards.

FRENCH AND AMERICAN RECORDS.

Excavation	Feet
Highest elevation on new center line of Canal before excavation begun by the French:	
At Culebra.....	312
At Bas Obispo.....	233
Greatest depth of excavation by the French:	
On I. C. axis—At Culebra.....	161
At Bas Obispo.....	148
Greatest center-line depth remaining to be excavated when Americans took control in order to reach the bottom of an 85-foot level Canal:	
At Culebra—At same point as before.....	111
At barrier on Contractor's Hill.....	about 140
At Bas Obispo.....	45
Total excavation by the French at all points and including diversion channel.....	81,548,000
Amount excavated under American control to November 1, 1908:	
In Culebra Cut.....	24,725,858
By steam shovels.....	33,609,840
By dredges.....	20,121,115
Total by steam shovels and dredges, entire canal.....	53,730,955

PACIFIC DIVISION.
PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....
February.....
March.....
April.....
May.....
June.....
July.....
August.....
September.....
October.....
November.....
December.....
Totals.....

Total to November 1, 1908—135,301 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY.

Months.	Dredges—1908.		Steam Shovels, 1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....
February.....
March.....
April.....
May.....
June.....
July.....
August.....
September.....
October.....
November.....
December.....
Totals.....

Total to November 1, 1908—728,816 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at the La Boca locks and dams in 1907, and 125,035 cubic yards at Cardenas Hill in March, April, May, June, July, August, September and October, 1908.

LA BOCA—DREDGES.

Months.	1906*		1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	98,940	.....	98,940	94,710	460,250	.....
February.....	116,820	.....	116,820	92,439	463,570	.....
March.....	110,700	.....	110,700	102,885	763,231	.....
April.....	122,340	.....	122,340	122,157	520,539	.....
May.....	50,676	.....	50,676	64,352	656,691	.....
June.....	41,533	.....	41,533	108,338	696,170	.....
July.....	54,530	.....	54,530	168,288	737,774	.....
August.....	105,780	.....	105,780	9,250	750,080	.....
September.....	97,170	.....	97,170	357,122	741,283	.....
October.....	81,836	.....	81,836	.....	.....	.....
November.....	71,176	.....	71,176	.....	.....	.....
December.....	90,528	.....	90,528	349,551	.....	.....
Totals.....	1,191,233	1,557,695	1,191,233	586,094	6,695,983	.....

Total to November 1, 1908—10,516,158 cubic yards.

* No work done inside Canal Prism.

HOSTLING.

Caring for the Locomotives After Their Day's Work.

At 5 o'clock in the afternoon the Isthmian Canal Commission engineer takes his train to the nearest siding, uncouples his locomotive from the string of loaded or empty cars, and runs the engine to the hostling yard. His dinner over, he goes to his quarters, and the following morning at 6.30 o'clock he is in the cab again. From the time the engineer leaves his locomotive at night until he takes the throttle again in the morning, the engine also is resting and preparing for the next day's work. Its food is two or three tons of coal, several barrels of water, and a few bushels of sand; and once in two weeks it is given a bath in the form of a "washout." The engineer calls his dinner and rest "recreation," and the recreation of his locomotive "hostling." Hostling is as essential to the engine as recreation is to the engineer.

Between fifty and sixty locomotives are hosted every night at Pedro Miguel. During the day screws have begun to show wear, a drawhead has weakened, a grate given out, lubricators and injectors, rod brasses, air brake equipment or trucks need repairing, the guides on the piston cross-head must be closed, or some other little weaknesses have developed in several of the engines; and those so affected are run into the shed, over the repair pit if necessary, and the machinist begins the repairs at once. The other engines are turned over to the six "gold" men known as "hostlers." These men have served as engineers and are now hostling, waiting a chance to take a regular run.

Each hostler takes four locomotives in one train and runs them to the coal chute, then to the sand chute, and then to the water pipe. This order may be changed as convenience dictates, but the process remains the same, and when the hostler leaves the engines they have a full store of coal, a tank full of water, and sand enough in the sand box to meet the next day's demands. Firemen then separate the cinders from the coal, dump them, and bank the fire. The oil cups are filled, the light repairs finished, and the locomotives cleaned, usually by midnight. After that the hostler's work is merely to visit each engine two or three times until 5 o'clock, and see that all is going well. Between 5 and 6 o'clock the fires are raked again, and when the engineer takes his locomotive at 6.30 o'clock the fire is bright, and the gauge registers from 120 to 150 pounds of steam.

Four engines are "washed out" every night, and an order is preserved so that each has a thorough cleaning once in fifteen days. Like the locomotives that need repairing, those to be washed out are separated from the rest early in the evening and hosted at once. They are then run over the cinder pit where the fires are dumped, and taken into the house where the steam and water are allowed to escape, while cold water is forced into the boilers and running out carries with it the loose matter that has collected during two weeks. All this takes from 5.30 o'clock in the evening until 2 o'clock the next morning, when the fires are started again, and at 6.30 the engines are ready for their work.

To one not accustomed to such work the

hostlers and their helpers moving in and out among the great engines, with the shadows deepened by an occasional headlight, the gleam from the cinder pit, or rays from the workmen's lanterns, make an eerie sight. Fifty locomotives manuever in files of four on only six tracks, and so close to one another that the trains almost touch, while half a hundred men hurry about among them. It looks like a mix-up and sounds like discord; but the engines start only on double signals, there are no collisions, accidents are few, the work moves swiftly.

At daybreak the result of it all is seen in the locomotives standing ready, like horses at the barrier. On the morning of October 29, at 6.30 o'clock 52 locomotives left the yard in nine minutes, and often the clearance is made in seven minutes. Between 6.30 and 6.41 o'clock two locomotives had left the yard, coupled to a train of sixteen 20-yard cars which had been left on the siding the night before, had stretched the unloader cable, and started to the La Boca dumps.

Many railroad men on the Isthmus are of the opinion that this daily performance at Pedro Miguel is quite unique in railroading. It is unique on the Canal work, however, only because it is the one place where so many locomotives are stationed over night. At Las Cascadas 35 engines are handled in the same way and at Empíre, Gorgona, and other points like work is done with the smaller number of locomotives hosted at those places. All the hostling for the Central Division is done by the Mechanical Division, and a statement of the work in September is as follows, the material charged to this account being for coal, oil, sand and waste:

COST OF OPERATING COAL CHUTES DURING THE MONTH OF SEPTEMBER, 1908.

LOCATION.	Coal.	Tons handled	Cost of operating	Cost of operation per ton of coal handled.
Las Cascadas	On bin...	2,769	.....	.....
	Delivered	2,769	.....	.....
Total .....	.....	5,538	\$138.69	.0251
Pedro Miguel	On bin...	3,275	.....	.....
	Delivered	3,275	.....	.....
Total .....	.....	6,550	\$270.88	.0414
Grand total.....	.....	12,088	\$409.57	.0339

Las Cascadas—214 tons coal unloaded by hand account not received in hopper-bottom cars, additional expense incurred.....\$10.00
 Pedro Miguel—87 tons coal unloaded by hand account not received in hopper-bottom cars, additional expense incurred..... 4.00

STATEMENT SHOWING COST OF HOSTLING FOR THE MONTH OF SEPTEMBER, 1903.

LOCATION.	Number hosted.	Cost of hostling.	Average cost per engine.
Gorgona.....	688	\$-03.53	1.168
Santa Cruz.....	235	333.38	1.419
San Pablo.....	735	874.63	1.190
Tabernilla.....	4.20	371.17	.884
Empire.....	638	1,376.45	2.157
Bas Obispo.....	130	412.90	3.176
La Boca.....	147	344.63	2.344
Las Cascadas.....	1,043	1,946.09	1.865
Pedro Miguel.....	1,574	3,169.18	2.013
Rio Grande.....	216	237.72	1.101
Total.....	5,826	\$9,869.68	1.694

The average number of men employed in hostling for the Central Division in September was—Gorgona, 16; Tabernilla, 6; Santa Cruz, 5; San Pablo, 15; Las Cascadas, 29; Empire, 16; Rio Grande, 9; Bas Obispo, 5; Pedro Miguel, 47; La Boca, 4.

At Pedro Miguel the facilities for hostling are good, although not faultless. The track lay-out is well adapted to sending the locomotives out in a short time, but not to han-

dling them so easily on their return from work. Four tracks run through the engine house, which can accommodate twenty engines, and outside the house are one track and two leads to the yard. The cinder pit extends under two tracks between which is a depressed track on which the cinders are hauled out. Double tracks lead to the coal chute and one track runs up the incline. In the chute an engine run by compressed air furnishes the power for handling cars up the incline by cable. There are 24 pockets and the capacity is 120 tons. In the coal chute is a sand plant in which sea sand is dried, sifted, and lifted by air to the storage bin. An oil house is nearby.

The machine shop at Pedro Miguel is equipped to do any light repairing. The machinery consists of: One French blacksmith's fan, 20 inches in diameter; one 16-inch emery wheel—double; one 40-inch grind stone; one 48-inch grind stone; one combined wet and dry grinder, 12-inch table; one drill press, 16-inch table; one drill press 31-inch table; one old French drill press; one engine lathe, 18 by 60-inch; one La Blond lathe, 24 by 10-inch; one French shaper, 18-inch stroke; one American shaper, 24-inch stroke; one 2-horsepower air motor; one old French engine, cylinders 8 by 12-inch, used for power at shop; one old French pump 3½ by 4-inch, one pipe bending machine, bends pipe from ½-inch by 2-inch diameter; one pipe cutting and threading machine, (will handle pipe from 1 to 6-inches diameter); one pipe cutting and threading machine, (will handle pipe from 2½ to 12-inches diameter); one power hack saw, 5½-inch stroke; one old French punch and shear, 14-inch throat; one double head bolt cutter, ½-inch to 2 inch; one portable air-brake testing machine; one forcing press, 30 by 36-inch, capacity 30 tons; one vertical wood boring mill, ½-inch to 2-inch; one rip saw, table 3 feet 3 inches by 6 feet; one 2-cylinder air driven engine for coal hoist.

Las Cascadas yard is shorter than that at Pedro Miguel, and the double cinder pit is at one side the yard and nearer the engine house. There are five tracks through the house and one on each side. The capacity of the house is 30 engines. The coal and sand chutes are of the same type as at Pedro Miguel. The machine equipment is as follows: One 44-inch blacksmith's fan; one emery wheel and stand, 16-inch; one 48-inch grind stone; one French drill press, No. 9, 16-inch swing; one American upright drill press, 16-inch table; one American drill press, 18-inch table; one 16-inch Pratt & Whitney lathe; one 18-inch LaBlond engine lathe; one French shaper, 18-inch stroke; one French 2-cylinder vertical engine, used for power for shop; one 2-cylinder horizontal air engine, used for operating hoisting device at coal chute; one 2-cylinder air engine, to operate sand shaker; one Dean duplex pump, 10 by 6 by 12; one forcing press 30 by 36-inch, with a capacity of 30 tons.

Since October 1, no engines have been hosted at Rio Grande. At the smaller hostling stations the machinery equipment is small. Heavy repairs to locomotives are made at Gorgona.

The engines of the Pacific Division are hosted in the field at the Miraflores lock site, and those of the Atlantic Division are cared for at Gatun. In all there were 298 locomotives in the service of the Commission in September.

ANGLICAN CHURCH ON ISTHMUS.

Established Here in 1883 for Benefit of Negroes.

Twenty-five years ago the Church of England was established on the Isthmus of Panama. The quarter centennial will be observed at Colon, Panama, and Gorgona in the week beginning November 22. On that day, at 3 p. m., in Christ Church, Colon, Rev. S. Purcell Hendrick, of Jamaica, for sixteen years pastor of the church, will preach the anniversary sermon. On November 24 he will preach at St. Andrew's Church, in Gorgona, and at 3 p. m. on October 29, in St. Paul's Church, Panama. A picnic for church members will be held at Gorgona on November 26, when the morning will be given over to entertainment of all kinds, and the afternoon to addresses and other formal exercises.

The distinction made between the Anglican Church (English) and the Protestant Episcopal Church (American) must be kept in mind in any clear conception of the anniversary about to be celebrated. The Anglican Church was a factor in canal work from 1883 until 1907, while the Protestant Episcopal Church began its work on the Isthmus in 1865, and resumed it in 1907. Christ Church in Colon was consecrated in 1865, with the idea that it would be the center of the religious life of the little colony of Americans collected there by the Panama Railroad Company. It is a handsome structure, built of stone, and cost \$75,000. Political reasons caused its practical abandonment after a few years, and it served variously as a barracks, a magazine and arsenal, and a storehouse, during the revolutions that vexed Colombia in the seventies. From 1865 until 1883 it was under the jurisdiction of the Protestant Episcopal Church.

When the French began their work on the Canal there was a large immigration of West Indians to the Isthmus. As most of the immigrants came from Jamaica and other British West Indian islands, there were many members of the Anglican Church among them. Not with any idea of proselyting, but to minister strictly to members of that church, the Anglican missions were established on the Isthmus. Speaking of the opening of the work, Rev. Mr. Hendrick says:

"We were warmly welcomed by both the French Canal Company and the Panama Railroad Company. The former provided us with camps at different centers of work along the route of the canal, and in one or two instances built churches for our use; and also contributed monthly a sum toward the maintenance of the work. The privilege to continue our work in these buildings at these places was conceded to us by the new Panama Canal Company, who were willing to recognize the necessity of the continuation of our work, but who did not find it possible to make any contribution toward its maintenance. The Panama Railroad Company very graciously allowed us the free and exclusive use of Christ Church, Colon, and supplied a furnished residence for the clergyman ministering therein. He was treated as a chaplain of the company in his official capacity, and was granted a monthly sum toward his stipend. He was also permitted, as well as others associated with him in the work, to travel on the road free of charge.

We were able in the course of years to establish missions at Mount Hope (then Monkey Hill), San Pablo, Gorgona, Bas Obispo, Las Cascadas, Culebra, and Paraiso, also opening a mission in the city of Panama. At these places day-schools for the education of the children of the laboring class were established, and were conducted by men trained for such work under government supervision in the Island of Jamaica, who also performed the duties of catechists or lay-readers at the said stations. These places are maintained partly by the voluntary contributions of people residing therein, and partly by a vote of money from our missionary society in England."

On account of the change of sovereignty in the Canal territory the Anglican Church turned its work over to the Protestant Episcopal Church, November 1, 1907. The primary reason for establishing the Church here in 1883 was to work among the West Indian laborers. No distinction between white and negro members was made, and the great majority of those who now attend the Episcopal Churches on the Isthmus are negro employes of the Commission. It is the belief of Archdeacon Henry B. Bryan that a majority of the 34,000 negroes in the Canal Zone were brought up under the influence of the Anglican Church, and therefore are nominally Episcopalians. The number of communicants is about one thousand. The schools for lay instruction were abandoned as soon as the Canal Zone public schools were opened, except the schools in Panama, Colon, Las Cascadas and Mount Hope, in which 260 pupils are enrolled.

There are now thirteen congregations of West Indians on the Isthmus: St. Paul's, Panama; St. Augustine's, Paraiso; St. Mark's, Culebra; St. Matthew's, Empire; St. Philip's, Las Cascadas; Ascension, Bas Obispo; St. Andrew's, Gorgona; St. Peter's, San Pablo; St. John's, Mount Hope; Christ, Colon, and missions at Guachapali, Pleya de Flor and La Boca.

Since the coming of Americans the work of the Church has been less closely confined to negroes. Five congregations for white people have been organized: Ancon, Culebra, Empire, Gorgona, and Cristobal.

It will be understood, of course, that religious work in the Canal Zone is not confined to any one sect. The Roman Catholics, Wesleyans, and Baptists have churches at various points in the Zone; and independent services are held in several of the Canal villages. There is no village along the line of the Canal where there is not at least one church, and in several of them there are two or three congregations.

Rifle Range in Old French Spillway.

A rifle range for the use of the detachment of the United States Marine Corps stationed at Camp Elliott, has been laid off in the spillway dug by the French as part of their scheme for controlling the Chagres River by a dam at Gamboa. As laid off the range is only six hundred yards, but there is room for a longer one if it is desired. The old spillway channel is completely excavated so that there is a level stretch of land about 120 feet wide at bottom, a thousand yards long, and almost completely surrounded by hills. The location is northeast of Santa Cruz and easily accessible by a newly cut trail. The butts are being built in the side

of a hill 190 feet high and 70 feet above the bottom of the old spillway. Back of this hill the railroad track runs to the new storage magazine at Gamboa, but as the subgrade of the track is at 80 feet, and the whole hill is thus between the butts and the railroad, the proximity of the railroad was not considered of any moment in establishing the range.

Women's Waiting Room, Cristobal.

A waiting room for women has been built at Cristobal, across the track, opposite the north end of the station platform. The building is one story high, 30 feet square, with a screened veranda, eight feet wide, entirely around it. The waiting room is 14 feet by 20 feet, with a toilet room attached.

Card of Thanks.

Mrs. Ruth E. Averill together with her children, Glenn and Clara, and her brothers, Willis and Lewis Webster, wish to thank the Knights of Pythias, Odd Fellows, Masons, Association of Steam Shovel Men and their other friends for the many kindnesses shown them in their recent bereavement.

Attention, Kangaroos.

All members of the Independent Order of Panamanian Kangaroos that are to compose the Ancon Court, No. 7, are earnestly requested to meet in the hall over the District Quartermaster's office in Ancon, near Hotel Tivoli, on Friday, November 6, at 7 p. m., sharp. This is a very important meeting, and all are urged to be present. By order of
SAM B. DENNIS.

Notice to Shovel Men.

All members of the I. B. of S. S. and D. M. are requested to attend a meeting in the I. C. C. hall, Empire, Sunday, November 8, at 2.30 p. m.
S. I. LYONS.

Concerts by the I. C. C. Band.

BAS OBISPO, C. Z.

Sunday, November 8, 1908, at 2.30 p. m.:

PROGRAM.

- 1 March—*Santiago Flynn*.....Morse
- 2 Selection—*Hits of the Day*.....Remick
- 3 Waltz—*Moonlight on the Hudson*.....Tobani
- 4 { a Intermezzo—*Ivanhoe*.....Van Alstyne
- b Schottische—*Let Me Be Your Lemon*
- Coon.....Allen
- 5 Selection—*The Soul Kiss*.....Levi
- 6 Idyl—*The Glow Worm*.....Lincke
- 7 Popular March—*Persian Lamb Rag*.....Wenrich
- 8 Overture—*Lustspiel*.....Suppe
- 9 Patrol—*American*.....Meacham
- 10 Galop—*Telemachus*.....Bennett

CRISTOBAL, C. Z.,

On band stand near Clubhouse, Wednesday, November 11, 1908, at 8.15 p. m.:

PROGRAM.

- 1 March—*Waldmere*.....Losey
 - 2 Selection—*Mill's Merry Melodies*.....Mills
 - 3 Waltz—*Thousand and One Nights*.....Strauss
 - 4 { a Intermezzo—*Napanea*.....Williams
 - b Schottische—*When a Boy Says "Will You?"*.....Allen
 - 5 Potpourri—*The Sunny South* (by request).....Lampe
 - 6 Intermezzo—*After Sunset*.....Pryor
 - 7 Humoresque on *The Merry Widow Waltz*.....Bellstedt
- Introducing this popular melody from the opera "The Merry Widow," burlesqued in the following manner: 1. A little German band; 2. A flute solo with organ effect; 3. An amateur trombonist, who is willing to show what he can do if only requested to; 4. A street piano; 5. A la ragtime as played on a banjo; and finally—the result, the popularity of this melody has produced—a brainstorm.
- 8 Overture—*Four Ages of Man*.....Tachner
 - 9 Patrol—*American*.....Meacham
 - 10 March—*Old Salt*.....Hildreth
- CHAS. E. JENNINGS, Musical Director.

A concert will be given at Gorgona, C. Z., Sunday, November 15.

COMMISSARY DEPARTMENT.

TURKEYS, CRANBERRIES, OYSTERS.

The Subsistence Department has placed orders in the States for a supply of turkeys, cranberries and oysters to be delivered on the Isthmus before Thanksgiving Day. A large enough quantity of each has been ordered to supply all the Commission hotels, as well as families.

Within a few days cold storage supplies for Gatun, Gorgona, Empire, Culebra, Pedro Miguel, Ancon, and La Boca will be shipped from Cristobal on the freight train leaving at midnight instead of on the supply train leaving at 4.30 a. m. This arrangement will reduce the length of the supply train and will enable the department to deliver cold storage articles earlier in the morning on the Pacific side of the Isthmus.

COMMISSARY PRICES

For week beginning November 3:

FRESH MEATS.		Price.
Mutton—Stewing.....	per lb	6
Shoulder and neck (not under 6 pounds).....	per lb	7
Entire forequarter (not under 10 pounds).....	per lb	8
Leg (8 to 10 pounds).....	per lb	16
Short-cut chops.....	per lb	22
Lamb—Stewing.....	per lb	6
Entire forequarter.....	per lb	8
Leg (6 to 8 pounds).....	per lb	27
Veal—Stewing.....	per lb	10
Entire forequarter (15 to 20 lbs).....	per lb	11
Loin for roasting.....	per lb	21
Chops.....	per lb	22
Beef—Suet.....	per lb	4
Soup.....	per lb	8
Stew.....	per lb	12
Corned.....	per lb., 12, 14, 16	16
Pot roast (from sirloin butt).....	per lb	17
Rib-roast, second cut (not under 3 pounds).....	per lb	19
Rib-roast, short cut (not under 3 1/2 pounds).....	per lb	23
Sirloin roast.....	per lb	29
Rump roast.....	per lb	29
Porterhouse roast.....	per lb	29
Steak, round.....	per lb	23
Rib.....	per lb	24
Sirloin.....	per lb	29
Porterhouse.....	per lb	29
Rump.....	per lb	29
Tenderloin.....	per lb	30

MISCELLANEOUS.

Livers—Calf.....	each	65
Sausage—Pork.....	per lb	19
Leberwurst.....	per lb	17
Sweet bread—Veal.....	each	1.20
Ox tongues.....	each	90
Pigs' tongues, pickled.....	per lb	15
Eggs, fresh.....	dozen	34

POULTRY AND GAME.

Chickens—Capons.....	each	2.40
Broilers.....	each	60
Fowls, medium and large.....	each, 80c, and 1.00	
Turkeys.....	per lb	30
Squabs.....	each	45
Suckling pigs (whole).....	each	3.50
Suckling pigs (one-half).....	each	1.75

CURED AND PICKLED MEATS.

Bacon—Strips.....	per lb	23
English, breakfast sliced.....	per lb	\$26
Ham—Sugar-cured, sliced.....	per lb	\$25
One-half, for boiling.....	per lb	\$21
Ferris.....	per lb	20
Beef, salt, family.....	per lb	16
Salt pork.....	per lb	13

DAIRY PRODUCTS.

Cheese—Neufchatel.....	each	6
Young America.....	per lb	22
Swiss.....	per lb	31
Edam.....	each	1.05
McLaren's.....	jar	15
Pinxter's.....	tin	22
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....	tin	20

VEGETABLES AND FRUITS.

Tomatoes (local only).....	per lb	5
White potatoes.....	per lb	3 1/2
Sweet potatoes.....	per lb	2 1/2
Cabbage.....	per lb	4
Onions.....	per lb	3 1/2
Cucumbers.....	per lb	25
Beets.....	per lb	5
Carrots.....	per lb	5
Turnips.....	per lb	5
Lemons.....	dozen	24
Oranges.....	dozen	18
Grapefruit.....	each	3
Alligator pears.....	each	5

§ Sold only from cold-storage and not from Commissaries.

NEW ARTICLES.

	Price.
Cigarette paper, "La Croix".....	book 2 1/2
Viscol shoe dressing, 1/2-pint.....	tin 25
Sticks, shaving, Pear's.....	dozen 25
Pans, sauce, Berlin, No. 012.....	each 80

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, October 31, 1908:

	STATIONS.					
	Vigia.	Alhajuela.	Gaibaron.	Bebio.	Gatun (W. Diver'n).	Gatun (Canal).
Height of low water above mean sea level, feet.....	129	92	46	0	0	0
Maximum height above low water, feet:						
Sunday, Oct. 25.....	4.9	4.5	7.5	8.9	3.4	4.6
Monday, Oct. 26.....	9.2	7.2	10.4	11.7	4.9	6.5
Tuesday, Oct. 27.....	9.3	7.3	8.0	14.2	5.3	7.6
Wednesday, Oct. 28.....	8.4	7.3	10.5	14.3	6.5	8.6
Thursday, Oct. 29.....	4.6	4.2	9.2	14.9	5.8	7.9
Friday, Oct. 30.....	7.6	6.2	10.1	15.2	7.1	9.4
Saturday, Oct. 31.....	4.0	4.6	10.0	16.0	7.7	10.0
Maximum for week.....	9.3	7.3	10.5	16.0	7.7	10.0

UNCLAIMED PACKAGES.

The following is a list of packages that have been forwarded from New York to Isthmian Canal Commission and Panama railroad employees, and that are waiting to be claimed at the freight house at Colon. The owners of these packages will have to make application for free customs entry in connection with Circular No. 85, or in the alternative, pay duty to the Panama Government customs on the value of the contents of the packages, before delivery can be effected:

- W. S. Clements, Colon, 1 box, *Advance*; July 6, 1908.
- J. F. Montero, Panama, 2 cases instrument boxes, *Allianza*; July 15, 1908.
- J. F. Dempsey, Colon, 1 box cloth, *Allianza*; July 15, 1908.
- S. Chenalloy, Colon, 1 parcel (No. 7656), *Advance*; July 10, 1908.
- C. Thomas, Cristobal, 1 parcel (No. 7778), *Esperanza*; August 18, 1908.
- A. Y. Ingram, Colon, 1 bundle wall paper, *Finance*; September 8, 1908.
- J. O. Gonzalez, Colon, 1 case hardware, *Colon*; September 18, 1908.
- G. H. Jack, Matachin, 1 case plaster paris, *Allianza*; September 21, 1908.
- Hugh Crabtree, Las Cascadas, 1 parcel (No. 7848), *Allianza*; September 21, 1908.
- Alex Sanclous, Ancon, 1 box E. ware, *Finance*; September 26, 1908.
- J. W. Hughes, Cristobal, 5 barrels household goods, 1 crate sewing machine, *Finance*; September 26, 1908.
- C. J. Geddes, Gatun, 1 parcel (No. 7862), *Finance*; September 26, 1908.
- Haynes Clark, Empire, 1 box, *Advance*; October 8, 1908.
- Mrs. Sam Chas. Lewis, Corozal, 1 box, *Advance*; October 8, 1908.
- Isthmian Locomotive Engineers, Las Cascadas, 1 box photographs, *Advance*; October 8, 1908.
- Mrs. J. K. Baxter, Culebra, 1 parcel (No. 7877), *Advance*; October 8, 1908.

OFFICIAL CIRCULARS.

Leaves of Absence.

[The following circular supersedes the circular with the same title, published on page 71 of the issue of THE CANAL RECORD for October 28, 1908.]

CULEBRA, C. Z., October 20, 1908.

CIRCULAR No. 215.

This office has been requested, in numerous recent instances, to waive the rules governing leaves of absence, in favor of employes who have been misled by erroneous information given them by timekeepers, or subordinate officials, and have thus allowed their leave to become forfeited.

To prevent the recurrence of similar misunderstandings, timekeepers and subordinate officials should be instructed to give no information to employes relative to their leave, and to take no action on applications for leave, but to forward all inquiries and applications to the administrative office of the department or division with such comment or recommendation as may be required.

Any case to which the application of the rules governing leaves of absence may not be perfectly clear, should be referred to this office for decision.

So far as may be practicable, the heads of departments and divisions will see that employes apply for their leave before it is forfeited. In future, no plea of ignorance of the published rules, or of misunderstanding due to erroneous information, will be considered.

This circular should be posted on all official bulletin boards and given the widest possible publicity.

H. F. HODGES,
Acting Chairman

Pay for November 3.

CULEBRA, C. Z., October 26, 1908.

TO ALL CONCERNED:

November 3, which is to be observed as a holiday in the Canal Zone, is not one of the holidays for which gratuity time is allowed under Circular No. 133, and time for that day will be allowed on the same basis as time for Sundays.

H. F. HODGES,
Acting Chairman and Chief Engineer.

LEGAL NOTICE.

EMPIRE, C. Z., October 22, 1908.

To any and all persons who may have any claim or claims against the estate of Philip F. Kramer, deceased, who met his death at the town of Paraiso, Canal Zone, on December 17, 1907: You will present the same on or before the 1st day of December, 1908, to Theodore C. Hinckley, administrator of the estate of P. F. Kramer, Panama, Panama, or E. M. Goolsby, Clerk of the Circuit Court, Empire, Canal Zone, properly verified, or the same will be forever barred according to law.

THEO. C. HINCKLEY,
Administrator

Misdirected Letters.

Division of Posts, Customs and Revenues,
Ancon, C. Z., October 31, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

- Atkins, John
- Barnes, M ad C
- Barrett, Fred
- Barlon, Edward
- Blodgett, Glenn
- Coe, Capt. F. W.
- Davis, Mrs. D. R.
- Deikman, O. H.
- Drummond, J. H.
- Duncan, Geo. L.
- Elemgren, G.
- Emerck, Frank
- Emslaw, Florence
- Forsyth, L. M.
- Galiger, Walter
- Gayer, Carl
- Gibson, W. C.
- Gilman, Wm. F.
- Graubers, Arthur
- Hall, J. A.
- Hallagan, Thomas
- Harper, Archie
- Klinger, G. R.
- Laharty, Joe
- Love, Chas. M.
- Lybrook, W. A.
- Mevers, Arthur
- Moore, Wade H.
- McCaull, Dan
- McKaig, Mrs. M. E.
- McKay, Hugh
- Norman, Thos.
- Pabst, Chas.
- Page, C.
- Patterson, Louis
- Peck, W. D.
- Phillips, Frank
- Rath, Thomas J.
- Rodgers, Viola
- Ryberg, Oscar
- Sullivan, W. F.
- Thomas, Gus
- Thull, Peter
- Torosian, David
- Vareucamp, Fred
- Walker, Hector
- Walsh, Stephen
- Wals on, W. H.
- Ward R. G.
- Wilbut Ruth
- Whittaker, W. R.
- Yount, Mrs. J. L.

The steamship *Nordstjernin* sailed from Baltimore, Md., on October 25, with a cargo of 23,784 feet B. M. lumber, 3,500 feet of culvert pipe, and ten 40-ton locomotives for the Isthmian Canal Commission.

The following steamers have recently arrived at La Boca: October 23, *Loa*, from Valparaiso; October 24, *City of Pava*, from San Francisco. Departures were: October 25, *Peru*, for Valparaiso; October 30, *Quito*, for Buenaventura.

CANAL DIRECTORY.**ISTHMIAN CANAL COMMISSION.**

Lieut.-Col. Geo. W. Goethals, U. S. A.,
Culebra.
Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
Maj. D. D. Gaillard, U. S. A., Empire.
Maj. Wm. L. Sibert, U. S. A., Gatun.
Civil Engineer H. H. Rousseau, U. S. N.,
Culebra.
Mr. Jo C. S. Blackburn, Ancon.
Col. W. C. Gorgas, U. S. A., Ancon.
Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

DEPARTMENTS.**Construction and Engineering.**

Headquarters, Culebra.
Lieut.-Col. Geo. W. Goethals, Chairman
and Chief Engineer.
M. B. DePutron, Assistant to the Chairman.
W. H. May, Secretary to the Chairman.
C. A. McIlwaine, Chief Clerk.
Caleb M. Saville, Assistant Engineer.
Lieut.-Col. H. F. Hodges, Assistant Chief
Engineer.
C. O. Carlson, Secretary.
Edward Schildbauer, Electrical and Mechanical
Engineer.
Henry Goldman, I. D. Cornish, H. F. Tucker
and T. B. Mönische, Designing Engineers.

Civil Engineer H. H. Rousseau, Assistant
to the Chief Engineer.

J. C. Parsons, Secretary.
A. B. Nichols, Office Engineer.
P. O. Wright, Jr., Architect.

Central Division.

Headquarters, Empire.
Maj. D. D. Gaillard, Division Engineer.
A. E. Bronk, Chief Clerk.
Louis K. Rourke, Assistant Division Engineer.
A. S. Zinn, Resident Engineer.
Mark W. Tenny, Assistant Engineer.
R. W. Hebard, Assistant Engineer.
W. L. Thompson, Assistant Engineer.
Geo. H. Ruggles, Assistant Engineer.

Atlantic Division.

Headquarters, Gatun.
Maj. Wm. L. Sibert, Division Engineer.
R. M. Sands, Chief Clerk.
Maj. Chester Harding, U. S. A., Assistant Division
Engineer.
Maj. Edgar Jadwin, U. S. A., Resident Engineer.
Maj. J. P. Jervey, U. S. A., Resident Engineer.
Capt. G. M. Hoffman, U. S. A., Assistant En-
gineer.
Capt. Horton W. Stickle, U. S. A., Assistant En-
gineer.
L. G. Thom, Assistant Engineer.
F. C. Stanton, Assistant Engineer.
R. B. Smith, Superintendent of Dredging.

Pacific Division.

Headquarters, Corozal.
S. B. Williamson, Division Engineer.
E. A. LeMay, Chief Clerk.
W. G. Comber, Resident Engineer.
G. B. Strickler, Resident Engineer.
Wm. F. M. Acherson, Assistant Engineer.
James MacFarlane, Superintendent of Dredg-
ing.

Mechanical Division.

Headquarters, Culebra.
Geo. D. Brooke, Superintendent of Motive
Power and Machinery.
F. W. Doty, Chief Clerk.
Earle J. Banta, Mechanical Engineer.
A. L. Robinson, Electrical Engineer.

Quartermaster's.

Headquarters, Culebra.
Maj. C. A. Devol, U. S. A., Chief Quarter-
master.
C. H. Mann, Chief Clerk.
Lieut. R. E. Wood, U. S. A., Assistant Chief
Quartermaster.
Capt. Courtland Nixon, U. S. A., Depot Quar-
termaster, Mount Hope.
C. L. Parker, C. C. McColley, Inspectors.
H. S. Farish, Acting Survey Officer.

District Quartermasters.

Ira A. Giles, Cristobal.
R. R. Wasson (acting), Gatun.
J. M. Kine, Tabernailla.
J. H. Humphreys, San Pablo.

R. C. Shady, Gorgona.
M. R. Currie, Bas Obispo.
D. F. Shannon, Las Cascadas.
J. B. Jeffries, Culebra.
C. P. Allen, Empire.
Harry Dundas (acting), Paraiso.
Otto Mastrand, Pedro Miguel.
R. M. Gamble, (acting), Corozal.
B. C. Poole, Ancon.
W. H. South, La Boca.
C. E. Heisey, Porto Bello.

Subsistence.

Headquarters, Cristobal.
Maj. Eugene T. Wilson, U. S. A., Subsistence
Officer.
W. F. Shipley, Chief Clerk.
Lieut. Frank O. Whitlock, U. S. A., Assistant
Subsistence Officer.

Civil Administration.

Headquarters, Ancon.
Jo C. S. Blackburn, Head of the Department.
H. D. Reed, Executive Secretary.
G. A. Ninas, Chief Clerk.
Tom M. Cooke, Chief, Division of Posts, Cus-
toms and Revenues, Ancon.
Heruan A. Gudgey, Deputy Collector, Ancon.
E. Lewis Baker, Deputy Collector, Cristobal.
George M. Shontz, Prosecuting Attorney, Ancon.
George R. Shanton, Chief of Police, Ancon.
D. E. McDonald, Chief Clerk.
C. E. Weidman, Chief, Fire Department, Cristo-
bal.
Geo. L. Campen, Supt. of Public Works, Ancon.
C. R. Sargent, Chief Clerk.
J. J. Reidy, Asst. Supt. Public Works, Cristobal.
H. L. Smith, Superintendent of Schools, Ancon.
H. A. A. Smith, Treasurer of Canal Zone, Em-
pire.

Canal Zone Judiciary.

Headquarters, Ancon.
Supreme Court—Dr. F. Mutis Durán, Chief
Justice.
Walter Emery, Clerk, Ancon.
H. A. Gudgey, Associate Justice, Empire.
Lorin C. Collins, Associate Justice, Cristobal.
Circuit Court, First Circuit—Dr. F. Mutis
Durán, Judge, Ancon.
Walter Emery, Clerk.
Circuit Court, Second Circuit—H. A. Gudgey,
Judge, Empire.
Elbert M. Goolsby, Clerk.
Circuit Court, Third Circuit—Lorin C. Collins,
Judge, Cristobal.
Nelson R. Johnson, Clerk.
M. C. Rerdell, Senior District Judge, Cristobal.
S. E. Blackburn, District Judge, Ancon.
Edgar S. Garrison, District Judge, Empire.
J. B. March, District Judge, Gorgona.
Thomas E. Brown, Jr., District Judge, Cristo-
bal.

Law.

Headquarters, Washington, D. C.,
Richard Reid Rogers, General Counsel,
Washington, D. C.
George M. Shontz, Attorney for Isthmian Canal
Commission and Panama Railroad Company,
Ancon.
George H. Bartholomew, Assistant Attorney.

Sanitation.

Headquarters, Ancon.
Col. W. C. Gorgas, Chief Sanitary Officer.
Capt. Robert E. Noble U. S. A., Executive Officer.
Harry E. Bovay, Chief Clerk.
H. R. Carter, Director of Hospitals, Ancon.
Surgeon, J. C. Perry, P. H. and M. H. S., Chief
Quarantine Officer, Ancon.
Maj. John L. Phillips, U. S. A., Superintendent
Ancon Hospital, Ancon.
Capt. Alexander Murray, U. S. A., Assistant to
Superintendent.
Maj. C. C. McCulloch, Jr., U. S. A., General In-
spector, Ancon.
J. F. Ixys, U. S. N., Superintendent Colon
Hospital, Colon.
Surgeon Claude C. Pierce, P. H. and M. H. S.,
Quarantine Officer, Colon.
Dr. Fleetwood Gruver, P. H. and M. H. S., Quar-
antine Officer, Panama.
Dr. A. E. Mayner, Acting Health Officer, Pan-
ama.
Dr. M. F. Conuor, Health Officer, Colon.
Joseph A. LePrince, Chief Sanitary Inspector,
Ancon.

Disbursements.

Headquarters, Empire.
Edward J. Williams, Disbursing Officer.
Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.
W. W. Warwick, Examiner of Accounts,
Thomas L. Clear, Chief Clerk.

Purchasing Department.

Headquarters, Washington, D. C.
Capt. F. C. Boggs, U. S. A., General Pur-
chasing Officer.
C. E. Dole, Chief Clerk.

Capt. Courtland Nixon, Purchasing Agent on
the Isthmus.
Maj. Wendell L. Simpson, U. S. A., Purchas-
ing Agent, 24 State Street, New York City.
F. C. Nordsiek, Assistant Purchasing Agent, 24
State Street, New York City.
S. E. Redfern, Assistant Purchasing Agent,
Custom House, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
(New York office, 24 State Street.)
H. J. Slifer, Assistant to the President, and
General Manager, Colon.
G. E. Geer, Assistant to the General Manager.
R. Budd, Chief Engineer,
J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Pan-
ama Railroad Steamship Company, of the Royal
Mail Steam Packet Company, of the Hamburg-
American Line, and of the United Fruit Company's
line, the Panama Railroad Company's dates being
subject to change:

FROM NEW YORK TO COLON.

Advance.....	P. R. R. Monday.....	Nov. 2
Allianca.....	P. R. R. Saturday.....	Nov. 7
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Nov. 7
Colon.....	P. R. R. Thursday.....	Nov. 12
Magdalena.....	R. M. Saturday.....	Nov. 14
Panama.....	P. R. R. Tuesday.....	Nov. 17
Prinz Joachim.....	H. A. Saturday.....	Nov. 21
Finance.....	P. R. R. Monday.....	Nov. 23
Orinoco.....	R. M. Saturday.....	Nov. 28
Advance.....	P. R. R. Saturday.....	Nov. 28
Allianca.....	P. R. R. Thursday.....	Dec. 3
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Dec. 5
Colon.....	P. R. R. Tuesday.....	Dec. 8
Atrato.....	R. M. Saturday.....	Dec. 12
Panama.....	P. R. R. Monday.....	Dec. 14
Finance.....	P. R. R. Saturday.....	Dec. 19
Prinz Joachim.....	H. A. Saturday.....	Dec. 19
Advance.....	P. R. R. Thursday.....	Dec. 24
Trent.....	R. M. Saturday.....	Dec. 26
Allianca.....	P. R. R. Tuesday.....	Dec. 29

All the steamers of the Hamburg-American and
Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK.

Esperanza.....	P. R. R. Tuesday.....	Nov. 3
Finance.....	P. R. R. Monday.....	Nov. 9
Prinz Joachim.....	H. A. Tuesday.....	Nov. 10
Advance.....	P. R. R. Sunday.....	Nov. 15
Orinoco.....	R. M. Tuesday.....	Nov. 17
Allianca.....	P. R. R. Friday.....	Nov. 20
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Nov. 24
Colon.....	P. R. R. Wednesday.....	Nov. 25
Panama.....	P. R. R. Monday.....	Nov. 30
Atrato.....	R. M. Tuesday.....	Dec. 1
Finance.....	P. R. R. Sunday.....	Dec. 6
Prinz Joachim.....	H. A. Tuesday.....	Dec. 8
Advance.....	P. R. R. Friday.....	Dec. 11
Trent.....	R. M. Tuesday.....	Dec. 15
Allianca.....	P. R. R. Wednesday.....	Dec. 16
Colon.....	P. R. R. Monday.....	Dec. 21
Prinz Aug. Wilhelm.....	H. M. Tuesday.....	Dec. 22
Panama.....	P. R. R. Sunday.....	Dec. 27
Tagus.....	R. M. Tuesday.....	Dec. 29
Finance.....	P. R. R. Friday.....	Jan. 1
Prinz Joachim.....	H. A. Tuesday.....	Jan. 5
Advance.....	P. R. R. Wednesday.....	Jan. 6
Allianca.....	P. R. R. Monday.....	Jan. 11

FROM NEW ORLEANS TO COLON.

Heredia.....	U. F. C. Saturday.....	Nov. 7
Cartago.....	U. F. C. Saturday.....	Nov. 14
Parismina.....	U. F. C. Saturday.....	Nov. 21
Heredia.....	U. F. C. Saturday.....	Nov. 28

FROM COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Tuesday.....	Nov. 10
Heredia.....	U. F. C. Tuesday.....	Nov. 17
Cartago.....	U. F. C. Tuesday.....	Nov. 24
Parismina.....	U. F. C. Tuesday.....	Dec. 1

Tagus.....	R. M. Tuesday.....	Nov. 10
Magdalena.....	R. M. Tuesday.....	Nov. 24
Orinoco.....	R. M. Tuesday.....	Dec. 8
Atrato.....	R. M. Tuesday.....	Dec. 22
Trent.....	R. M. Tuesday.....	Jan. 5

FROM COLON TO NEW ORLEANS VIA KINGSTON.
Jamaican.....Leyland Line.....about Nov. 22
Antillian.....Leyland Line.....about Nov. 30

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, NOVEMBER 11, 1908.

No. 11.

The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

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Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Dredging Curiosities.

The dipper dredge *Mole* is having an interesting experience in deepening the channel alongside the Panama Railroad Company's wharf. In one day last week the material taken from the bottom included, in addition to rock and silt, coffee, sugar, shoes, nails, boiler tubing, hemp and wire cable, canned goods, railroad rails, and a variety of other material that had been dropped into the water in the process of loading or unloading. As much of this material as could not be handled by the dredge was taken out by other methods and some of it is now stored on a lighter alongside the La Boca marine shop. The channel alongside the wharf will be deepened to—38.

Ladder dredge *No. 11* of the Pacific dredging fleet, which has been working on the west side of the Canal, opposite the La Boca marine shop, struck a ledge of rock at—17 last week and further dredging in that locality became impossible, as the rock was too hard to handle with a ladder dredge and was too near the surface at dead low water for the dredge to work over it. Dredge *No. 14* is now working on the east side of the Canal on the way to Miraflores.

Work at Gatun Dam.

The rock toe at the upstream or south end of Gatun Dam is almost up to the elevation decided on, that is, 60 feet above sea level. The toe is constructed of Bas Obispo rock and runs gradually up to its highest point. It extends from the old line of the Panama railroad to the spillway. When completed the toe will be at an elevation of sixty feet along its entire length, that is, clear across the valley. This toe is not the dam proper, but is only a retaining wall for the dredged material which will form the dam. Beyond the spillway channel a dump has been

started along the west diversion of the Chagres River, extending from the line of the rock toe southward to the limit of the fill it is proposed to make on this toe. The toe can not be extended across the west diversion until the concrete work in the spillway is finished above the high water line of the river.

Spoil from the cut at Mindi is being dumped on the north toe of the dam, and this toe also is assuming something of the appearance it will have when completed. The dump will be extended clear across the valley and so far north that it will include the ground on which the Gatun Island hotel is located. Between these two toes, a distance of 1,700 feet, the hydraulic fill will be made, or, in other words, the dam proper will be located.

The unwatering of the old bed of the Chagres, between the two toes, is almost completed and it will be possible in a few weeks to begin the work of scraping the layer of silt from the bottom. The whole dam site will be cleared of the loose earth covering before the hydraulic fill is begun.

Locomotives for Porto Bello.

Ten small locomotives for use in the stone quarries at Porto Bello arrived on the Isthmus last week and were loaded on barges, and have been towed to Porto Bello. They came from H. J. Porter & Co., of Pittsburg, and were sent to the Isthmus knocked down. They will be erected at Porto Bello. The locomotives are of the general type used in such service in the United States. They have a 3-foot 6-inch gauge, wheels 40 inches in diameter, cylinders 50 inches by 20 inches, and boilers carrying 160 pounds pressure. They will work from the quarry to the stone crusher, on a grade of from 2½ to 3 per cent on a 20-degree construction track. They are equipped with an air brake rigging. It is believed they will be in service by the middle of December.

New Corozal Road.

Work on the new highway from Panama to Corozal is well under way. The road bed has been practically all graded, 12,000 cubic yards having been moved during October. The road leaves the Sabanas road about 4,000 feet (three quarters of a mile) from the Caledonia bridge, Panama, and the distance from the Sabanas road to Corozal station is 17,000 feet, about three and one quarter miles, making the distance from Caledonia bridge, Panama, to Corozal station almost exactly four miles. The governing grade is three per cent, with short stretches at a steeper grade at a few hills. The road-bed is 22 feet wide with a ditch 4 feet wide on each side, making the width of the right of way 30 feet.

The macadam section of the road will be 6 inches thick and 16 feet wide. Crushed

stone from Rio Grande is being used. It is delivered on the road by a spur track from the Panama railroad, at a point about one and a half miles from Corozal at the highest point on the road, thus giving the wagons distributing the stone a down hill haul in both directions. About 1,200 feet of stone have been spread and a steam roller will begin work this week. It is thought the road will be completed in a few months.

October Record of Track Shifters.

The five track shifting machines in the Central Division during the month of October moved a total of 415,858 feet, or 78.8 miles of track. In the Tabernilla district track shifter No. 5 moved 110,200 feet or 20.9 miles, and No. 8 moved 70,064 feet or 13.3 miles. Track shifter No. 7 moved 121,076 feet in the Gorgona district and 4,158 feet in the Empire district, a total of 125,234 feet, or 23.7 miles. No. 9 shifted 39,212 feet of track on the Miraflores dumps and 6,388 feet in the Empire district, a total of 45,600 feet or 8.6 miles. No. 6 shifted 58,160 feet of track on the La Boca dumps and 6,600 feet in the Empire district, a total of 64,760 feet or 12.2 miles. Of the total of 415,858 feet of track shifted, 180,264 feet or 34.2 miles, were moved in the Tabernilla district, 121,076 feet, or 22.9 miles, in the Gorgona district; 17,146 feet or 3.2 miles in the Empire district; 39,212 feet or 7.4 miles on the Miraflores dumps, and 58,160 feet or 11 miles on the La Boca dumps.

New Record for Ladder Dredges.

A new dredging record was established for ladder dredges in the month of October, when the ladder dredge *No. 1* of the Atlantic dredging fleet excavated 168,796 cubic yards of material. The best previous record for ladder dredges was made in March by the *Gopher* of the Pacific dredging fleet, which took out 168,375 cubic yards. *No. 1*, the dredge that now holds the record, was working during October in the channel in Limon Bay and the material handled was a mixture of mud and rock.

The grand total of material excavated by the dredges in October was below that of previous months owing to several of the dredges being laid up for repairs. A comparison shows:

	Cu. Yds.	Cu. Yds.	
March.....	1,330,167	August.....	1,375,991
July.....	1,321,667	September.....	1,374,856
		October.....	1,271,135

This comparison does not take into consideration a certain amount of dredging done each month that is not counted as Canal excavation. For instance, in October, a 20-inch suction dredge working in the channel to the Gatun handling docks took out 57,638 cubic yards of material which was not counted in the total of Canal excavation. This performance is noteworthy because the

NOTES OF PROGRESS.

(Continued).

dredge is handling a very hard clay which resists the Galveston cutter much as rubber would. The material is taken out in lumps as large as a man's fist, the character of the dredging being much more difficult than the dredge was designed to do. With this exception the dredges of the Atlantic Division were working in the Canal prism in Limon Bay, or in the channel already made in the shore of the bay. Ladder dredge No. 6 was taking out earth and rock, the dipper dredges *Chagres* and *Mindi*, were working in earth and rock, and the new 20-inch suction dredge, No. 85, was working in silt. The new suction dredge worked only the latter part of the month, and the sea-going suction dredge *Ancon* was laid up 18 working days for general repairs. The October records for the Atlantic Division follow:

DREDGE.	Cubic Yards.		
	Earth.	Rock.	Total.
Ladder, No. 1.....	168,796	.....	168,796
Ladder, No. 6.....	71,679	31,868	103,547
Dipper, Chagres.....	33,500	1,850	35,350
Dipper, Mindi.....	21,082	21,382	42,464
20-inch Suction, No. 82.....	57,638	.....	57,638
20-inch Suction, No. 85.....	26,403	.....	26,403
Sea-going Suction, Ancon.....	128,700	.....	128,700
Total.....	507,798	55,100	562,898

The Pacific dredging fleet was also hampered in its work by repairing to three of the dredges. The ladder dredge *Mole* did not begin work in October until the evening of the 19th. The ladder dredge *No. 14* was laid up four days, and the dipper dredge, three days. The record follows:

DREDGE.	Cubic Yards.		
	Earth.	Rock.	Total.
Culebra.....	431,537	.....	431,537
Ladder, Gopher.....	103,514	(a)	103,514
Ladder, No. 14.....	not class.	not class.	89,391
Ladder, Mole.....	56,340	.....	56,340
Dipper.....	not class.	not class.	60,501 (b)
20-inch Suction, Sand-piper.....	24,593	.....	24,593
Total.....	.....	.....	765,876

(a) About 2 per cent of this material was rock.

(b) Three thousand six hundred yards of this were taken from outside the prism at the Panama Railroad Company's coal dock.

Accident to the *Cocoli*.

The tug *Cocoli* of the Pacific fleet struck a submerged pile in the harbor of La Boca, October 20. The pile jammed into the propeller and broke the shaft off close up to the wheel. The tug was towed to the beach at Flamenco Island where she was beached, the shaft taken out, and the hole plugged up. She was then brought to the machine shop where the shaft was welded and a spare wheel was put on.

Preparing for Gatun Concrete Work.

A little below the line of the north toe of Gatun Dam a 20-inch suction dredges is making the channel to the site of the docks at which material for the locks will be stored and handled.

A few days ago the 16-inch suction dredge that had been used in the Colon district was taken to Nombre de Dios, where it is to be used for delivering sand to barges which will tow it to the concrete handling plant at Gatun. During a severe norther on Thursday night last the dredge was sunk in six feet of water. There is a good harbor at Nombre de Dios, but the dredge was not

working in a secure position. There has been fear of storms during the dry season, which come from the north and northeast, but the storm of Thursday night came from the northwest and was most unusual at this season.

Conditions at Porto Bello are such that rock can be delivered whenever it is wanted. In fact it is believed that the deliveries will begin about January 1, when it is proposed to start the concrete work in the spillway.

Proposals for Corozal Schoolhouse.

Sealed proposals will be received at the office of the Purchasing Agent, Isthmian Canal Commission, Mount Hope, Canal Zone, until 11 a. m., Tuesday, November 17, 1903, when they will be publicly opened, for the erection by contract of a two room schoolhouse at Corozal, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the architect, Culebra. A deposit of \$5 is required to insure their return.

Each bidder must accompany his proposal with a check, cash or money order for \$50, as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$250 conditioned upon the faithful performance of the contract.

The Commission reserves the right to reject any or all proposals or to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals.

October Police Report.

The October report of the Chief of Police shows that 489 persons, representing 44 countries, were arrested in the Canal Zone during the month. This is a decrease of 150 for the month, there having been 639 arrests in September. Of the 489 persons arrested, 450 were men and 39 were women, and they were charged with 57 different offenses. They were divided among the towns of the Zone as follows: Ancon, 35; Las Sabanas, 3; La Boca, 27; Corozal, 12; Pedro Miguel, 8; Miraflores, 5; Paraiso, 23; Culebra, 41; Empire, 82; Las Cascadas, 15; Bas Obispo, 11; Gorgona, 63; San Pablo, 12; Tabernilla, 22; Frijoles, 2; Bohio, 5; Gatun, 37; Cristobal, 85. An outpost of the Tabernilla police station was established at Frijoles on October 1, and was made a separate station in charge of a first-class policeman on October 11. The total effective police force on October 31 was 162, and the pay roll amounted to \$22,235.59.

Sixty-seven cases were tried in the courts, 12 of which were dismissed, 43 continued, and 12 in which convictions were secured. Of the 12 persons convicted, 2 were fined, 1 received a jail sentence, 8 were sentenced to the penitentiary, for one year each, and one person forfeited his bail. Seven convicts were discharged from the penitentiary during the month, leaving a total of 113 in the penitentiary on October 31. The number of district prisoners on the same date was 129, a decrease of 91 for the month. The value of work performed by convicts on roads, etc., was \$1,949.80. There were 17 deaths by violence requiring action by the coroner during the month. Nine of these deaths were caused by explosions of dynamite, three by railroad accidents, and two by drowning.

HEALTH REPORT FOR OCTOBER.

Excellent Health Conditions.

ANCON, C. Z., November 10, 1903.

To the Acting Chairman and Chief Engineer, Isthmian Canal Commission, Culebra, Canal Zone.

Sir: I herewith forward the report of the Department of Sanitation for the month of October, 1903:

The health conditions upon the whole are, I think, most excellent, though the sick rate has not fallen this year as it has done in previous years. The rates for the past three years, comparing September and October, are as follows.

Month.	Force.	Constantly sick.	Rate per thousand.
1905—September..	23,264	1,054	37.74
October.....	25,445	857	33.62
1907—September..	41,062	1,141	27.78
October.....	41,113	1,105	26.90
1908—September..	45,058	1,130	25.09
October.....	43,593	1,152	26.66

You will see from this table that both the number of sick and the rate is larger in October than in September. The reverse occurred in the preceding two years.

The death rate of the force makes a very good showing. The total rate from all causes being 12.93, but of this only 7.70 was due to disease. Comparing the four years as to the deaths due to disease, we have the following:

Month.	Force.	Deaths.	Rate.
1905—October.....	22,003	60	32.72
1906—October.....	25,445	90	42.44
1907—October.....	41,113	81	23.64
1908—October.....	43,593	28	7.70

That is, the death rate from disease in the force during the past October is just about one-sixth of what it was in 1906.

The malarial conditions, however, for October were not as good as in September, as the following table shows. This table is made up from employes admitted to hospitals:

Month.	Force.	No. of cases.	Rate per thousand.
1908—September..	45,058	1,410	31.29
October.....	43,593	1,822	41.79

From this table you will see that with a smaller force we had 412 more cases of malaria in October than in September. Taking the past three years, and, considering October, we have the following:

Month.	Force.	No. of cases.	Rate per thousand.
1906—October.....	25,445	1,912	75.14
1907—October.....	41,113	1,596	38.81
1908—October.....	43,593	1,822	41.79

We have had no case of yellow fever since May, 1905, though it exists at several points north and south of us. There has been no case of bubonic plague since August, 1905, though it is occurring at Guayaquil on one side of us and at La Guayra on the other. We have had no case of small-pox within the past year.

Very respectfully yours,

W. C. GORGAS,
Chief Sanitary Officer.

The Lobnitz subaqueous rock breaker, which is being erected at the La Boca marine shops, was launched at noon, November 5. The work of installing the boiler, engines, and ram is now in progress.

At Miraflores dumps in October the three Lidgerwood unloaders of the Central Division unloaded respectively, 181, 208, and 214 trains, a total of 603 trains, of seventeen 20-yard cars each. The material thus handled equals 205,020 yards car measurement.

THANKSGIVING.

The President's Proclamation.

By the President of the United States of America: A Proclamation.

Once again the season is at hand when, according to the ancient custom of our people, it becomes the duty of the President to appoint a day of prayer and of thanksgiving to God.

Year by year this nation grows in strength and worldly power. During the century and a quarter that has elapsed since our entry into the circle of independent peoples we have grown and prospered in material things to a degree never known before, and not now known in any other country. The thirteen colonies which struggled along the sea-coast of the Atlantic and were hemmed in but a few miles west of tidewater by the Indian-haunted wilderness, have been transformed into the mightiest republic which the world has ever seen. Its domain stretch across the continent from one to the other of the two greatest oceans, and it exercises dominion alike in the Arctic and tropic realms. The growth in wealth and population has surpassed even the growth in territory. Nowhere else in the world is the average of individual comfort and material well-being as high as in our fortunate land.

For the very reason that in material well-being we have thus abounded, we owe it to the Almighty to show equal progress in moral and spiritual things. With a nation, as with individuals who make up a nation, material well-being is an indispensable foundation. But the foundation avails nothing by itself. That life is wasted, and worse than wasted, which is spent in piling, heap upon heap, those things which minister merely to the pleasure of the body and to the power that rests only on wealth. Upon material well-being as a foundation must be raised the structure of the lofty life of the spirit if this nation is properly to fulfill its great mission and to accomplish all that we so ardently hope and desire. The things of the body are good; the things of the intellect better; but best of all are the things of the soul; for, in the nation, as in the individual, in the long run it is character that counts. Let us, therefore, as a people set our faces resolutely against evil, and with broad charity, with kindness and good will toward all men, but with unflinching determination to smite down wrong, strive with all the strength that is given us for righteousness in public and in private life.

Now, therefore, I, Theodore Roosevelt, President of the United States, do set apart Thursday, the 26th day of November next, as a day of general thanksgiving and prayer, and on that day I recommend that the people shall cease from their daily work, and, in their homes or in their churches, meet devoutly to thank the Almighty for the many and great blessings they have received in the past, and to pray that they may be given strength so to order their lives as to deserve a continuation of these blessings in the future.

In witness whereof, I have hereunto set my hand and caused the seal of the United States to be affixed.

Done at the city of Washington this thirty-first day of October, in the year of our Lord

one thousand nine hundred and eight, and of the independence of the United States the one hundred and thirty-third.

THEODORE ROOSEVELT.

By the President:

Alvey A. Alee, Acting Secretary of State.

Culebra Beached for Repairs.

While turning in the new channel at La Boca, about two months ago, the port propeller wheel of the dredge *Culebra* struck a reef, and three of the blades were broken. Since that time it has been working with the damaged wheel. As there is no dry dock on the Pacific side of the Isthmus large enough to dock a vessel of the size of the *Culebra* it was necessary to beach her in order to put on a new propeller wheel. This was done on Naos Island at high tide on the morning of November 8. The old wheel was taken off at low tide and a new wheel put on at the next low tide. The vessel was floated at high tide on Monday morning and resumed her work in the afternoon, after coaling at La Boca.

Canal Zone Schools.

The second meeting of the teachers of the Canal Zone Public Schools was held in the Ancon school building, Saturday, November 7. There were present twenty-two white and twenty colored teachers, the teachers in the white schools meeting in the morning from 9 to 12 o'clock, and the teachers in the colored schools meeting in the afternoon from 2 to 5 o'clock.

According to the general plans for work in these meetings the first part of each session was devoted to a discussion of problems connected with schoolroom organization and class management, and the second part was given over to a discussion of the contents of the different subjects in the present curriculum and the methods of teaching them, special emphasis being placed upon the subject of reading. As a basis for the work of the second part of each session of the meetings, the teachers had prepared beforehand an assignment in "McMurray's Method of the Recitation" on the subject of reading. The larger part of the time was given to discussing those difficulties in reading which are peculiar to the schools of the Zone.

In the session for the white teachers, consideration was given to the monthly reports made out by the teachers, and to a method for avoiding the frequent loss in time to the children, consequent upon the numerous transfers that are made from school to school in the Zone.

In the meeting of the colored teachers most of the first part of the session was given over to a discussion of devices and methods for increasing the percentage of attendance and for avoiding the present great amount of tardiness.

The school for white children opened October 1, and the total attendance for the month of October, 22 school days, was as follows: Cristobal, 1,959; Empire, 1,498; Ancon, 1,405; Gorgona, 1,338; Culebra, 1,257; Las Cascadas, 934½; Colon Beach, 743½; Gatun, 598½; Pedro Miguel, 491; Paraiso, 461½. The daily average for the highest week's attendance for the combined schools was 509.

The schools for colored children also opened October 1, and the following was the total attendance for the month: Cristo-

bal, 2,317; Culebra, 2,044½; Empire, 2,054; Gorgona, 1,529½; Matachin, 1,362; Mount Hope, 975½; Paraiso, 898½; Bohio, 757; Tabernilla, 729; San Pablo, 578½; Playa de Flor, 550½; La Boca, 505½; Cruces, 527½; Las Sabanas, 265½. The daily average for the highest week's attendance for the combined schools was 785.

The average daily attendance for October, 1907, was: White children, 243; white and colored children combined, 880.

There are two high schools on the Zone, Culebra, with a class of 11, and Cristobal, with a class of 9. Of the 11 pupils at Culebra, 5 are from Empire, 3 from Ancon, 2 from Culebra, and 1 from Pedro Miguel. Of the 9 pupils at Cristobal, 3 are from Gorgona, 2 from Gatun, 2 from Cristobal, 1 from San Pablo, and 1 from Colou. In October, 1907, there were five pupils enrolled in the high school, and, at the close of October, 1908, there were 20 enrolled.

Owing to the unexpected increase in number of pupils, the shortage of high school text books, and the insufficient time in which to obtain teachers fitted for the work, the range of studies has been somewhat restricted. However, it has been arranged so that each pupil has four subjects not before studied.

La Boca Outfall Sewer.

The outfall of the sewer at La Boca has been moved, as it was surrounded in its old location by the dumps at that place. A trench was dug under the railroad tracks to Panama Bay, the outfall pipe was laid in the bottom of the trench and covered with concrete, the concrete covering being used as the floor of an open culvert built in the same trench to which all the surface drainage in La Boca is carried, as the old French drains and those built by the Department of Sanitation are connected with the new outlet.

Isthmian Baseball League.

A meeting of the Isthmian Baseball League was held at Empire on Sunday, November 9. It was decided to have a league of four teams, consisting of Ancon, Empire, Gorgona, and Motive Power and Machinery of Culebra. The league will open on the 20th of December, and the number of playing dates will be 30. The next meeting will be held in the office of the president of the league at Culebra on Sunday, November 15, and an election of officers will take place at that time.

Indoor Baseball.

The I. O. R. H. indoor baseball team of Cristobal desires to arrange games with other indoor baseball teams on the Isthmus. The members, all of whom are under nineteen years of age, are: Sanford MacSparren, Harold Delevante, William Russell, George Smith, Ernest Wardeman, David Russell, and Andrew Cartwright. All communications should be sent to Harold Delevante, secretary and treasurer, care of R. M. S. P. Co., Colon.

The dipper dredge of the Pacific dredging fleet at La Boca has been taken off the work in the Canal prism and is dredging a channel at the new unloading dock for the ships of the Union Oil Company. The channel will be 600 feet long, 120 feet wide, and 38 feet deep at mean tide.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Hallow-e'en entertainment given October 31 by the Pedro Miguel Social and Recreation Club, assisted by the Woman's Club was one of the most enjoyable affairs that have been given in the club room. A number of guests from Paraiso and other points on the line were present. The club rooms were decorated with palms and bunting for the occasion. A program consisting of a little comedy by members of the Woman's Club, songs, recitations and other musical selections was given. Simple refreshments were served, and the evening ended with a dance.

The two clubs are combining again in the arrangements for a bazaar to be given in the club rooms, November 14. Fancy articles, suitable for Christmas gifts, cakes, and candies will be sold, other features will be a gipsy booth, weighing scales, and a special booth for children. The proceeds of the sale will be entirely devoted to the Christmas fund.

The Culebra Woman's Club held its regular meeting with election of officers on Thursday, November 5, when the following officers were elected: President, Mrs. E. M. Pullen, re-elected; vice-president, Mrs. W. P. Wheeler; secretary, Mrs. Wm. H. Bulter, re-elected; treasurer, Mrs. Robert Wheeler. These officers will serve for one year. The club has reduced its dues to one dollar a year. Entertainments will be organized from time to time in order to keep the treasury in a sound condition.

The study class began its work with 11 members, Mrs. Frank M. Miracle leading. Classes will begin at 4 o'clock on club days. The club meets on the first and third Thursday of each month, at 3 o'clock, beginning promptly. Mrs. E. M. Pullen, the president, is still away on her vacation, but is expected to return about the middle of the present month.

A box party and dance will be given by the Roman Catholic women of Culebra at the Commission clubhouse on Thursday evening, November 12, at 8 o'clock, for the benefit of the church of the Holy Redeemer, now in course of erection at Culebra.

On Tuesday evening, November 17, 1908, the degree team of Alfretta Council, No. 1, Degree of Pocahontas of Improved Order of Red Men, will give a homemade pie social, followed by a dance, in Fraternal Hall at Culebra. Friends are cordially invited, and a good time is assured.

The Cristobal Woman's Club held its regular literary meeting on Wednesday, November 4, the second vice-president in the chair. The reports of the different departments were read, and announcements made, the routine business being followed with a paper by Mrs. E. Lewis Baker, chairman of the art and literature department. A social half hour was enjoyed by the members at the close of the program. The meeting of the home department was held at the residence of the chairman, Mrs. H. J. Slifer, on Monday, November 9. The date of the next literary meeting is November 18, when the program, under the direction of the educational department, will consist of an address by the Superintendent of Schools, Prof. Henry Lester Smith. The address will be followed by a general discussion.

The department has extended a cordial invitation to all mothers who have children in the school to attend this meeting.

The Paraiso Woman's Club is to be reorganized. The women of the community have taken the matter up and it will probably be effected before the end of the month.

The Las Cascadas Woman's Club met at the residence of Mrs. C. F. Merry on Thursday afternoon, November 6. Committees for the month were appointed as follows: Entertainment, Mrs. Naylor, Mrs. Stanton, Mrs. Drysdale, Mrs. Bowers; visiting, Mrs. Decher, Mrs. Grimmison. The opening of the clubhouse will be marked by a dance or other entertainment, in charge of the committee for the month. It has been decided to suspend the regular meeting which falls on November 26, Thanksgiving Day. The club has sent for a number of the Shakespeare plays and will devote a part of the year to general reading.

The social societies represented at Las Cascadas, include the Masonic Club, Knights of Pythias, the Kangaroos, Brotherhood of Locomotive Engineers, the Order of Railway Conductors, the Men's Social Club, and the Woman's Club, and in addition a flourishing Union Sunday school.

The Ancon Woman's Club held its regular meeting on Wednesday, November 4, the president in the chair. The reports of the different heads of departments show that the club is doing good work. The philanthropy department reported its first regular visit, an inspection of the San Blas Indian Industrial School, made on Saturday morning, November 7. Nearly all the members of the department attended, and there were a few guests. The school is in charge of the Christian Brothers. The pupils, of whom there are 17, are given school training, instruction in manual work and athletic exercises.

The next visit of the philanthropy department will be to the home for aged men and women sometime within the month. The dates of the club bazaar have been placed for December 4 and 5, and the members are putting forth their best efforts toward the perfection of arrangements.

The Gatun Sunshine Club will hold a sale of fancy and useful articles suitable for Christmas gifts, on Monday evening, November 23, at the Commission hotel. Ice cream and homemade cake will be served and an entertainment will be given.

The Tivoli Club will give its regular semi-monthly dance on Saturday night, November 14, at the Hotel Tivoli, Ancon.

On Sunday morning at 11 o'clock, the Ven. Archdeacon Bryan will preach and celebrate Holy Communion in the Union church at Culebra. Services will also be held at 4 o'clock in the afternoon.

Canal Zone Humane Society.

A meeting was held at the residence of the Ven. Archdeacon H. B. Bryan, Ancon, on Friday evening, November 7, for the formation of a humane society. The following officers were elected: President, Col. W. C. Gorgas; vice-president, Archdeacon Bryan; vice-president-at-large, Miss Beattie; secretary, Mr. Charles F. Fondy; treasurer, Mr. J. S. Fearon; directors, Mrs. H. B. Bryan, Mr. and Mrs. George Campen, Mr. Fondy, Archdeacon Bryan and others. The society will appoint secretaries and directors in the

towns in the Zone. Directors' meetings will be held monthly and the general society will meet once a year.

It is understood that the present Panaman administration is in sympathy with the movement and will give all the support and assistance necessary for carrying out the work.

PERSONAL.

Maj. William L. Sibert and family, sailed from New York on the *Allianca* on November 7, due at Cristobal on November 13.

Mr. William Mitchell Bunker, who is a trustee of the Chamber of Commerce of San Francisco and the representative of that body at Washington during the sessions of Congress, accompanied by Mrs. Bunker, spent several days on the Isthmus during the past week. Mr. Bunker came to the Isthmus to present to the Isthmian Canal Commission the wishes of the merchants of San Francisco in regard to furnishing commissary supplies from California products.

A. S. Zinn, Resident Engineer at Empire, accompanied by his family, sailed on the *Parismina* on November 10, for a vacation of six weeks, to be spent in Costa Rica.

Mr. Edward Schildhauer, electrical and mechanical engineer, and Mrs. Schildhauer have returned to the Isthmus from Europe, where Mr. Schildhauer has been investigating the mechanism of locks on canals in Great Britain, Germany, the Netherlands, and Belgium.

Missing Men.

Information is wanted in regard to William Storey, an American, who came to the Isthmus three or four years ago from Jamaica where he had resided for two years. Anyone having knowledge concerning him is requested to communicate with Frederick Escala, Cristobal, Canal Zone.

Information is wanted in regard to William or Wilhelm Ewald or Ewalt, who at one time was employed as a cook on the Isthmus. Anyone having knowledge of him will communicate with the American Consul-General, Panama.

Ancon Amusement Association.

Arrangements have been made with the Lambardi Opera Company, now appearing at the National Theater of Panama, for tickets for members of the Ancon Amusement Association at two performances.

The funds in the treasury of the association make it possible to secure one ticket for each bachelor member and two tickets for each married member, for each of the two performances. Additional tickets for any member can be secured at the reduced rate of \$1.50 each.

The association will attend on Tuesday evening, November 17, *Faust*, and on Thursday evening, November 19, *Traviata*. The attention of members is called to the change in dates as given on the circulars sent to each member.

Members who wish to attend either one or both performances, should inform at once Mr. Tom M. Cook, Ancon, Canal Zone, of the number of tickets desired.

Tickets may be called for, or will be mailed if stamped addressed envelope is furnished, and will be issued in the order in which applications are received.

CRUDE OIL AS FUEL.

Delivery and Installations in the Canal Zone.

By the 1st of January, 1909, practically all of the stationary boilers in the service of the Isthmian Canal Commission will be using crude oil as fuel. It is estimated that the monthly consumption of oil at that time will have reached 24,080 barrels, and that the actual saving to the Commission by substituting oil for coal will be at least 65 per cent. Coal is now delivered on the Isthmus by the Panama Railroad Company for \$6.35 a ton, and in the fiscal year ended June 30, 1908, 31,292 tons of coal were used in the boilers in which oil is being used, those under the Mechanical Division. On a commercial basis a barrel of the oil delivered to the Commission will generate as much steam as a quarter ton of coal, and as the oil costs 90 cents a barrel, the saving from a fuel point alone will be 56 per cent. In addition to this the fixed expenses, such as wages of firemen, etc., are considerably less.

Oil is delivered on the Isthmus by the Union Oil Company of California, under a concession granted January 10, 1906, for the construction and operation of a pipe-line from the Pacific to the Atlantic side of the Isthmus over land owned by the United States and the Panama Railroad Company. This company had previously obtained, under date of October 30, 1905, a similar concession from the Government of Panama for the construction and maintenance of a pipe-line across the Isthmus for the purpose of conveying crude oil, and for the erection of pumping stations and storage tanks in the cities of Panama and Colon. The license granted by the Secretary of War is revocable at the will of the Government of the United States, and is conditioned upon the payment of \$500, United States currency, a month, beginning August 1, 1906, into the Canal Zone Treasury, the fund thus created to be set aside for the support of the public schools of the Canal Zone. It is further stipulated in the grant that, if desired, the Isthmian Canal Commission or the Panama Railroad Company may purchase crude oil from the Union Oil Company of California at 90 cents, United States currency, a barrel. In addition to the monthly payment of \$500 to the Treasury of the Canal Zone, the Union Oil Company also pays \$250 to the Government of Panama, and is subject to the usual Canal Zone taxes.

The oil delivered on the Isthmus comes from the Santa Maria fields in San Luis Obispo county, California.

Its consistency is about the same as water, and it can be transported in a pipe-line as readily. It is piped from the field in San Luis Obispo county to Port Harford, where it is pumped into the Union Oil Company's tank steamers, of which there are fourteen serving points in Oregon, Washington, Hawaii, Chile, and Guatemala, as well as Panama. Each ship has a capacity of about 52,000 barrels of 42 gallons to the barrel, and deliveries are made on the Isthmus whenever required. There are seven storage tanks in the Canal Zone, four at La Boca, at the Pacific entrance, and three at Mount Hope, near Colon. Each tank has a capacity of 37,500 barrels. An eighth tank

of like capacity formerly located at Mount Hope was destroyed by lightning on May 13, 1908.

The pipe-line through which the oil is pumped to the Atlantic side of the Isthmus follows the line of the Panama railroad, and is about 48 miles long. It is made of wrought steel pipe, 8 inches in diameter, and 5-16 of an inch thick, with gate valves at one-mile intervals, and without expansion joints. The pipe holds 15,000 barrels of oil. From sea-level to the summit near Culebra the total lift is about 225 feet, and the pumps are assisted by gravity from that point to the tanks at Mount Hope. At the summit the line runs along the edge of the Rio Grande reservoir, and at this point is encased in concrete, so that if the pipe should break the water would not be affected. It is tested to 800 pounds to the square inch, but a pressure of over 300 pounds is seldom used.

A Dow compound pump, driven by steam from boilers in which crude oil is used, furnishes the pressure to pump the oil across the Isthmus, and about 30 hours are consumed in the journey. The oil is so inelastic that it can be ascertained by the pulsation in the plant at La Boca at what moment the valve of the tank at Mount Hope has been closed. As the pipe is laid on the surface of the ground, it follows rather a serpentine course, and the many curves help to overcome the expansion due to the uniformly high temperature in Panama. The estimated investment of the Union Oil Company on the Isthmus in pipe-line and plant is \$1,000,000.

After some litigation, that followed immediately on the grant of the concession, had been disposed of the company was given 180 days in which to lay its pipe. This was at a time when the work involved not only engineering features but also those of providing subsistence and quarters for the men engaged. The laying of the pipe was begun in several places simultaneously, and a large force of men was kept constantly at work, so that the company was ready to deliver oil within the allotted time, although the line was not used throughout its entire length until November 14, 1907. For a time a section of the line from Mount Hope to Colon was used for delivering water to the latter place, pending the completion of the Commission's water line.

During the first months only a few hundred barrels of oil were taken by the Commission, and this was used in the campaign against mosquitoes. The purchases at no time have been more than 14,000 barrels a month.

On account of changes in the line of the Panama Railroad Company and in that of the Canal itself, the pipes have been shifted at many places and, according to the contract, all this work is done at the expense of the Union Oil Company.

At fifteen points on the Isthmus oil is now used as fuel and the installations will be continued until all the stationary boilers are equipped. The method of equipment at the different stations is as follows:

Six boilers are equipped for burning oil at the Cristobal ice plant. A brick arch is erected on the grates in each furnace and the grate bars are covered with broken brick. This arch and floor of broken brick form the combustion chamber into which the oil is discharged through a burner manufac-

tured at Cristobal shops. This plant like all others on the Isthmus, uses steam for spraying the oil. The burners are placed on the dead plate near the fire door.

At the Gatun pumping station two locomotive-type boilers have been equipped for using oil. Each fire box is fitted with a brick flash wall, the top of which extends to the bottom row of tubes. At this plant a patented burner is used for spraying the oil. The burner is placed in the ash door opening and tipped so that the flame will impinge on the flash wall near the tube sheet.

At the Mount Hope pumping station the W. N. Best burner is used on each of the two locomotive-type boilers. This plant is equipped in the same manner as at the Gatun pumping station.

At the Tabernilla pumping station two old French marine-type boilers are using oil as fuel. The flash wall is placed in the flue about four feet from the fire door, the lower half of this flue being covered with brick so that the gases will not impinge on the sheets until combustion has taken place.

At the Gorgona pumping station two marine-type boilers have been equipped for burning oil, although only one is used at a time. These boilers are equipped in practically the same manner as those at the Tabernilla pumping station.

At the Gorgona shops five horizontal return tubular boilers have been equipped for burning oil and the sixth one is nearly completed. Two of these boilers are equipped with a modification of the Warren burner and three with a modified Booth burner, each boiler using two burners. The burners are placed at an elevation midway between the ash and fire doors. The furnaces are equipped with hollow flash walls and two secondary floors so that all air required for combustion is first drawn into the heated flash wall and along the upper secondary floor, through which it passes through openings about one-half inch wide to the furnace, where ignition takes place.

The Las Cascadas air compressor plant is equipped in a manner similar to that of Gorgona, with the exception that the Booth type of burner is used under all of the boilers.

Six boilers are burning oil at Empire shops and six more are being equipped. The method of installation is similar to that at Las Cascadas and Gorgona, with the exception that all burners are of the W. N. Best type.

The Rio Grande air compressor plant has three boilers equipped for burning oil and the remaining three will be finished about November 15. The equipment at this plant is identical with that of Las Cascadas.

The Aucon pumping station has one vertical boiler burning oil at the present time, and two horizontal return tubular boilers are being equipped for that purpose. This plant has been experimenting with the Booth, Best, and Owens types of burners.

At the La Boca electric light plant seven boilers are equipped for fuel oil, five of which are of the Manning type and two of the Sterling type. Each of these boilers is using the W. N. Best type of burner. The fire boxes of the vertical boilers are lined with one course of brick to within about one foot of the lower tube sheet, and a checked flash wall is placed at right angles to the burner about three-quarters of the diam-

eter of the boiler from the burner, the burner being placed in the ash door opening and the flame directed against the flash wall.

At the La Boca ship yards four French boilers of the marine type are using fuel oil and are equipped with several types of burners made at the La Boca shops. In these boilers no flash wall is made use of, the flame being allowed to extend the whole length of the furnace. Most of the floating equipment at the Pacific entrance, including dredges, clapnets, tugs, and launches, are equipped with oil burner and storage tanks and are using oil.

The approximate amount of oil that will be used per month at the different plants on the Isthmus is as follows:

	Barrels.
Cristobal shops.....	650
Cristobal ice plant.....	3,900
Mount Hope pumping station.....	280
Gatun pumping station.....	600
Tabernilla pumping station.....	450
Gorgona pumping station.....	600
Gorgona shops.....	3,000
Las Cascadas air compressor plant.....	1,800
Empire pumping station.....	200
Empire shops.....	7,000
Ancon pumping station.....	1,100
La Boca shops and floating equipment.....	3,200
La Boca electric light plant.....	1,300
Total.....	24,080

The question of using oil as fuel in the locomotives at work on the Canal has been considered, but for the present it has not been thought wise to take up this experiment. The Panama Railroad Company has placed one order for twelve locomotives to be equipped with oil tanks and oil burning apparatus. It is expected the first delivery will be made in about a month.

Concert by the I. C. C. Band.

GORGONA, C. Z.

Sunday, November 15, 1903, at 6 p. m.

PROGRAM.

- 1 March—*Santiago Flynn*.....Morse
 - 2 Selection—*George Washington, Jr.*.....Cohan
 - 3 a Popular March—*Persian Lamb Rag*.....Wenrich
 - 3 b Schottische—*When a Boy Says "Will You?"*.....Allen
 - 4 Waltz—*Jolly Fellows*.....Vollstedt
 - 5 Clarinet Solo—*Sonnambula*.....Thornton
- JOHN GRAY
- 6 Selection—*Hits of the Day*.....Remick
 - 7 a Intermezzo a la Rag—*Pickles and Peppers*.....Shepherd
 - 7 b Intermezzo a la Indian—*Pankee*.....Van Alstyne
 - 8 Overture—*Four Aces of Mau*.....Lachner
 - 9 Humoresque on *The Merry Widow* Waltz.....Bellstedt
- Introducing this popular melody from the opera "The Merry Widow," burlesqued in the following manner: 1. A little German band; 2. A flute solo with organ effect; 3. An amateur trombonist, who is willing to show what he can do if only requested to; 4. A street piano; 5. A la ragtime as played on a banjo; and finally—the result produced by the popularity of this melody—a brainstorm.
- 10 March—*Conde*.....Wettge

CHAS. E. JENNINGS, Musical Director.

A concert will be given at Empire, C. Z., Sunday, November 29.

In accordance with the advertisement of the General Manager of the Panama Railroad Company, offering several of the company's properties in Colon for lease, the old tenants of the properties have been given new leases.

The first installment of electrical machinery for the Gatun handling plant has arrived on the Isthmus. It is expected the plant will be in operation by July 1, 1909.

"NO HELP WANTED."

Little Chance for New Men in the Canal Zone.

The primary reason why the sign "No Help Wanted" is displayed along the line of the Canal is that the work has passed its highest point, so far as the employment of men is concerned. The present tendency is not to employ more men, but to reduce the force, and this applies alike to clerical, artisan, and labor classes.

From this time forward the work in the Canal Zone will be confined largely to actual Canal building, that is, to excavation and dam and lock construction. Building and municipal work, erecting houses, installing water and sewer systems, and road making, have reached the stage where most of the expenditure from this time forth will be for maintenance. On this account the forces formerly engaged on municipal engineering and building have been reduced, and in consequence the services of a number of clerks, engineers, carpenters, plumbers, and other artisans have been dispensed with. Wherever possible the men whose services are not needed in one division of the work are employed on another, and this system of transferring members of the present force also reduces the number of positions open to new men.

The bulk of the manufacturing heretofore done in the shops is no longer necessary, because the heads of the various divisions of the work can now estimate, six months or more ahead of time, what spare parts will be needed, and material can be purchased in the States at a considerable saving in cost. On this account the mechanics and helpers heretofore engaged on manufacturing in the shops are facing a reduction in force, and a number of them have already been given free passage back to New York. This reduction, like the others, is in the interest of economy. It has the effect of making it almost impossible for mechanics not already in the employ of the Commission to find work on the Isthmus.

The demand for clerks has also ceased, for the number of men in this class of the service is greater than the number of positions, due to the abolition of three divisions, and the curtailment of work in the Mechanical Division. Therefore, the clerical force is being reduced, instead of being increased.

The work of laying concrete in the locks at Gatun and on the Pacific slope cannot begin until the completion of certain contracts for the supply of the plant needed to handle the material. These contracts will not be finished before next spring. This being the case there is no present object in pushing the work in Culebra Cut faster than it is now going, since at the present rate, the excavation there will be finished as soon as the locks and dams. The construction force is, therefore, at its maximum until the laying of concrete begins, when there will be a demand for men skilled in that work.

Finally, the "gold" employes on the Canal work are no longer a shifting force. The men who are here want to stay, both because they are interested in their work and like the country, and because the wage scale is higher than in the States. Thirteen hundred "gold" employes, out of the total of 4,328, have their families here, and are occupying Commission quarters. They form

a nucleus that not only is not anxious to leave, but is desirous of staying until the Canal is completed.

The problem of unskilled labor, at one time vexing because it was so difficult to procure men, has become a problem of how to keep the laborers already under contract employed. Common laborers are no longer asked to come to the Isthmus. They come of their own volition and apply for work.

A comparative statement of the gold and silver forces at work on the last days of June, July, August, and September is appended. The "gold" force includes all American clerks, artisans, and construction men, while the "silver" force includes laborers and negro artisans:

	Gold.	Silver.	Total.	Expenditures for salaries and wages for the month
June 30, 1908.....	4,587	20,991	25,578	\$1,515,602.15
July 31, 1908.....	4,477	21,049	25,526	\$1,407,660.17
Aug. 31, 1908.....	4,396	21,486	25,882	\$1,416,515.98
Sept. 30, 1908.....	4,328	21,129	25,457	\$1,499,213.26

This statement shows a steady decrease in the "gold" force. With regard to the "silver" force it does not give an adequate idea of the total number of laborers on the rolls of the Isthmian Canal Commission, because the labor force is never all at work at one time, whereas practically all the "gold" force is constantly at work. The decrease in the "gold" force has probably been more marked since October 1 than in any of the three previous months, owing to the reduction in the shops. Data for October has not yet been compiled.

Rainfall, November 1 to 7, 1908, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total.
<i>Atlantic Division—</i>		
Cristobal.....	3.65	6.90
Brazos Brook.....	1.90	5.14
Gatun.....	2.36	5.69
Bohio.....	1.59	2.49
<i>Central Division—</i>		
Tabernilla.....	.50	1.93
San Pablo.....	.66	2.77
Bas Obispo.....	1.32	2.79
Gamboa.....	.78	2.09
Empire.....	.17	.73
Camacho.....	1.67	2.49
Culebra.....	.37	.69
Rio Grande.....	.42	.71
<i>Pacific Division—</i>		
Pedro Miguel.....	.62	1.63
La Boca.....	.95	3.21
Ancon.....	1.00	3.99
<i>Atlantic Coast—</i>		
<i>Upper Chagres.</i>		
El Vigia.....	1.16	4.49
Alhajuela.....	1.35	3.40

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, November 7, 1908 :

	STATIONS.					
	Vigra.	Alhajuela.	Gamboa.	Bohio.	Gatun (W Diver'n).	Gatun (Canal).
Height of low water above mean sea level, feet.....	129	92	46	0	0	0
Maximum height above low water, feet:						
Sunday, Nov. 1.....	2.2	2.6	5.4	12.5	7.0	9.0
Monday, Nov. 2.....	1.8	2.5	5.1	11.9	6.3	8.2
Tuesday, Nov. 3.....	3.6	3.5	5.0	10.0	6.0	7.7
Wed'n'sday, Nov. 4.....	4.5	4.2	7.2	10.2	5.5	7.2
Thursday, Nov. 5.....	2.4	3.0	7.0	11.7	5.6	7.2
Friday, Nov. 6.....	10.1	7.6	9.8	9.0	4.8	6.2
Saturday, Nov. 7.....	7.0	6.4	11.0	14.3	6.5	8.4
Maximum for week.....	10.1	7.6	11.0	14.3	7.0	9.0

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

Election day and night, together with the night preceding, afforded much fun, excitement and recreation. Temporary telegraph offices had been installed in clubhouses on election night and, by direct cable service, election bulletins were received almost as soon as returns were known at New York. These bulletins were exhibited on stereopticon screens. A program of music, monologues, sketches, and general fun-making was carried out. The climax of interest and excitement was in the local municipal elections. Political rivalry was so strong and interest so keen that scarcely any Americans were attracted to Panama and Colon, notwithstanding that election day was a holiday, because of occurring on Independence Day of the Republic of Panama. A tally register count showed an attendance of more than 5,000 within the clubhouses during the day and night, besides there were several hundred persons who could not gain admission but who listened to campaign speeches delivered from the clubhouse steps.

A tally-register count of attendance in the four Commission clubhouses from October 25 to November 7 (both inclusive) was as follows:

OCTOBER 25-31.

	Total attendance.	Average per day.	High day.	Low day.
Culebra.....	2,371	339	648, Oct. 25	232, Oct. 27
Empire.....	2,657	380	512, Oct. 31	300, Oct. 30
Gorgona.....	2,056	294	529, Oct. 31	191, Oct. 27
Cristobal....	2,799	400	502, Oct. 30	280, Oct. 26
Total.....	9,883	1,412	1,728, Oct. 31	1,066, Oct. 27

NOVEMBER 1-7.

	Total attendance.	Average per day.	High day.	Low day.
Culebra.....	3,342	477	806, Nov. 2	279, Nov. 6
Empire.....	3,937	562	1,399, Nov. 3	303, Nov. 6
Gorgona.....	2,743	392	871, Nov. 3	273, Nov. 4
Cristobal....	5,065	724	2,007, Nov. 3	324, Nov. 6
Total.....	15,087	2,155	5,085, Nov. 3	1,192, Nov. 6

The Ernest Gamble Concert Party, who made themselves so popular by their entertainments in the clubhouses in December of last year, will visit the Isthmus again and will be accompanied by Miss Edith Harris Scott, contralto and reader. Other members of the company are Ernest Gamble, basso; Verno Leone Page, violinist; and Sam Lauberson, pianist. The company will appear at Cristobal, Saturday evening, November 14; Gorgona, the 15th; Culebra, the 16th, and Empire, the 19th.

The standing of the bowling league on November 9, was as follows:

	Played.	Won.	Lost.	Per cent.
Cristobal.....	63	39	24	.617
Empire.....	63	39	24	.617
Culebra.....	57	24	33	.421
Gorgona.....	57	18	39	.315

CRISTOBAL.

The result of the local election, held at the clubhouse on November 3, was a complete victory for the Panama Railroad ticket, all their candidates being elected.

The score of the games bowled at Cristobal on Saturday evening, November 7, was as follows:

	First.	Second.	Third.
Cristobal.....	696	877	817
Empire.....	820	785	787

GORGONA.

Monday, November 2, the various political parties of Gorgona joined forces for the time being and pulled off a political rally that would have done justice to the States. After parading the streets they gathered at the clubhouse, and the various candidates were called upon for speeches. On Tuesday evening, November 3, a general election was held at the clubhouse. Dan Wright, Geo. Loughrey and Frank Lasker were elected aldermen, and William Witmer was chosen mayor. A smoker was a feature of the evening, while the returns were being received from the States by special wire.

Friday evening, November 6, the Gorgona Y. M. C. A. Dramatic Club held its first rehearsal of a new drama, which will be given to the public early in December.

Sunday afternoon, November 8, an informal "sing" was held at the clubhouse. A piano and

two vocal solos were special features of the service. Sunday evening, November 15, at 8.30 o'clock, the Gamble Concert Party will give a sacred concert at the clubhouse.

CULEBRA.

In the local election held at Culebra, November 2, Mr. E. M. Pullen was elected mayor for the ensuing year, receiving 166 votes out of 260 polled. Mr. C. A. McIlvane was second with 81.

As a result of a caucus of representative citizens from the four wards of Culebra, held at the Y. M. C. A. on the evening of November 6, in response to the proclamation of the mayor, published November 3, nominations were made for the following officers of the municipal government: judge of the city court, district attorney, city clerk, sheriff of city court, city treasurer, coroner, councilmen. Further nominations for these offices will be received if accompanied by a petition signed by twenty-five voters. These petitions must be presented to Mr. W. H. Baxley, city clerk, pro tem., before 6 p. m., Wednesday, November 11. The election will be held November 13, from 7 to 9 p. m.

On Saturday, October 31, the boys' departments of the Cristobal and Culebra Y. M. C. A. held an all day meet at Cristobal. In the morning the 15-yard dash, running high jump, a basketball game and relay race were held; and following these events an indoor baseball game was played. In the afternoon two bowling matches were rolled, one of duck pins and the other with regular pins. The following is a summary of the events:

15-yard dash—First, Simms of Cristobal; second, Atkins of Culebra; third, Roe of Culebra.

High jump—First Simms, Cristobal; second, A Lindersmith, Cristobal; third, Morris, Cristobal.

Relay race, won by Culebra

Baseball game, won by Culebra 18 to 16.

Duck pins, won by Culebra.

Regular pins, won by Culebra.

Total points scored, Cristobal 34; Culebra 52.

The Culebra Y. M. C. A. pool and billiard team defeated the Empire team, Saturday evening, November 7, four games to one. In billiards Tragsdorf defeated Housel 100 to 86. Strong defeated Elgard 100 to 93.

In pool Fleischman defeated McKeever 100 to 69; Stevens defeated McIlroy 100 to 72. Chapple of Empire defeated McRaven of Culebra 100 to 32.

The Gorgona basket-ball team was defeated at Culebra by the score 29 to 19. Line up of Culebra—Rackle, captain; Cushing, Smith, Bath, King. Line up of Gorgona: Edbon, Christ, Swanson, captain, Hennen and McCormick.

The score of the games bowled at Culebra on Saturday evening, November 7, was:

	First.	Second.	Third.
Culebra.....	803	822	751
Gorgona.....	772	783	780

EMPIRE.

Open house was observed November 3, election day, and 1,398 people visited the clubhouse. The result of the election was as follows: For Mayor of Empire—Gorham, 141; Davies, 47; Rourke, 32; Hummer, 79; Warrick, 10; Perry Brown, 10; Williams, 7; Porter 5.

The Marine band furnished music which was appreciated by the large audience. Mrs. Gorham and Miss Hillerman gave a piano duet; Mr. Dohrman and Mr. Moore, a vocal duet; Mr. Gray, a buck and wing dance; Mr. Jacobs, song and dance; Miss Clark, vocal selection. Refreshments were furnished by the ladies of Empire during the evening. Mrs. Johnson being chairman of the committee.

The two-men bowling tournament has begun and there is much interest, as one man must depend upon the good work of the other.

Arrangements are being made by the campaign committees for the inauguration which will be combined with a smoker given in the near future.

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., November 10, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

Anderson, Mrs. Rosita	Keirstead, H. W.
Blackman, Donald	Kelly, Pierce
Brock, Mrs. Nellie	Kimball, H. B.
Brown, Mrs. Grace	McKnight, Jim
Campbell, J. F.	McNaught, Robert
Counors, Gene	Naylor, Michael
Gerdes, R	Price, Peter
Griffin, Anthony	Rutzler, George F.
Hall, Wm. H.	Saifer, Mrs. R.
Hansson, H. F.	Saunders Miss I.
Hemmer, Otto	Soupolfo, A. A.
Hornor, Uriah	Textor, Mrs. H. N.
Howard, G. Arthur	Truellex, Edwin
Ives, F. W. B. (2)	von der Leith, Theodore
Jackson, Mrs. Florence	Weiser, William
Judge, Miss T.	Wise, Lieut. Wm. C., Jr.

OCTOBER STEAM SHOVEL RECORDS.

The steam shovels at work on the Canal excavated 1,953,502 cubic yards in October. Of this amount 216,961 cubic yards were taken out by the Atlantic Division, 1,598,981 cubic yards by the Central Division, and 137,560 cubic yards by the Pacific Division. The records made in the Central and Pacific Divisions follow:

Best Records for the Month.

CENTRAL DIVISION.

TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
253	20,460	23,071	43,531	27
125	20,056	20,874	40,930	26

GORGONA DISTRICT.

255	14,144	18,749	32,893	26
256	9,270	22,694	31,964	26

BAS OBISPO DISTRICT.

211	32,383	17,437	49,820	26
212	29,431	12,613	42,044	27

EMPIRE DISTRICT.

252	48,584	48,854	97,438	27
206	4,742	42,682	47,424	27

CULEBRA DISTRICT.

230	58,483	58,483	116,966	27
217	50,493	50,493	100,986	27

PEDRO MIGUEL DISTRICT.

209	6,275	23,607	29,882	24
257	13,371	13,371	23

OBISPO DIVERSION.

126	17,819	17,819	35,638	25
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PACIFIC DIVISION.

PEDRO MIGUEL LOCKS.

222	Not cls'd	Not cls'd	24,410	24
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MIRAFLORES LOCKS.

118	Not cls'd	Not cls'd	17,419	25
153	Not cls'd	Not cls'd	21,870	22

CARDENAS HILL.

157	Not cls'd	Not cls'd	18,131	25
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Best Records for One Day.

CENTRAL DIVISION.

Shovel No.	Location.	Date.	Character material excavated.	Cubic yds. excavated.
253	Tabernilla.....	Oct. 22	Rock.....	3,170
114	Tabernilla.....	Oct. 23	Earth.....	2,520
256	Gorgona.....	Oct. 1	Rock and earth	2,440
255	Gorgona.....	Oct. 21	Rock and earth	2,030
212	Bas Obispo.....	Oct. 23	Earth.....	2,931
262	Bas Obispo.....	Oct. 31	Earth.....	2,270
252	Empire.....	Oct. 29	Earth.....	2,580
206	Empire.....	Oct. 20	Rock.....	2,565
205	Culebra.....	Oct. 26	Earth.....	2,650
217	Culebra.....	Oct. 2	Rock and earth	2,740
209	Pedro Miguel....	Oct. 8	Rock and earth	2,220
257	Pedro Miguel....	Oct. 12	Rock.....	1,580

PACIFIC DIVISION.

153	Miraflores Locks	Oct. 31	Not classified..	1,650
259	Miraflores Locks	Oct. 6	Not classified..	1,710
258	Pedro Miguel	.....	.....	.....
.....	Locks.....	Oct. 30	Rock.....	1,650
157	Cardenas Hill...	Oct. 7	Earth.....	1,145

NOTE—Shovels in the one-hundred class are 75-ton Bucyrus and Model 60 Marion with dippers of a capacity of 2½ cubic yards. Shovels in the two-hundred class are 95-ton Bucyrus and Model 91 Marion with dippers of a capacity of 5 cubic yards. Shovels in the fifty-class are 45-ton shovels with dippers of a capacity of 1½ cubic yards. These shovels are under steam for eight hours per day, but are not actually worked during this entire period, time being lost by the necessity of moving the shovel forward, blasting stone too big for the shovel to handle, keeping the shovel supplied with cars, etc.

COMMISSARY DEPARTMENT.

COMMISSARY CORRESPONDENCE.

Patrons of the Commissary Department, when dealing with the Cristobal office, will address their individual orders, deposits, etc., to the Order Room, Commissary Department, Building No. 2, Cristobal.

Complaints should be made in separate letters and addressed to the Subsistence Officer, Building No. 2, Cristobal.

JOHN BURKE, Manager.

Approved: EUGENE T. WILSON, Subsistence Officer.

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning November 10:

FRESH MEATS.		Price.
Mutton—Stewing	per lb	6
Shoulder and neck (not under 6 pounds)	per lb	7
Entire forequarter (not under 10 pounds)	per lb	8
Leg (8 to 10 pounds)	per lb	16
Short-cut chops	per lb	22
Lamb—Stewing	per lb	6
Entire forequarter	per lb	8
Leg (6 to 8 pounds)	per lb	27
Chops	per lb	29
Veal—Stewing	per lb	10
Entire forequarter (15 to 20 lbs)	per lb	11
Loin for roasting	per lb	21
Chops	per lb	22
Cutlets	per lb	25
Pork—Cuts	per lb	20
Beef—Suet	per lb	4
Soup	per lb	8
Stew	per lb	12
Corned	per lb.	12, 14, 16
Pot roast (from sirloin butt)	per lb	17
Rib-roast, second cut (not under 3 pounds)	per lb	19
Rib-roast, short cut (not under 3 1/2 pounds)	per lb	23
Sirloin roast	per lb	29
Rump roast	per lb	29
Porterhouse roast	per lb	29
Steak, round	per lb	23
Rib	per lb	24
Sirloin	per lb	29
Porterhouse	per lb	29
Rump	per lb	29
Tenderloin	per lb	30

MISCELLANEOUS

Livers—Calf	each	65
Beef	per lb	11 1/2
Sausage—Pork	per lb	18
Leberwurst	per lb	17
Frankfurter	per lb	17
Bologna	per lb	17
Sweet bread—Veal	each	1.20
Beef	per lb	30
Pigs' tongues, pickled	per lb	15
Pigs' feet	per lb	14
Oysters, 1/2-gallon kegs	each	80
Eggs, fresh	dozen	40

POULTRY AND GAME.

Chickens—Dressed (milk-fed)	each	1.00
Capons	each	2.40
Broilers	each	60
Fowls, medium and large	each, 80c, and	1.00
Turkeys	per lb	30
Squabs	each	45
Suckling pigs (whole)	each	3.50
Suckling pigs (one-half)	each	1.75

CURED AND PICKLED MEATS.

Bacon—Strips	per lb	23
English, breakfast sliced	per lb	\$26
Ham—Sugar-cured, sliced	per lb	\$25
One-half, for boiling	per lb	\$21
Ferris	per lb	20
Beef, salt, family	per lb	16
Salt pork	per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality	per lb	40
Cheese—Neufchatel	each	6
Roquefort	per lb	45
Swiss	per lb	31
Edam	each	1.05
Camembert	per lb	28
McLaren's	jar	15
Pinxter's	tin	22

French cheese in tins—Camembert, Roquefort, Brie, Neufchatel	tin	20
Milk, Briarcliff	bottle	25

VEGETABLES AND FRUITS.

Lettuce	per lb	14
White potatoes	per lb	3 1/2
Sweet potatoes	per lb	2 1/2
Cabbage	per lb	4
Onions	per lb	3 1/2
Cucumbers	per lb	18
Yams	per lb	3 1/2
Parsnips	per lb	2 1/2
Beets	per lb	3
Peppers	per lb	5
Grapes (3-lb baskets)	basket	30
Lemons	dozen	24
Oranges	dozen	18
Apples	per lb	5
Grapefruit	each	3
Cranberries	per lb	12

§ Sold only from cold-storage and not from Commissaries.

NEW ARTICLES.

	Price.
Watches, "Ingersoll" ladies' nickel	each \$1.70
Watches, "Ingersoll" ladies' oxidized	each 1.80
Paste, library, Carter's, 2-oz	bottle 5
Razors, "Claus Safety"	each 3.00

LEGAL NOTICES.

In re Estate of Anatole Laurence, Deceased.—To any and all persons having any claim or claims against the estate of Anatole Laurence, deceased, who died at Empire, Canal Zone, on the 18th day of September, 1908:

You are hereby notified to present your claims, duly verified, to Felix Laurence, administrator of said estate, or to the undersigned, on or before the 1st day of June, 1909, or your claims will be forever barred according to law.

Witness my hand, this 6th day of November, A. D. 1908.

E. M. GOOLSBY,

Clerk of the Circuit Court, Second Judicial Circuit, Canal Zone, of Empire.

EMPIRE, C. Z., October 22, 1908.

To any and all persons who may have any claim or claims against the estate of Philip F. Kramer, deceased, who met his death at the town of Paraiso, Canal Zone, on December 17, 1907: You will present the same on or before the 1st day of December, 1908, to Theodore C. Hinckley, administrator of the estate of P. F. Kramer, Panama, Panama, or E. M. Goolsby, Clerk of the Circuit Court, Empire, Canal Zone, properly verified, or the same will be forever barred according to law.

THEO. C. HINCKLEY,

Administrator.

EMPIRE, C. Z., November 2, 1908.

Estate of } Administration.
Michael Doyle

All relatives of the late Michael Doyle, an American, who died intestate at Ancon Hospital on the 20th of July, 1908, are hereby requested to communicate with the Administrator of the estate. Also all persons owing the said estate will likewise communicate with the Administrator in order that a settlement may be effected; and all creditors of the estate must file their claims, properly verified, with the Administrator within six months, or the same will be barred.

F. H. SHEIBLEY,

Administrator.

Tug Service Porto Bello and Nombre de Dios.

Effective, August 6, 1908: The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Cristobal 6.30 p. m. for Porto Bello only; returning same day.

Monday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Tuesday: Leave Cristobal after Train 2 without tow, for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.

Wednesday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Friday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Saturday: Leave Cristobal after Train 2 for Porto Bello only; returning, leave Porto Bello 5.30 p. m.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Allianca	P. R. R. Saturday	Nov. 7
Prinz Aug. Wilhelm	H. A. Saturday	Nov. 7
Colon	P. R. R. Thursday	Nov. 12
Magdalena	R. M. Saturday	Nov. 14
Panama	P. R. R. Tuesday	Nov. 17
Prinz Joachim	H. A. Saturday	Nov. 21
Finance	P. R. R. Monday	Nov. 23
Orinoco	R. M. Saturday	Nov. 28
Advance	P. R. R. Saturday	Nov. 28
Allianca	P. R. R. Thursday	Dec. 3
Prinz Aug. Wilhelm	H. A. Saturday	Dec. 5
Colon	P. R. R. Tuesday	Dec. 8
Atrato	R. M. Saturday	Dec. 12
Panama	P. R. R. Monday	Dec. 14
Finance	P. R. R. Saturday	Dec. 19
Prinz Joachim	H. A. Saturday	Dec. 19
Advance	P. R. R. Thursday	Dec. 24
Trent	R. M. Saturday	Dec. 26
Allianca	P. R. R. Tuesday	Dec. 29

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK.

Finance	P. R. R. Monday	Nov. 9
Prinz Joachim	H. A. Tuesday	Nov. 10
Advance	P. R. R. Sunday	Nov. 15
Orinoco	R. M. Tuesday	Nov. 17
Allianca	P. R. R. Friday	Nov. 20
Prinz Aug. Wilhelm	H. A. Tuesday	Nov. 24
Colon	P. R. R. Wednesday	Nov. 25
Panama	P. R. R. Monday	Nov. 30
Atrato	R. M. Tuesday	Dec. 1
Finance	P. R. R. Sunday	Dec. 6
Prinz Joachim	H. A. Tuesday	Dec. 8
Advance	P. R. R. Friday	Dec. 11
Trent	R. M. Tuesday	Dec. 15
Allianca	P. R. R. Wednesday	Dec. 16
Colon	P. R. R. Monday	Dec. 21
Prinz Aug. Wilhelm	H. A. Tuesday	Dec. 22
Panama	P. R. R. Sunday	Dec. 27
Tagus	R. M. Tuesday	Dec. 29
Finance	P. R. R. Friday	Jan. 1
Prinz Joachim	H. A. Tuesday	Jan. 5
Advance	P. R. R. Wednesday	Jan. 6
Allianca	P. R. R. Monday	Jan. 11

FROM NEW ORLEANS TO COLON.

Cartago	U. F. C. Saturday	Nov. 14
Parismina	U. F. C. Saturday	Nov. 21
Heredia	U. F. C. Saturday	Nov. 28

FROM COLON TO NEW ORLEANS.

Heredia	U. F. C. Tuesday	Nov. 17
Cartago	U. F. C. Tuesday	Nov. 24
Parismina	U. F. C. Tuesday	Dec. 1

FROM COLON TO BARBADOS, CALLING AT TRINIDAD.

Magdalena	R. M. Tuesday	Nov. 24
Orinoco	R. M. Tuesday	Dec. 8
Atrato	R. M. Tuesday	Dec. 22
Trent	R. M. Tuesday	Jan. 5

FROM COLON TO NEW ORLEANS VIA KINGSTON.

Jamaican	Leyland Line	about Nov. 22
Antillian	Leyland Line	about Nov. 30

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from New York at 1 p. m. via Kingston, Jamaica, for New York.

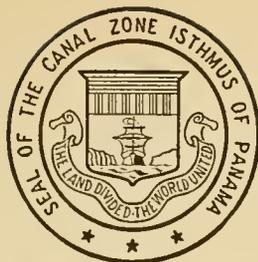
All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The following steamers have recently arrived at La Boca: November 1, *Peru*, from San Francisco, and *Chile*, from Valparaiso; November 6, *Aysen*, from Valparaiso. Departures were: October 30, *Quito*, for Buenaventura; November 3, *Loa*, for Valparaiso; November 4, *City of Para*, for San Francisco.

A deep water channel is being dredged from the Panama railroad docks at La Boca to the marine shops, which are located on the Rio Grande. When it is completed the vessels at the Pacific entrance can run up to the shops at any stage of the water.



The Canal Record

Published weekly under the authority and supervision of the
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"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Acting Chairman of the Isthmian Canal Commission for October is published in other columns of this issue of THE CANAL RECORD. The work of re-organization was continued, and, effective October 12, the Division of Meteorology and River Hydraulics was abolished, the duties pertaining to that division being assigned to the Assistant Engineer in the office of the Chairman and Chief Engineer. The grand total of excavation for the month was 3,286,173 cubic yards. This includes 57,638 cubic yards of dredging in connection with the dock for the handling plant at Gatun and is outside of the excavation for actual Canal construction.

In the Atlantic Division 119,272 cubic yards of material were dumped on the south toe of Gatun dam, 35,989 cubic yards of this material being rock from Bas Obispo, and the remainder from the lock site, the spillway, and from Mindi. On the north toe of the dam 39,290 cubic yards of material from the spillway and Mindi were dumped. Dredging for sand was commenced at Nombre de Dios on October 27.

The excavation in the Central Division, which includes Culebra Cut, amounted to 1,598,981 cubic yards, of which 1,551,409 cubic yards were from the Canal prism. The average number of steam shovels at work in this division was 49.55 against 39.85 in October of last year. The output per shovel per day was 1,185 cubic yards against 800 cubic yards a year ago, an increase of 48 per cent.

The average number of laborers employed daily was 13,396; 392.323 tons of explosives were used, and 399,984.7 feet of rock drilling was accomplished.

The surplus of labor on the Isthmus continued. No laborers were imported during

the month, and none are being recruited at this time. The agent of the Commission for the recruiting of European laborers, with headquarters at Paris, has been withdrawn and arrangements have been made with the agents of the several steamship lines which have transported laborers to the Isthmus to act as recruiting agents for the Commission. In the event it should become necessary to secure additional Europeans. One of the recruiting agents in the West Indies has also been withdrawn.

During the month 181,331 meals were served at the various hotels. There has been a constant diminution in the meals served both in the Spanish messes and in the colored laborers' kitchens. The attendance at the messes has fallen from about 4,000 per day on August 1, to 3,400 per day on November 1, and the attendance at the kitchens has fallen from 6,000 a day on July 1, to 4,000 a day on November 1. It is estimated that there are about 7,000 laborers that do not eat at the kitchens or live in Commission quarters.

On the relocation of the Panama Railroad 3,831 linear feet of permanent track were laid, making a total of 47,407 feet. The force of laborers on this work during the month averaged 908.

The Division of Public Works of the Department of Civil Administration, reported that during the month 27,733,000 gallons of water were used in the city of Panama, and 22,063,125 gallons in the city of Colon. Health conditions continued to be satisfactory during October.

Two Hundred Dump Cars.

A contract has been let to the Western Wheeled Scraper Company for 200 steel dump cars of 12 yards capacity. The first consignment will be delivered at Cristobal about January 1, and the contractor has agreed to finish the deliveries in March. Eight different firms submitted bids varying from \$900, for a car lighter than that called for in the specifications, to \$1,535. The contract was awarded at the rate of \$948 for each car, a total of \$189,600.

The car contracted for is of the gravity type, similar to the 300 Western dump cars and the 500 Oliver dump cars now in use on the Isthmus. Some of the bidders, including the successful one, sent engineers to the Isthmus to study the conditions peculiar to the work here and, as a result of their investigations and of suggestions made by the Commission, the new cars will be superior to those already in use, although the latter have been satisfactory. One of the chief difficulties in the dump cars in use is the failure of the side door, and in the cars now being built special attention is paid to the design of the door in order to obviate the difficulties at present experienced. The draft sills of the new cars have also been made

considerably heavier than those in the present cars. The improvements are simply those suggested by two and one-half years' experience with this type of cars on various parts of the work. The center sills and latch rigging have also been improved.

The new cars will be 21 feet over the striking plates, with inside dimensions 19 feet by 9 feet by 22½ inches. Their weight unloaded will be about 29,000 pounds. The clearance between the door and the floor when the car has been dumped will be 4 feet 8 inches. The cars will be delivered knocked down and will be erected on the Isthmus.

Additional Cold Storage Unit.

Authority has been given for an additional unit at the cold storage plant at Cristobal, and specifications have been sent to the Purchasing Officer at New York for a 150-ton ammonia compressor and engine to be shipped to the Isthmus as soon as practicable. When the new unit is installed it will give a total capacity of 375 tons of refrigeration for the compressor plant.

One of the cooling rooms in the cold storage plant that heretofore has been kept at a temperature of 26 degrees Fahrenheit has been turned into a freezing room and will be kept at a temperature of 10 degrees Fahrenheit, which will keep meat in good condition for six months.

Another French Dredge.

Dredge No. 21, an old French ladder dredge, was hauled on the shipways at the La Boca marine shops on Thursday, November 10, to be rehabilitated. This vessel was erected at the La Boca shops during the French régime, but never had any of her machinery installed, and is now back on the same ways from which she was launched about twenty years ago.

From the water line to the top of her tower the dredge is in good condition, and after a new bottom is put on she will be practically new. All the machinery to be put in is old French stock found on the Isthmus, and it is intended to install oil-burning apparatus under the boilers.

This is the fourth dredge of this type to be rebuilt at La Boca, and it is expected that the rebuilding will cost about \$40,000, while a new dredge of equal capacity would cost \$125,000.

October Money Order Business.

The report of the Chief of the Division of Posts, Customs, and Revenues for the month of October shows that 14,472 money orders, amounting to \$441,783.30, were issued, an increase of \$11,792.83 over the amount reported for September. Of the \$441,783.30 in October, \$321,095.19 was in orders drawn payable in the United States and elsewhere, and \$120,688.11 in orders drawn payable in the Canal Zone. The fees collected amounted

NOTES OF PROGRESS.

(Continued).

to \$1,815.37, and the amount paid and repaid was \$126,309.98.

The largest number of orders, 2,562, was issued at Cristobal, and amounted to \$69,405.41, an average of \$27.09 per order. Empire was second in the number of orders issued, 1,832, but was third in amount, \$55,249.34, making an average per order of \$30.16; Gorgona was third in the number of orders issued, 1,543, but was second in amount with \$58,956.54, an average per order of \$38.21, the highest average for any post office during the month. Ancon was fourth with the number of orders issued, 1,442, and sixth in amount, \$33,971.87, an average of \$23.56, the lowest average amount per order shown for the month. Culebra was fifth in orders issued, 1,270, but was fourth in amount, \$37,131.14, an average of \$29.24. Pedro Miguel was fifth in amount, having sold 969 orders, amounting to \$35,026.73, an average of \$36.15, the second highest average shown. The average of all the orders issued was \$30.53.

New Gridiron at La Boca.

A new gridiron is under construction at the La Boca marine shops. It is 300 feet long, 50 feet wide, and when completed will accommodate a vessel the size of the suction dredge *Culebra*.

The foundations of the structure will be 44 concrete piers, placed 7 feet apart and extending the full width of the gridiron. The piers will rest on solid rock and a layer of mud and silt, from two to ten feet deep, is being removed from the site. As the variation in the tide on the Pacific side of the Isthmus is about 20 feet, the gridiron is so situated that a vessel, placed on it at high tide, will be entirely above water at low tide so that work can be done on the hull between tides. It is expected that the work will be finished in about three months.

Commission Action.

At a meeting of the Isthmian Canal Commission on November 7, 1908, the following action was taken:

There being no provision in the General Conditions of Employment, adopted by the Commission at its 129th meeting, for the payment to the estate of an employe dying while on leave of absence the amount due for the period from the effective date of the employe's leave to the date of his death, and it being deemed desirable to provide for future cases of this character, it was

Resolved, That if an employe who has entered upon his leave of absence, with pay, dies while on such leave, his estate shall be paid the amount due him for the period from the effective date of his leave to the date of his death, both inclusive; *Provided*, that in case of the death of an employe before return from leave of absence and after expiration of the same, payment of salary accrued for the leave period may be made, with the approval of the Chairman.

Additional Fire Alarm Boxes.

Additional boxes are being added to the fire alarm systems of several towns in the Zone. Fire boxes have recently been added to the Ancon system, making a total of 15 in that system. The new boxes have been located at the following points: Near house No. 137, Ancon; near house No. 22, East La Boca; between the La Boca commissary and the electric light plant; at the La Boca marine shops, and on the wharf at La Boca.

The latter box is connected with five auxiliary boxes located at convenient points on the wharf.

The Gorgona system has had two additional boxes put in, one near house No. 88 and one near house No. 161. This addition makes a total of eight boxes at Gorgona.

Four boxes will be added to the Cristobal system which will bring the total up to 14 fire alarm boxes. The new boxes will be placed between the bakery and the paint shop; at the Folks River labor camp; at the general offices of the Panama Railroad Company, and on the beach near the residence of Mr. R. Budd.

One additional box will shortly be put in at Empire, and will be located near the row of type 14 houses west of the Disbursing Office. This addition will make a total of 11 fire alarm boxes in the Empire system.

Administration of Estates.

The estates of foreigners who die in the Canal Zone are administered by the consul of the country of which they were citizens or subjects. The estates of American employes of the Isthmian Canal Commission or of the Panama Railroad Company who die in the Zone, when such estates do not exceed \$500 in value, are administered by the Collector of Revenues of the Canal Zone. The laws of the Canal Zone provide for the judicial appointment of administrators, and that method of administration is generally resorted to in cases which do not come within the jurisdiction of foreign consuls or of the Collector of Revenues. But cases frequently arise which cannot be handled by consuls or by the Collector of Revenues, in which the property is of too small value to justify judicial administration, or there are no heirs or other persons to commence administration proceedings.

The Code of Civil Procedure of the Canal Zone provides that when a person dies intestate, owning property in the Zone, and leaving no heir or person legally entitled to

the property, the estate shall, after proper petition, notice, and hearing, escheat to the Canal Zone, and shall be administered upon by the Collector of Revenues, the proceeds to be used for the benefit of Zone schools.

The Head of the Department of Civil Administration has, at the suggestion of the Auditor of the Zone, taken the matter up, and all personal effects in the hands of Hospital Superintendents, the Chief of Police, or other persons, which it has been impossible to dispose of by any of the ordinary methods of administration, will be disposed of by the Collector of Revenues, under the law referred to, for the benefit of the Zone schools.

Accident to Pay Car.

Isthmian Canal Commission pay car, No. 1, was wrecked at the Cut-off near the Gorgona shops on Saturday night, October 14, on its return trip to Empire after completing the monthly payment of employes. The ash-pan on Engine No. 57 dropped and threw the tender off the track. The caboose, immediately behind the engine, was thrown over the embankment and the pay car was tipped over on its side across the tracks, blocking both the north and southbound tracks. While the pay car was badly damaged no one was hurt and no money was lost. The accident occurred about 6.30 p. m. and by 10 o'clock the wreck was cleared.

Lidgerwood Unloaders at La Boca.

The three Lidgerwood unloaders of the Central Division working on the La Boca dumps during the month of October unloaded 709 trains, composed of a total of 11,929 cars. Of this number, engine No. 226 unloaded 259 trains composed of 4,366 cars; engine No 265 unloaded 238 trains with 3,994 cars and engine No. 264 unloaded 212 trains with 3,569 cars. As all the cars were 20-yard cars, the material unloaded represents about 238,580 cubic yards.

LABOR FORCE FOR OCTOBER.

The report of the Chief Quartermaster for the month of October, shows that a total of 24,935 persons were actually employed on Canal work on October 31. Of this number 4,183 were "gold" employes, and 20,752 were "silver." The additions to the "gold" force during the month were 262, and the separations 402, making a reduction of 140. Of the additions to the "gold" roll, 82 people were employed in the United States, 160 employed or re-employed on the Isthmus, and 20 were transferred from the Panama Railroad Company. Of the 402 separations, 90 people voluntarily left the service, 244 were discharged, 55 resigned, 5 died, 3 were changed to a "silver" basis, and 5

were transferred to the Panama Railroad Company. The surplus of labor on the Isthmus continues and no laborers were imported during the month.

A statement of the occupants of Isthmian Canal Commission quarters during October, 1908, shows that among "gold" employes and their families, there were 4,706 men, 1,402 women, and 1,279 children occupying quarters. Among the European laborers, there were 5,337 men, 338 women, and 383 children occupying quarters, and of the West Indians there were 6,569 men, 1,032 women, and 1,077 children in quarters. A statement of the force actually at work on October 31, 1908, is as follows:

DEPARTMENT.	Gold Men.	SILVER MEN.							Total Gold and Silver Men.	
		Monthly.	Artisans.		European Laborers.		West Ind'n Laborers.			Total Silver.
			32c. & over.	26c.	40c.	32c.	26c.	20c.		
Construction and Engineering.....	3,036	1,906	4,245	991	4,427	291	1,225	2,953	16,039	19,075
Quartermaster's Department.....	237	1,071	343	.....	362	35	112	821	2,744	2,981
Department of Sanitation.....	392	679	82	.....	4	.....	6	230	1,001	1,393
Subsistence Department.....	70	757	1	.....	.....	.....	.....	.....	758	828
Department of Civil Administration.....	314	171	24	.....	.....	.....	.....	.....	195	509
Disbursements.....	28	9	.....	.....	.....	.....	.....	.....	9	37
Examiner of Accounts.....	106	6	.....	.....	.....	.....	.....	.....	6	112
Totals.....	4,183	4,599	4,695	991	4,793	327	1,343	4,004	20,752	24,935

Panama railroad force, 5,078; Panama railroad commissary force, 688.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Gorgona Woman's Club has the arrangements for the Christmas celebration well in hand. The Young Men's Christian Association, the Sunday school, and the teachers of the public school have been asked to cooperate with the club, and the combined organizations are planning to make the occasion a memorable one. The meetings of the philanthropy department are held at the home of the chairman for the purpose of making clothing for the Panaman newsboys. Donations of clothing have been received, and these will be put in order and distributed within a short time. The club has donated a sum of money to the leper colony at Palo Seco for the purchase of extra comforts for the inmates. The literary department is arranging for the study of Spanish and the history of Panama. The next meeting of the club will be in charge of the music department, Mrs. Beetham, chairman.

The Gorgona Chorus Club will give its Old Folks' Concert at the Commission clubhouse on Friday evening, November 20.

The newly instituted Rebekah lodge of Gorgona meets on the first and third Saturday of each month in Fraternity hall. A drill team has been formed, and practice by the team forms a part of each meeting. A number of applications for admission have been received, and the members are enthusiastic about the work.

A reception in honor of the newly appointed secretary of the Young Men's Christian Association, Mr. Guy P. Mitchell, has been arranged for Monday evening, November 23. A musical program will be given. The Woman's Club is cooperating with the Association in preparing the entertainment. Mr. Mitchell, who comes from Auburn, N. Y., arrived on the Isthmus on the *Allianca*, November 13.

The young girls of Gorgona meet at the Commission clubhouse on Thursday afternoon for instructions in bowling.

The Gatun Woman's Club held a meeting on Friday, November 13, at the home of the president, Mrs. C. D. Corp, for the election of officers, with the following result: President, Mrs. E. L. Bandy; vice-president, Mrs. O. Bromwell; secretary, Mrs. W. C. Story; treasurer, Mrs. L. A. Clark. These officers were elected for the term of three months, as there has been great difficulty in finding members who are willing to serve for a longer period, and it was decided to amend the by-laws of the club in order to meet existing conditions. A revision committee will also be appointed at the next meeting to draw up and present the required amendments. Chairmen of the different departments will be appointed at that time. Mrs. W. C. Story was appointed to represent the club at the meeting of the Sunday school committee, for the arrangement of the Christmas celebration. The club has a sewing class for young girls, which meets at the home of Mrs. Bandy on Saturday afternoon. There are at present ten members, and they are interested in their work. The domestic or philanthropy committee is engaged in some special sewing for charity. The hour of meeting of this committee has been changed from 2.30 to 3 p. m., and it is agreed to meet every Friday instead of semi-monthly as heretofore. The next meeting will be

held at the home of Mrs. W. C. Story, November 20.

A concert in aid of the organ expense fund of Christ Church, Colon, was given in the parish schoolroom on Tuesday evening, November 10, the program being rendered by Mrs. E. Lewis Baker, Mrs. Frank Ullrich, and the Messrs. Sales, Delgard, Doty and Cooper.

"Association Night" at the National Theater, Panama, Tuesday, November 10, was such a success that arrangements for a second similar night are under consideration. Nearly 400 Zone residents attended the performance.

Nearly 200 persons participated in the dance and social by the Culebra Roman Catholic Club at the clubhouse on Thursday, November 12, and it is estimated that the sum of over \$300 was raised toward the building fund of the Church of the Redeemer. Boxes filled with refreshments were auctioned off, some selling for \$14. An entrance fee was charged for the dancers, who took possession of the floor later in the evening. A special train was run from Las Cascadas, and there were present a number of guests from the Line.

The Las Cascadas Woman's Club met at the residence of Mrs. T. J. Grimmisen on Thursday afternoon. A committee of three was appointed to make arrangements for the Christmas celebration, which will be held in the new clubhouse.

The Empire Woman's Club met for the election of officers on Saturday, November 7. Mrs. E. H. Ash was elected president, Mrs. H. C. Ball, vice president, Mrs. P. Bell, secretary and Mrs. A. S. Zinn, treasurer. At a second meeting on Tuesday afternoon, November 17, the work for the coming season was planned and heads of departments appointed.

There was an unusually large attendance at the meeting of the Woman's Guild at St. Luke's Church, Ancon, at the Hotel Tivoli on Monday afternoon, November 16. The Ven. Archdeacon Purcell Hendricks, formerly Archdeacon of Panama and the adjacent countries, was the guest of the Guild and gave an address on the work of women in the church. The Guild will hold its sale of cakes at the residence of the chaplain on Saturday afternoon, November 21, from 4 to 9 o'clock. The proceeds of this sale will be devoted to the expenses of the Guild and the purchase of necessary fittings and furnishings for the new chapel which will be opened on Christmas Day. Arrangements for a suitable celebration of Thanksgiving are being made.

Class in Shorthand.

Mr. William F. Bennyhoff has received permission from the Chairman of the Commission to give instruction in short hand and will organize a class for that purpose in the near future. Anyone wishing to join the class will be furnished full particulars by communicating with him, care of Department of Sanitation, Ancon, C. Z.

The two old French dredges that were found by the Americans on the banks of the Chagres at Frijoles have been floated into the river. One of them was taken out on November 11, and the other on November 15. They will be taken to the Cristobal dry dock.

PERSONAL.

Lieut.-Col. Geo. W. Goethals returned to the Isthmus from the States on the *Prinz August Wilhelm* on November 16.

Mr. Herbert G. Squires, American Minister to Panama, accompanied by his family, sailed from New York on the *Colon* November 12, due at Cristobal, November 18.

Mr. W. G. Comber, Resident Engineer at La Boca, returned to the Isthmus on the *Heredia*, November 13.

Missing Men.

Information is wanted in regard to Antonio Vila Tojo, who is said to have been employed by the Commission as a laborer at Tabernilla. He was last heard from by his relatives in March of this year. Anyone having knowledge concerning him is requested to communicate with M. B. DePatron, Assistant to the Chairman, Culebra, C. Z.

Information is also wanted in regard to the following men:

William E. Ridding, who is thought to be a foreman on the Isthmus.

Antonio P. de Treitas, who is said to have been a cook, and afterwards a painter at Ancon. His father in Trinidad last heard from him in September of this year.

Anyone having knowledge concerning either of these men is requested to communicate with THE CANAL RECORD, ANCON, C. Z.

Sojourners' Lodge.

Sojourners' lodge, No. 874, A. F. and A. M., will meet on Saturday evening, November 21, 1908, in extraordinary communication. Work in the third degree. Master Masons in good standing fraternally invited to attend.

G. G. DEDGE, I. P. M.,
Acting Secretary.

Pacific Masonic Club.

There will be a meeting of the Pacific Masonic club in the lodge room, building No. 31, formerly occupied by Mr. Lipsett, on Saturday night, November 21.

The ancient order of humility will be conferred. This is strictly a Panamanian degree, and any member wishing to have same will please send his name to the secretary before Friday night.

There are several matters of importance coming up, and it is desired to have all members present.

H. A. GUDGER,
President.

ROLLIN S. STILES,
Secretary.

Army and Navy Union Smoker.

Goethals Garrison, No. 106, Army and Navy Union, will give a smoker at the Empire hotel on Saturday, November 21, at 8.30 p. m. All army and navy men on the Isthmus, either regulars or volunteers, are invited and urged to attend.

HOMER BRETT,
Committee.

Knights of Columbus.

All third and fourth degree members of the Knights of Columbus are urgently requested to be present at an important meeting to be held in the I. C. C. lodge hall, Empire, on Sunday, November 22, 1908, at 2.30 p. m. Business relative to charter application and election of council officers.

J. L. KERR,
President, K. of C. Club.
WILLIAM J. ERGENZINGER,
Secretary-Treasurer, K. of C. Club.

CANAL WORK FOR OCTOBER.

Monthly Report of the Acting Chairman to the Secretary of War.

CULEBRA, C. Z., November 14, 1908.

The Honorable the Secretary of War, Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of October, 1908:

The work of reorganization was continued. Effective October 12, 1908, the Division of Meteorology and River Hydraulics was abolished, and the duties pertaining to that Division were assigned to the Assistant Engineer in charge of the Third Division in the office of the Chairman and Chief Engineer, the usual observations and measurements being continued under his supervision.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
<i>Steam Shovel Excavation—</i>					
In prism.....	Cubic yards.....	155,142	1,540,417	139,206	1,834,765
Auxiliary.....	Cubic yards.....	61,819	45,471	2,248	109,538
Total.....	Cubic yards.....	216,961	1,585,888	141,454	1,944,303
<i>Dredge Excavation—</i>					
In prism.....	Cubic yards.....	505,260	.....	762,279	1,267,539
Auxiliary.....	Cubic yards.....	57,638	.....	3,600	61,238
Total.....	Cubic yards.....	562,898	.....	765,879	1,328,777
<i>Hand Excavation—</i>					
In prism.....	Cubic yards.....	.....	10,992	.....	10,992
Auxiliary.....	Cubic yards.....	.....	2,101	.....	2,101
Total.....	Cubic yards.....	.....	13,093	.....	13,093
Total excavation.....	Cubic yards.....	779,859	1,598,981	907,333	3,286,173
Explosives used.....	Tons (2240 lbs).....	48,783	327.75	15.79	392.323
Drilling.....	Feet.....	59,945	313,705	26,334.7	399,984.7
Track removed.....	Miles.....	.....	14.1	14.1	14.1
New track laid.....	Miles.....	3.32	15.7	2.88	21.90
Material placed in dam.....	Cubic yards.....	147,762	.....	2,038	149,800
Rock crushed.....	Cubic yards.....	.....	13,243.5	2,896	16,139.5
Cement used.....	Barrels.....	302	.....	336	638
Concrete placed.....	Cubic yards.....	219	.....	200	419
New roads built.....	Miles.....	0.459	1.48	0.50	2.439
Water mains laid.....	Feet.....	1,830	1,896	4,881	8,607
Sewers laid.....	Feet.....	2,400	1,740	6,640	10,780
Open drains and ditches dug.....	Feet.....	.....	16,563	58,978	75,541
Open drains and ditches cleaned.....	Feet.....	.....	.....	11,710	11,710
House connections made.....	Feet.....	.....	.....	3,602	3,602
Daily average number of laborers.....	.....	2,304	7,666	3,426	13,396
Rainfall.....	Inches.....	12.22	8.85	8.41	.....

Atlantic Division.

GATUN LOCKS.

During the month, the total amount excavated from the lock site was 127,089 cubic yards, of which 109,667 cubic yards were from the Canal prism, and 17,422 cubic yards were from the proposed site for the handling plant dock.

On October 20, pile driving was commenced at the north end of the unloading cableway dock. Preparations were also made during the month to start work on the cement shed dock.

GATUN DAM.

Dredge No. 82 excavated 57,638 cubic yards of material from the slip leading to the proposed docks for the handling plant.

On the south toe of the dam 119,272 cubic yards of material were dumped, having been brought from the following points in the amounts stated:

	Cubic Yards.
Bas Obispo.....	35,989
Lock site.....	44,033
Spillway.....	27,175
Mindi.....	12,075

On the north toe of the dam 39,290 cubic

yards of material from the spillway and Mindi were dumped.

SPILLWAY.

Three steam shovels worked on the spillway during the month, and removed a total of 44,397 cubic yards.

PORTO BELLO.

Work was actively continued, consisting of preparing a site for the power plant, stripping the earth from the quarry, and various municipal and building work.

NOMBRE DE DIOS.

Dredging was commenced October 27, at the entrance to the Fato River, a portion of the sand removed being used in brick work at Porto Bello.

CRISTOBAL.

During the month a boiler and air pump for the aeration of water supply were installed at the Brazos Brook reservoir, and the sheet piling in the dam was completed.

MUNICIPAL ENGINEERING.

A large amount of grading, road building, construction of sewers and water works was

at work during the month was 49.55 as compared with 49.68 for the month of September.

For comparison with the work done during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels	Classification of material.		Av. No. of steam shovels working during month	W'kg days in month	Av. amount excavated per steam shovel per 8-h day
		Rock	Earth			
1907, Oct.....	cu. yds. 852,084	cu. yds. 565,803	cu. yds. 286,281	39.85	27	800
1908, Oct.....	1,585,888	1,018,357	567,531	49.55	27	1,185

Rainfall during the month: 1907, 13.95 inches; 1908, 8.85 inches.

The above table shows that the average output per shovel day was over 48 per cent greater in October, 1908, than in the corresponding month of the previous year.

The output of the Bas Obispo rock crusher for the month was 9,508½ cubic yards, and that of the Rio Grande crusher, to October 16, 3,735 cubic yards, on which date this crusher was transferred to the Pacific Division.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

The total excavation in this district during the month amounted to 166,047 cubic yards, as follows:

	Cubic Yards.
From Pedro Miguel Lock site.....	47,688
Accessory works at Pedro Miguel....	1,187
From Miraflores Lock site.....	71,201
Accessory works at Miraflores.....	839
From west dam at Miraflores.....	3,002
From Canal prism, south of lock site. 17,315	17,315
Accessory to Canal prism.....	172
From Canal prism, south of lock, dredging.....	24,593
Total.....	166,047

At Pedro Miguel, the track west of the lock site was extended to an intersection with the old location of the Panama Railroad, and raised within about six feet of the grade of the latter. This track will be used as a dump at the south end, its north end forming the toe of the west dam. The old bed of the Rio Grande River, at the south end of the lock site, was lowered for drainage purposes.

At Miraflores the excavated material was deposited as a backfilling for the locks and in the toes of the west dam. The suction dredge *Sandpiper* began the work of cutting a channel from the Rio Grande River into the lower end of the lock site.

Steam shovel work at Cardenas Hill is nearing completion, and will probably be finished during the month of November.

DISTRICT NO. 2—DREDGING, AND LA BOCA SHIPWAY.

Five dredges were in operation during the month as follows:

Dredge	Type.	Cubic yards.		Remarks.
		In pr'm	Auxil'y	
Culebra	Suction	431,537	.....	Scow measurement
Gopher	Ladder	103,517	.....	Place measurement
Mole...	Ladder	56,340	.....	Place measurement
No. 14..	Ladder	89,391	.....	Place measurement
Dipper.	Dipper.	56,901	3,600	Place measurement
Total.....	.....	737,686	3,600	.....

Current repairs were made on dredges, clapets, launches, tugs and barges, including also erection of new plant.

The borings to determine the character

accomplished at Cristobal and Gatun. The maintenance of municipal improvements was also given necessary attention.

BUILDING CONSTRUCTION.

Satisfactory progress was made on all buildings under construction.

During the month the powder house at Mindi hills and the detonator house at that point were completed.

Central Division.

During the month the total amount of material excavated in the Central Division was 1,598,981 cubic yards, of which 569,632 cubic yards were classified as earth, and 1,029,349 cubic yards as rock.

Of this quantity, 1,585,888 cubic yards were removed by steam shovels, 10,992 cubic yards by hand at the Bas Obispo quarry, and 2,101 cubic yards by hand at the new powder house site up the Chagres River.

The quantity of material removed from the Canal prism was 1,551,409 cubic yards, while 33,603 cubic yards were removed from the Obispo Diversion, 8,180 yards in the Pedro Miguel yard, and 5,789 yards at the new powder house site.

The daily average number of steam shovels

and depth of sand at Chamé Point were completed.

The work of boring to determine the character of the material in the Canal prism between the Miraflores Locks and deep water was continued, as well as the work of clearing the Canal line over which the dredges will operate.

DISTRICT NO. 3—MUNICIPAL ENGINEERING AND BUILDINGS.

The principal items of new construction accomplished in this district during the month are included in a table given in the foregoing part of this report. Roads, water works and sewers, drains and other municipal improvements were maintained as usual.

The output of the Rio Grande rock crusher from October 16, on which date it was turned over to the Central Division, was 2,511 cubic yards.

Mechanical Division.

The usual work was performed in this division in maintaining and operating equipment, electrical work, and the manufacture of repair parts and various material required in the construction of the Canal.

Relocation of Panama Railroad.

Satisfactory progress was made in the construction of connecting tracks from the present operated line of the railroad, in grading, the construction of trestles for filling, and the construction of bridges and culverts.

In the Miraflores tunnel 935 cubic yards of concrete were placed in the lining in the rock section.

During the month, 3,831 linear feet of permanent track were laid on the relocated line, making a total of 47,407 feet to date.

The force of laborers during the month averaged 908 men.

Quartermaster's Department.

The surplus of labor on the Isthmus continued. No laborers were imported during the month, and none are being recruited at this time. The agent of the Commission for the recruiting of European laborers, with headquarters at Paris, has been withdrawn and arrangements have been made with the agents of the several steamship line which have transported laborers to the Isthmus to act as recruiting agents for the Commission, in the event it should become necessary to secure additional Europeans. One of the recruiting agents in the West Indies has also been withdrawn.

The additions to the gold force during the month were 262, and the separations 402; the net separations being 140. Of the additions, only 82 were of men employed in the United States, the remainder having been employments or re-employments on the Isthmus, or transfers from the Panama Railroad Company.

During the month a list of certain standard articles for supply on the Isthmus was prepared and submitted to the Division Engineers and the Division of Motive Power and Machinery for estimate as to quantities required for the six months ending June 30, 1909. This action was taken with a view to contracting for such articles, giving a minimum and maximum amount within which supplies can be ordered during the six months, thus reducing to a very considerable extent the amount of advertising now necessary by the Washington office.

An effort has also been made to standardize specifications on various articles on purchase requisitions to the United States.

It is hoped that within six months nearly all of the usual articles required can be purchased under requisitions standardized and to govern in all cases.

The only places at which there remain any considerable number of applications for family quarters, from applicants who entered the service prior to January 1, 1903, are as follows:

Empire.....	31
Gitun.....	37
Cristobal.....	70

A few employes who entered the service subsequent to January 1, have been assigned family quarters, but there are approximately 300 applications on file from employes of this class, which can not be met unless additional quarters are constructed.

Subsistence Department.

Careful statistics were compiled relating to the most important food components served at hotels, messes and kitchens. The average meat ration consumed per day at the hotels is 1.55 pounds; vegetables, one pound; and bread two-thirds of a pound. Since the vegetable season opened for produce of standard refrigeration, vegetables have been furnished to the hotels, messes and kitchens at merely the cost of handling them and without any profit to the commissary. The Spaniard consumes 1½ pounds of bread per day, the negro one pound, while in the white hotels the consumption has averaged but two-thirds of a pound.

During the month 181,331 meals were served at the various hotels. There has been a constant diminution in the number of rations served, both in the Spanish messes and in the colored laborers' kitchens. The attendance at the messes has fallen from about 4,000 per day, August 1, to 3,400 per day, November 1, while the attendance at the kitchens has fallen from 6,000 per day, July 1, to 4,000 per day, November 1. It is estimated there are about 7,000 unmarried colored laborers who do not eat in the kitchens or sleep in Commission quarters.

Department of Civil Administration.

Correspondence with the Foreign Office of the Republic of Panama during the month, in addition to the usual routine matters, included negotiations respecting the following subjects: The stationing of Zone police at Porto Bello, in the Republic of Panama; the withholding of clearance papers from small craft docking at the Panama Railroad Company's wharves at Colon and departing before payment of wharfage dues; the approval of the maps of the joint boundary survey of the Canal Zone, the action of the captain of the port of Colon in permitting, over the protest of the quarantine officer, the disembarkation of certain passengers aboard a vessel subject to quarantine, and the installation of water and sewer mains and construction of pavements upon certain streets in the city of Panama.

COURTS.

In the Supreme Court one civil case was settled during October, and one attorney was admitted.

In the circuit courts, 10 civil cases and 22 criminal cases were settled, and in the district courts 47 civil and 517 criminal cases were disposed of.

DIVISION OF REVENUES.

The general revenues of the Canal Zone collected by the Division of Revenues amounted to \$9,702.37.

Ten vessels entered at and fourteen cleared

from the port of Ancon, and fifteen vessels entered at and sixteen cleared from the port of Cristobal during the month.

DIVISION OF POLICE AND PRISONS.

During the month, 489 arrests were made, as compared with 639 for September.

As Coroner of the Canal Zone the Chief of Police investigated seventeen deaths.

DIVISION OF PUBLIC WORKS.

The usual business of this Division was conducted during the month, including the installation of new connections, the issuance of permits for installation of plumbing, and the inspection of plumbing and sewers.

In Panama, the collections on account of water rents for the quarter ended September 30, aggregated \$14,470.30, and in Colon the amount collected was \$14,646.85.

During the month 27,733,000 gallons of water were used in the city of Panama, and 22,063,125 gallons in the city of Colon.

DIVISION OF FIRE PROTECTION.

During the month, six fires occurred in the Canal Zone. While the value of the property endangered is estimated at \$55,000.00, the damage to the buildings was insignificant.

DIVISION OF SCHOOLS.

The Canal Zone schools were opened October 1. The teaching force consists of 23 Americans and 19 colored West Indians. The total enrollment in the white schools was 622, and the average daily attendance 493. In the colored schools, the total enrollment was 1,073, and the average daily attendance 695.

Department of Sanitation.

[The substance of the report of this department was published in THE CANAL RECORD last week.]

Respectfully,
H. F. HODGES,
Acting Chairman and Chief Engineer.

Central Division October Shovel Record.

The high record for steam shovels during the month of October in the Central Division was made by shovel No. 230, at work in the Culebra district, which excavated 58,483 cubic yards in 27 days, an average of 2,166 cubic yards per day. Shovel No. 259, working 20 days in the Empire District and 7 days in the Culebra District, excavated 55,535 cubic yards, an average of 2,055 cubic yards per day. Both of these shovels break the high record formerly held by shovel No. 256.

LEGAL NOTICES.

In re Estate of Anatole Laurence, Deceased.—To any and all persons having any claim or claims against the estate of Anatole Laurence, deceased, who died at Empire, Canal Zone, on the 18th day of September, 1908:

You are hereby notified to present your claims, duly verified, to Felix Laurence, administrator of said estate, or to the undersigned, on or before the 1st day of June, 1909, or your claims will be forever barred according to law.

Witness my hand, this 6th day of November, A. D. 1908.

E. M. GOOLSBY,
Clerk of the Circuit Court, Second Judicial Circuit,
Canal Zone, at Empire.

EMPIRE, C. Z., November 2, 1908.

Estate of } Administration,
Michael Doyle }

All relatives of the late Michael Doyle, an American, who died intestate at Ancon Hospital on the 20th of July, 1908, are hereby requested to communicate with the Administrator of the estate. Also all persons owing the said estate will likewise communicate with the Administrator in order that a settlement may be effected; and all creditors of the estate must file their claims, properly verified, with the Administrator within six months, or the same will be barred.

F. H. SHEIBLEY,
Administrator.

OFFICIAL CIRCULARS.

Holiday on Thanksgiving Day.

CULEBRA, C. Z., November 12, 1908.

CIRCULAR NO. 220.

Thanksgiving Day, Thursday, November 26, 1908, will be observed as a holiday in the Canal Zone, and as far as possible all public business will be suspended on that day.

H. F. HODGES,
Acting Chairman and Chief Engineer.

Land Clerk, Panama Railroad.

PANAMA RAILROAD COMPANY,
OFFICE OF THE GENERAL MANAGER,
COLON, R. P., November 11, 1908.

CIRCULAR NO. 12.

Heads of Departments—Effective this date: Mr. A. A. Greenman is appointed land clerk in charge of land office matters, working under the supervision of, and reporting direct to the General Manager.

HIRAM J. SLIFER,
General Manager.

Panama Railroad Company Land.

The following "Rules in connection with land matters of the Panama Railroad Company," became effective September 23, 1908, and are published for the benefit of all concerned. Copies of the circular printed in English, French, and Spanish, together with the proper blanks, may be secured from any agent of the company in the Canal Zone, from the cashier at Colon, and from the assistant cashier at Panama.

Assignments—Any parties desiring to occupy any portion of the lands of the Panama Railroad Company will fill out regular blanks, copies of which can be secured in the offices of the General Manager and cashier at Colon, assistant cashier at Panama, or from any of the station agents of the Panama Railroad Company.

The aforementioned blank, after being filled out will be sent direct to the office of the General Manager, when arrangements will be made to cover the necessary details. No one will be permitted to occupy any land of the Panama Railroad Company excepting under certain leases, agreements or written permissions. New occupation will not be allowed until application blank as aforesaid has been properly approved by the General Manager.

Transfers—Whenever any person holding property under either a lease, agreement or written permission, desires to transfer the property to another party, regular application will be required, and the party transferring the property will be expected to show that he is the proper person holding the lands. The party to whom the property is to be transferred will also be required to sign the application for the transfer, which, after being approved, will give the new party possession of the land under lease, agreement or written permission, for the unexpired term for which the former party held the property.

Payments—The acceptance of any moneys for the private use of any employe or agent of the Panama Railroad Company is forbidden.

No moneys will be expected or accepted by any employe of the Panama Railroad Company, or any other department, in connection with these applications for assignments or for transfers, and no agent or employe of the Panama Railroad will accept any moneys in connection with the land matters without giving a regular receipt which has been properly certified to by the auditor of the Panama Railroad.

All moneys for rentals or other purposes will be paid, at Colon, to the cashier's office; at Panama, to the assistant cashier's office. At all other points to the station agents of the Panama Railroad Company. All other parties are forbidden to receive any moneys in connection with land matters, and the present system of collecting rentals through collectors is herewith abandoned. Parties offering to pay money for rentals to the cashier, assistant cashier or station agents, will be required to identify themselves by presenting their old rent receipts, so that the various parties receiving money may know that proper parties are paying the rental.

The assistant cashier and the station agents will make daily reports to the cashier, who, in turn, will make consolidated report to the auditor's office. On the first of each month, the cashier will report all outstanding accounts in connection with land matters to the General Manager and the auditor.

Staking Land—After the application for assignment or transfer has been approved by the office of the General Manager, the lots will be staked out by the engineering department of the Panama Railroad. The chief engineer's office of the Panama Railroad will be divided into three departments, namely: Construction division, maintenance of way

division, and land division. The chief engineer will receive instructions direct from the General Manager for staking out property and giving grades to which height of building must be erected in accordance with municipal requirements and sanitary rules.

No moneys will be expected or allowed to be paid to any employe of the Panama Railroad for the engineering work that may be done in this connection.

Leases, Agreements, and Written Permissions—After the lots have been staked out and the lessee indicates by his action that it is his intention to occupy the lands as per his application, a regular formal lease agreement or written permission will be issued, signed by the General Manager, and rentals will commence from the first of the succeeding month after the papers have been executed by the General Manager. This paper will be delivered to the tenant by the cashier, assistant cashier, or one of the station agents. The tenant will be required to first sign all copies of the papers, and to pay the regular price, as shown, for the stamped paper on which it may be printed, but in doing so he will receive from the party delivering the lease, a properly authorized, certified "Bills Receivable" as shown in this circular. He will, at that time, also be required to pay the first month's rent, the receipt for which will be given to him on the "Rent Form Receipt" as previously shown. The cashier, assistant cashier, or station agent securing signatures to papers, will immediately forward the original to the General Manager's office and deliver the second (carbon) copy to the tenant.

Cancellation of Privileges—Tenants who neglect to pay their rentals will be notified through the Office of the General Manager, and if they continue to neglect paying their rentals they will be removed from the property by process of law.

Legal Matters—All legal questions that may arise will be handled direct between the General Manager and the legal department.

We hope to have the hearty co-operation of all tenants in connection with these arrangements, which we know will avoid a great deal of the present confusion and annoyance.

The office of the General Manager will be available at any time for any complaints that the tenants desire to make in connection with the questions of assignments, transfers or leases, or in fact, in connection with any subject affecting the land matters of the Panama Railroad Company.

HIRAM J. SLIFER,
General Manager.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

Total membership.....	1,298
Total number of bowling games.....	4,724
Number local bowling contests.....	15
Number match bowling contests.....	9
Total number pool and billiard games.....	12,819
Number of contestants in pool tournament.....	32
Total income from soda fountain.....	\$1,640.64
Number of different men using gymnasium.....	117
Number of men enrolled in systematic gymnasium class work.....	77
Total attendance of men using gymnasium.....	631
Number of basket and indoor baseball games.....	12
Number enrolled in chess and checker clubs.....	40
Number chess contests.....	4
Number enrolled in glee clubs.....	40
Number enrolled in dramatic and minstrel clubs.....	11
Number enrolled in orchestras.....	8
Number enrolled in educational classes.....	45
Number of members of library.....	486
Total number of books withdrawn.....	1,192
Number of imported entertainments.....	5
Attendance.....	911
Number of local entertainments.....	5
Attendance.....	1,425
Number of functions outside association management.....	10
Attendance.....	1,130
Number of afternoons for women.....	35
Attendance.....	336
Number evenings to which women were invited.....	20
Attendance of women.....	805
Number of committees.....	24
Number of men on committees.....	131
Number of men called on in hospital.....	56
Number of letters written at public tables.....	5,100
Total attendance at building.....	40,987
Average per day.....	1,332

BOYS' DEPARTMENT (AGES 10-16).

Number of members.....	50
Number of afternoons open to boys.....	51
Total attendance.....	2,040
Attendance at gymnasium exercises.....	376

The Ernest Gamble Concert Party will give return entertainments as follows: Gorgona, Monday, November 23; Cristobal, Tuesday, November 24; Culebra, Wednesday, November 25; Empire, Thursday, November 26.

A championship bowling tournament in singles and doubles will be held at the Empire clubhouse on Thanksgiving Day, open to all members of the Y. M. C. A. An entry fee of \$1 gold per man will be charged for each event, and each entry must be approved by the secretary of the Y. M. C. A. of which the contestant is a member. The total pinfall for three games count in each event. The following are the prizes: Gold medal to the winner of the tournament in singles, a gold medal to each of the winners in the tournament of doubles; and a gold medal to the one making the highest individual score in the tournament. Silver medals will be presented to the men finishing second in both the singles and doubles, and bronze medals to the men finishing third in each tournament. A silver cup has been offered to be held as a permanent trophy by the association whose team makes the highest number of points in the tournament.

CULEBRA.

Great excitement prevailed at the mock municipal elections held Friday night. Three parties were in the field during the early part of the week, the People's, Conservatives, and Socialists, but on election day the People's and Socialist parties united. A parade, speeches, fireworks and music by the United States Marine Corps band wound up the active campaign. The following is a list of the successful candidates, all of whom were Conservatives except Aldermen Cushing and Ball; Judge, C. A. McIlvaine; prosecuting attorney, M. B. DePutron; city clerk, R. H. Adams; sheriff, G. M. Douglas; city treasurer, J. H. Flynn; coroner, T. E. Tragsdorf. Aldermen: Ward 1, J. H. Smith; ward 2, H. O. Hostetter; ward 3, S. E. Cushing; ward 4, H. E. Bain; councilmen-at-large: Ward 1, W. P. Copeland; ward 2, W. B. Huff; ward 3, W. J. Brown.

At the pool and billiard contest, Saturday night, between Gorgona and Culebra, Culebra won four of five matches, by the following scores: Pool—Beaman, Culebra, 100; Pierson, Gorgona, 69; Stevens, Culebra, 100; Keicher, Gorgona, 74; Tribolet, Culebra, 75; Deverest, Gorgona, 100. Billiards: Floyd, Culebra, 100; Adams, Gorgona, 90; Doty, Culebra, 100; Barlow, Gorgona, 86.

EMPIRE.

The Empire bowling team which was tied with Cristobal for first place in the league, won three straight games from that team on Saturday evening, November 14. The scores were as follows: Empire—899, 833, 816; Cristobal—761, 751, 793.

Mr. Guy C. Mitchell, of Auburn, N. Y., arrived on the *Alliance*, November 13. He will be secretary of the Y. M. C. A. at the Gorgona clubhouse.

The Y. M. C. A. Choral Club will make its first appearance on Friday evening, November 20. The club has a membership of thirty-five, and will give an entertainment known as "An Old Folks' Concert." The program will consist of five choruses by the club, music by the orchestra, quartets, duets, solos, and readings.

Misdirected Letters.

Division of Posts, Customs and Revenues,
Ancon, C. Z., November 18, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

Allison, W. W.	Mallernee, Wm. N.
Alwin, W. J.	McCafferty, John
Barnett, R. J.	Murray, Alex.
Barry, E. S.	Myke, John
Barth, G. H.	Noland, C. Powell, Jr.
Bozeman, W. J.	Orr, Wm. T.
Butler, Miss Macle	Palmer, A. M.
Davis, John M.	Potts, Frank A.
Delmois & Co., Charles	Reed, Geo. T.
Durham, Henry W.	Rouch, Mr.
Goodwyn, J. N.	Rogers, Ernest
Griffin, John J.	Sanderson, Frank E.
Grosse, Mrs. Gustav F.	Schwartzentlutzer, Joseph
Groat, F. E.	Staats, John
Harry, S. B.	Staley, Frank S.
Hernandez, Damaso	Stanley, Miss J. B.
Hyde, Wm. H.	Starbuck, D. A.
Isaza, P. Alcide	Stratton, David V.
Jole, Charles M.	Turner, Lawrence
Keloe, Wm.	Walston, W. H.
Lewis, Annie	Whaler, J. W.
Love, William	William, H. H.
Mahon, John	Woods, Anderson
Mahoney, Lewis	

The small plots of vacant ground near Pier 11 and around the cold storage plant, at Cristobal, have been seeded in grass and shrubbery has been planted in them.

PERFORMANCE OF STEAM SHOVELS

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS

The subjoined tables show the monthly records of steam shovel work in Canal excavations since American occupation

ATLANTIC DIVISION

COLON DISTRICT						GATUN LOCKS						GATUN SPILLWAY					
Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
1907—						1907—						1907—					
July	1	13	56	731	11.12	August	3.70	27	784	21,176	16.37	July	1.33	26	423	10,908	11.12
August	2	27	283	7,629	16.37	September	4.12	24	884	21,219	8.03	August	2.00	27	498	13,433	16.37
September	2	24	601	14,419	8.03	October	5.00	27	1,013	27,355	19.27	September	2.00	24	757	18,158	8.03
October	2	27	761	20,539	19.27	November	5.00	24	1,014	24,327	14.28	October	2.00	27	745	20,118	19.27
November	2	24	833	20,002	14.27	December	5.00	25	1,286	32,159	5.53	November	2.00	24	854	20,494	14.27
December	2	25	939	23,473	5.53	1908—						December	2.00	25	1,395	34,878	5.53
1908—						1908—						1908—					
January	2	26	1,218	31,418	3.18	January	5.72	26	1,302	33,840	3.18	January	3.00	26	1,264	32,863	3.18
February	2	24	1,368	32,816	1.29	February	6.01	24	1,222	29,333	1.29	February	3.75	24	1,183	28,402	1.29
March	2	26	1,574	40,925	2.81	March	7.00	26	1,206	31,366	2.81	March	4.54	26	1,311	34,139	2.81
April	2	25	1,349	33,718	1.47	April	7.00	25	1,288	32,210	1.47	April	5.00	25	1,184	29,598	1.47
May	2	25	1,087	27,167	17.30	May	5.76	25	1,156	28,891	17.30	May	4.42	25	908	22,701	17.30
June	1.8	26	684	17,790	13.33	June	4.88	26	1,129	29,364	13.33	June	3.50	26	1,117	29,045	13.33
July	1.54	26	587	15,269	13.67	July	3.77	26	1,396	36,291	13.67	July	3.00	26	981	25,514	13.67
August	.88	26	741	18,532	15.88	August	3.50	26	1,431	37,218	15.88	August	2.85	26	783	20,351	15.88
September	1.80	25	713	17,840	8.52	September	3.44	25	1,218	30,459	8.52	September	2.08	25	792	19,812	8.52
October	1.96	27	859	23,202	8.87	October	3.96	27	1,026	27,694	8.87	October	2.96	27	555	14,990	8.87

CENTRAL DIVISION

CULEBRA SECTION						CHAGRES SECTION							
Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cubic yards).		Rainfall (inches).		Maximum temperature in sun at Yampe (degrees Fahrenheit).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
			Per day.	Per month.	Empire.	Culebra.							
1906—						1906—							
January	12.83	26	363	9,430	1.28	1.19	.....	August	0.15	27	716	19,333	12.20
February	12.48	23	587	13,494	0.57	0.64	.....	September	0.92	24	976	23,420	14.71
March	12.37	27	716	19,335	0.45	1.34	.....	October	2.22	27	428	11,544	13.62
April	12.33	24	720	17,289	11.42	8.43	.....	November	3.00	24	612	14,681	9.85
May	12.41	27	581	15,684	7.54	7.25	.....	December	6.12	25	630	15,756	2.26
June	14.81	26	539	14,026	6.92	8.94	123	1908—					
July	16.64	25	378	9,441	14.61	20.26	127	January	8.11	26	797	20,720	0.20
August	16.93	27	536	14,461	11.84	12.97	132	February	10.33	24	798	19,144	0.11
September	21.33	24	568	13,664	7.41	6.22	130	March	11.47	26	1,082	28,094	0.41
October	22.67	27	532	14,373	3.97	8.46	128	April	11.76	25	1,121	28,018	1.81
November	20.46	24	459	10,833	21.05	19.19	120	May	11.68	25	808	20,197	13.18
December	22.68	25	491	12,267	8.15	9.09	108	June	12.23	26	1,013	26,341	6.55
1907—						1907—							
January	31.04	26	702	18,248	0.08	0.00	104	*After July 1, 1908, the old Chagres and Culebra divisions were consolidated in the Central Division. No separate record for steam shovels in the old divisions has been kept since that date. Figures for July and August under "Culebra Section" include work done in the whole Central Division.					
February	39.87	23	674	15,966	0.13	0.49	108	Summary for the month of October, 1908: Average number of shovels at work, 65.20. Average output per shovel per day, 831 cubic yards. Average output per shovel per month, 22,440. The working day for steam shovels is eight hours.					
March	43.88	25	741	18,530	0.16	0.08	105						
April	44.12	26	765	19,884	0.09	0.04	110						
May	31.70	26	833	21,674	6.22	7.45	118						
June	38.28	25	651	16,266	13.53	14.74	118						
July	43.38	26	680	17,670	9.85	9.42	118						
August	39.70	27	729	19,680	11.28	11.81	120						
September	38.50	24	811	19,468	10.86	11.38	123						
October	37.63	27	813	21,963	15.44	15.27	123						
November	41.88	24	784	18,818	10.40	6.91	123						
December	42.72	25	965	24,113	1.47	2.30	124						
1908—						1908—							
January	43.42	26	1,084	28,177	0.75	0.91	125						
February	43.67	24	1,186	28,475	0.00	0.01	124						
March	42.19	26	1,171	30,451	0.41	0.13	125						
April	41.28	25	1,202	30,031	1.36	1.67	127						
May	41.56	25	918	22,948	12.91	12.63	129						
June	42.92	26	1,011	26,281	8.21	8.76	126						
July (old Chagres Division included)	52.57	26	1,071	27,845	11.79	13.23	121						
August do	52.58	26	1,122	29,184	8.11	7.74	.....					
September do	49.68	25	1,178	29,443	9.76	13.74	.....					
October do	49.53	27	1,195	32,270	8.87	9.03	.....					

PACIFIC DIVISION

PEDRO MIGUEL LOCKS						MIRAFLORES LOCKS, DAMS AND SPILLWAY						LA BOCA DISTRICT					
Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
1908—						1908—						1908—					
June	0.50	26	600	19,134	4.98	March	3.50	26	746	19,418	0.00	March	1.00	26	476	12,360	0.00
July	1.00	26	626	16,282	9.53	April	4.50	25	820	20,502	0.76	April	1.00	25	452	11,300	0.76
August	1.00	26	816	21,203	9.31	May	3.75	23	487	12,174	8.65	May	1.00	25	688	17,200	8.65
September	1.84	25	608	15,204	7.56	June	3.80	26	695	18,077	4.98	June	1.00	26	562	14,630	4.97
October	2.66	27	681	18,374	8.41	July	3.80	26	930	24,179	5.66	July	1.00	26	623	16,200	5.66
						August	3.70	26	947	24,612	9.31	August	0.92	26	739	19,214	10.49
						September	3.78	25	938	23,440	7.56	September	0.97	25	750	18,743	5.93
						October	3.11	27	854	23,054	8.41	October	1.00	27	648	17,487	7.51

COMMISSARY DEPARTMENT.

COMMISSARY CORRESPONDENCE.

Patrons of the Commissary Department, when dealing with the Cristobal office, will address their individual orders, deposits, etc., to the Order Room, Commissary Department, Building No. 2, Cristobal.

Complaints should be made in separate letters and addressed to the Subsistence Officer, Building No. 2, Cristobal.

JOHN BURKE,
Manager.

Approved:
EUGENE T. WILSON,
Subsistence Officer.

SUPPLY OF OYSTERS.

One thousand gallons of oysters have been ordered by the Subsistence Department. They will be sent to the Isthmus in partial shipments, and in such quantity that they can be served at all Commission hotels at least once a week.

Rolls, baked daily, are shipped from the bakery on the afternoon passenger train from Cristobal. They are delivered to the Commission hotels along the Line on the same evening, so that employes may be served with them the following morning for breakfast.

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning November 16:

FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	6
Shoulder and neck (not under 6 pounds).....per lb	7
Entire forequarter (not under 10 pounds).....per lb	8
Leg (8 to 10 pounds).....per lb	16
Short-cut chops.....per lb	22
Lamb—Stewing.....per lb	6
Entire forequarter.....per lb	8
Leg (6 to 8 pounds).....per lb	27
Chops.....per lb	29
Veal—Stewing.....per lb	10
Entire forequarter (15 to 20 lbs).....per lb	11
Loin for roasting.....per lb	21
Chops.....per lb	22
Cutlets.....per lb	26
Beef—Suet.....per lb	4
Soup.....per lb	8
Stew.....per lb	12
Corned.....per lb, 12, 11, 16	
Pot roast (from sirloin but).....per lb	17
Rib-roast, second cut (not under 3 pounds).....per lb	19
Rib-roast, short cut (not under 3 1/2 pounds).....per lb	23
Sirloin roast.....per lb	29
Rump roast.....per lb	29
Porterly-use roast.....per lb	29
Steak, round.....per lb	23
Rib.....per lb	24
Sirloin.....per lb	29
Porterhouse.....per lb	29
Rump.....per lb	29
Tenderloin.....per lb	30

MISCELLANEOUS.

Livers—Beef.....per lb	11 1/2
Calif.....each	65
Sausage—Pork.....per lb	15
Leberwurst.....per lb	17
Sweet bread—Veal.....each	1.20
Beef.....per lb	30
Pigs' feet.....per lb	14
Eggs, fresh.....dozen	40

POULTRY AND GAME.

Chickens—Fancy Roasting, large, each, 1.40 and 1.10
Fowls, medium and large.....each, 80c. and 1.00

Ducks, fatted.....each	1.22
Turkeys.....per lb	24
Squabs.....each	45
Capon.....each	2.40

CURED AND PICKLED MEATS

Bacon—Strips.....per lb	23
English, breakfast sliced.....per lb	826
Ham—Sugar-cured, sliced.....per lb	825
One-half, for boiling.....per lb	821
Ferris.....per lb	20
Berf, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	40
Cheese—Neufchatel.....each	6
Swiss.....per lb	31
Edam.....each	1 05
Camembert.....per lb	13
McLaren's.....per lb	15
Pinxter's.....per lb	22
Gouda.....per lb	34
French cheese in tin—Camembert, Roquefort, Brie, Neufchatel.....tin	21
Milk, Briarellif.....bottle	25

VEGETABLES AND FRUITS.

Lettuce.....per lb	12
Cauliflower.....per lb	10
White potatoes.....per lb	3 1/2
Sweet potatoes.....per lb	2 1/2
Cabbage.....per lb	4
Onions.....per lb	3 1/2
Cucumbers.....per lb	18
Yams.....per lb	3 1/2
Beets.....per lb	3
Celery.....bunch	15
Turriips.....per lb	3
Lemons.....dozen	24
Oranges.....dozen	18
Apples.....per lb	5
Pears.....per lb	10
Grapefruit.....each	3
Grapes, Malaga.....per lb	15
Cranberries.....per lb	12

§ Sold only from cold-storage and not from Commissaries.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, November 14, 1908:

	STATIONS.					
	Vigia.	Alhajuela.	Gambou.	Bohio.	Gatun (W. Diver'n).	Gatun (Canal).
Height of low water above mean sea level, feet.....	129	92	46	0	0	0
Maximum height above low water, feet:						
Sunday, Nov. 8.....	2.4	2.9	4.8	10.4	5.8	7.6
Monday, Nov. 9.....	3.4	2.6	4.5	8.6	4.1	5.8
Tuesday, Nov. 10.....	3.4	2.2	4.5	7.9	3.5	4.4
Wed'n'sday, Nov. 11.....	12.9	8.9	13.0	12.6	4.7	6.6
Thursday, Nov. 12.....	5.9	5.2	13.0	15.0	6.9	9.1
Friday, Nov. 13.....	3.0	2.4	4.7	11.2	6.4	8.4
Saturday, Nov. 14.....	6.1	5.4	8.4	11.8	4.7	6.4
Maximum for week.....	12.9	8.9	13.0	16.0	6.9	9.1

Rainfall, November 1 to 14, 1908, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total.
<i>Atlantic Division—</i>		
Cristobal.....	3.65	13.57
Brazos Brook.....	2.31	10.22
Gatun.....	2.36	9.29
Bohio.....	2.03	8.22
<i>Central Division—</i>		
Tabernilla.....	.88	4.16
San Pablo.....	.83	4.30
Bas Obispo.....	1.32	4.49
Gambou.....	.60	4.53
Empire.....	.40	2.09
Camacho.....	1.67	4.30
Culebra.....	.49	2.18
Rio Grande.....	.72	2.57
<i>Pacific Division—</i>		
Pedro Miguel.....	2.24	5.95
La Boca.....	.95	4.34
Ancon.....	1.00	5.7
<i>Atlantic Coast—</i>		
Porlo Bello.....	.....	.....
<i>Upper Chagres.</i>		
El Vigia.....	1.85	7.77
Alhajuela.....	1.35	5.37

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.

Magdalena.....R.-M.....Saturday	Nov. 14
Panama.....P. R. R.....Tuesday	Nov. 17
Prinz Joachi.....H.-A.....Saturday	Nov. 21
Finance.....P. R. R.....Monday	Nov. 23
Orinoco.....R.-M.....Saturday	Nov. 28
Advance.....P. R. R.....Saturday	Nov. 28
Allianca.....P. R. R.....Thursday	Dec. 3
Prinz Aug. Wilhelm.....H.-A.....Saturday	Dec. 5
Colon.....P. R. R.....Tuesday	Dec. 8
Atrato.....R.-M.....Saturday	Dec. 12
Panama.....P. R. R.....Monday	Dec. 14
Finance.....P. R. R.....Saturday	Dec. 19
Prinz Joachim.....H.-A.....Saturday	Dec. 19
Advance.....P. R. R.....Thursday	Dec. 24
Trent.....R.-M.....Saturday	Dec. 26
Allianca.....P. R. R.....Tuesday	Dec. 29
Colon.....P. R. R.....Monday	Jan. 4
Panama.....P. R. R.....Saturday	Jan. 9
Finance.....P. R. R.....Thursday	Jan. 14
Advance.....P. R. R.....Tuesday	Jan. 19
Allianca.....P. R. R.....Monday	Jan. 25
Colon.....P. R. R.....Saturday	Jan. 30

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

FROM COLON TO NEW YORK

Allianca.....P. R. R.....Friday	Nov. 20
Prinz Aug. Wilhelm.....H.-A.....Tuesday	Nov. 24
Colon.....P. R. R.....Wednesday	Nov. 25
Panama.....P. R. R.....Monday	Nov. 30
Atrato.....R.-M.....Tuesday	Dec. 1
Finance.....P. R. R.....Sunday	Dec. 6
Prinz Joachim.....H.-A.....Tuesday	Dec. 8
Advance.....P. R. R.....Friday	Dec. 11
Trent.....R.-M.....Tuesday	Dec. 15
Allianca.....P. R. R.....Wednesday	Dec. 16
Colon.....P. R. R.....Monday	Dec. 21
Prinz Aug. Wilhelm.....H.-A.....Tuesday	Dec. 22
Panama.....P. R. R.....Sunday	Dec. 27
Tagus.....R.-M.....Tuesday	Dec. 29
Finance.....P. R. R.....Friday	Jan. 1
Prinz Joachim.....H.-A.....Tuesday	Jan. 5
Advance.....P. R. R.....Wednesday	Jan. 6
Allianca.....P. R. R.....Monday	Jan. 11
Colon.....P. R. R.....Sunday	Jan. 17
Panama.....P. R. R.....Friday	Jan. 22
Finance.....P. R. R.....Wednesday	Jan. 27
Advance.....P. R. R.....Monday	Feb. 1
Allianca.....P. R. R.....Sunday	Feb. 7
Colon.....P. R. R.....Friday	Feb. 12

FROM NEW ORLEANS TO COLON.

Parismina.....U.F.C.....Saturday	Nov. 21
Heredia.....U.F.C.....Saturday	Nov. 28

FROM COLON TO NEW ORLEANS.

Cartago.....U.F.C.....Tuesday	Nov. 24
Parismina.....U.F.C.....Tuesday	Dec. 1

FROM COLON TO BARBADOS, CALLING AT TRINIDAD.

Magdalena.....R.-M.....Tuesday	Nov. 24
Orinoco.....R.-M.....Tuesday	Dec. 3
Atrato.....R.-M.....Tuesday	Dec. 22
Trent.....R.-M.....Tuesday	Jan. 5

FROM COLON TO NEW ORLEANS VIA KINGSTON.

Jamaican.....Leyland Line, about	Nov. 22
Antillan.....Leyland Line, about	Nov. 30

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The following steamers have recently arrived at La Boca: November 7, *Barracouta* from Central America; November 8, Salvadorian cruiser, *Presidente* from Salvador; November 10, *Newport* from San Francisco; November 13, *Panama* from Valparaiso. Departures were: November 10, *Cecil* for southern ports; November 11, *Peru* for San Francisco, and *Chile* for Valparaiso.



The Canal Record

Published weekly under the authority and supervision of the
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"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Vacations in Jamaica.

On recommendation of the Chief Sanitary Officer, the Chairman of the Isthmian Canal Commission has decided to include in the list of places where employes may take their annual leave, the parishes of Manchester, St. Anne and St. Andrew in Jamaica, as these parishes are above an altitude of 3,000 feet and will afford the change of climate required by Commission regulations.

New Interlocking Switches.

A modern system of interlocking switches was put in operation at the Las Cascadas yard on Monday, November 23. The tower is at the north end of the railroad station, and the eight levers assembled there operate three switches, four signals and one derailling switch.

This improvement in the yard will enable empty trains, returning from the dump at Tabernilla, to be run into the Whitehouse yard without loss of time, as the switching will be done mechanically instead of by hand.

Canal Medals.

The design for the medals which, in accordance with the proposals of President Roosevelt, are to be distributed to all employes of the Isthmian Canal Commission who have served two years or more on the Canal work, has been finished by Victor D. Brenner, the medalist in charge of the work, and he is now cutting the dies. The medal will be about an inch and a half in diameter, or the size of a Panama silver dollar, and will be struck in bronze. On the obverse there will be a portrait of President Roosevelt which was modelled by Mr. Brenner at Oyster Bay, in July last. It is a three-quarter view of Mr. Roosevelt, facing to the left. Around the border will be the inscription "For two years' continuous service on the Panama Canal."

The reverse of the medal bears a bird's-eye

view of the Culebra Cut, in the finished Canal, with steamers passing through, with Gold Hill to the left and Contractor's Hill to the right. Above the horizon, in incised letters, is inscribed, "The Land Divided, the World United," and around the rim, "Presented by the President of the United States." Below appears the shield of Panama and under it will be the name of the recipient on a name plate. Each medal will be numbered in a circle below the portrait, and will hang from a suspension bar. With each year's additional service on the Canal a bar will be added. It is expected that the medals will be awarded in December.

Sunken French Dredge.

The sea-going ladder dredge *Gopher*, which is working its way up the Canal prism from La Boca toward Corozal, has encountered an old French ladder dredge of the Belgian type, which had been sunk at a point where the Rio Grande crosses the old French canal, about a mile above La Boca wharf. The dredge had apparently been turned over and sunk in the same position in which it had been at work as the side chains, stern chains and head chains were still fastened to their moorings. In addition to these, other chains, probably used for moorings, have been found at various points in and across the Canal prism, and a diver has been kept constantly at work for some time past in locating and making fast to them so that they could be taken up and a free passage made for the *Gopher*. Up to this time over 10,000 linear feet or nearly two miles of chain have been removed. This work has to be done in order to prevent the old chain from becoming entangled in the dredge machinery. The old dredge will have to be blown up by dynamite and removed by the wrecking barge.

Boiler Equipment for Gatun and Miraflores.

The contract for twelve boilers with uptakes, breeching, and induced draft system, to be used in the power plants at Gatun Locks and Miraflores Locks was awarded, on September 27, to the D'Olier Engineering Company of Philadelphia. The equipment for each plant will include six boilers.

Each of the boilers specified has a nominal rating of 400-horsepower, is equipped with Foster superheaters, and will generate steam at 205 pounds absolute pressure, and 150 degrees Fahrenheit of superheat. The grate area will be 66½ square feet, and the furnace volume 400 cubic feet. The boilers are designed with a large combustion furnace for the use of oil as fuel, but they are also to be fitted with Ajax shaking grates in order that coal may be used if the emergency arises. The induced draft system includes fans of the Sturtevant Company's make, one fan to be driven by a vertical engine, and the other by an electric motor. A motor-

driven air compressor to furnish air for cleaning the generators and high tension electrical apparatus is also included in the contract. All the steam piping in the boiler room, two vertical boiler feed pumps, and a Cochraue open feed water heater will be part of the plant. The contractors have sublet the contract for the water tube boilers to the E. Keeler Company of Williamsport, Pa.

The power plant at Miraflores, for which six of the boilers are intended, will be the plant that will furnish the power in the construction of the locks and, after the completion of the Canal, for operating them in the emergency of the hydraulic plant giving out. At Gatun Locks the plant will furnish the power for unloading at the dock, for the motors on the lock cableways, and for the cable road which will be used in the construction of the locks, and it will probably be maintained as an emergency plant after the Canal is completed. The plant for operating the locks at Gatun will be a hydraulic power plant using water wasted from Gatun Lake.

October Report of Quarters.

The report of the Chief Quartermaster for the month of October shows that among "gold" employes, 1,407 quarters, divided among 751 buildings, were occupied by married employes and their families, and that 3,294 bachelors lived in 1,950 rooms, in 179 buildings.

Among European (silver) employes, 335 quarters in 80 buildings were occupied by married European laborers and their families and 5,015 Europeans were in bachelors' quarters, divided among 135 rooms in 129 buildings.

The married West Indian laborers (silver employes) were living in 1,013 quarters divided among 231 buildings, and 5,545 West Indian bachelors lived in 247 rooms in 134 buildings.

Work at La Boca.

The dredging for the basin at the new landing stage for oil ships at La Boca is completed, and the pipe and moorings have been placed in position. The pipe to the old landing stage is being taken up and the dredge *Mole* is making a deep water channel from the Canal prism to the marine shops. The pipe to the old landing stage crossed the ship channel to the marine shop and was only six feet below the surface of the water at low tide, thus preventing ships from reaching the shipyard except at high tide. When the new channel is completed ships will be able to go to the shipyard at any stage of the tide.

Five of the small boats in use with the dredging fleet at La Boca have had gasoline motors installed, three skiffs have had a 3-horsepower motor put in, and two whale

NOTES OF PROGRESS.

(Continued).

boats, each 28 feet long, have had 8-horse-power motors installed. This will expedite work in the fleet, as the dredges are working too far apart to make rowing economical.

Visit of the Pacific Fleet.

The First Squadron of the Pacific fleet under the command of Rear Admiral William T. Swinburne, will sail from Magdalena Bay, December 1, and should arrive at Panama, December 12. The squadron is divided into two divisions, each in command of a rear admiral, and is made up of the following armored cruisers:

First Division—West Virginia (flagship of Rear Admiral Swinburne), Capt. Alexander McCrackin; *Colorado*, Capt. Edmund B. Underwood; *Maryland*, Capt. Moses L. Wood; *Pennsylvania*, Capt. Frank A. Wilner.

Second Division—Rear Admiral Uriel Sebree, commanding; *Tennessee* (flagship of Rear Admiral Sebree), Capt. Bradley A. Fiske; *California*, Capt. Vincendon L. Cottman; *South Dakota*, Capt. Charles E. Fox; *Washington*, Capt. Austin M. Knight. The gunboat *Yorktown*, Commander James H. Glennon accompanies the squadron.

The fleet will be at anchor in Panama Bay from December 12 to December 22, when it will sail for Talcahuano, Chile, where it will remain from January 4 to January 14. From there it will go to Coquimbo, Chile, for five days, January 17 to January 22, and on January 27 it will arrive at Callao, Peru, where it will remain until February 10. On that date the fleet will sail for Panama where it is due February 22 and will remain here until March 4 when the squadron will sail for northern ports for target practice and maneuvers.

Canal Zone Not Under U. S. Constitution.

The Supreme Court of the United States, on November 9, dismissed the appeal in the case of Adolphus Coulson, convicted of murder at Gorgona and sentenced to be hanged in January, 1907. In dismissing the appeal no written decision was rendered by the Court, but its action in effect confirms the decision of the Supreme Court of the Canal Zone.

Adolphus Coulson, a Barbadian negro, killed his wife at Gorgona in January, 1907. He was tried in February, 1907, in the Second Circuit Court, before Judge Gudger and Messrs. Johnson and Fagan, mayors of Empire and Gorgona, respectively, under the provisions governing trial in capital cases contained in the Code of Criminal Procedure of the Zone, adopted by the Canal Commission in 1904, and in force until February 6, 1908, when the Executive Order providing for jury trial in such cases was issued. On the trial of the case, Coulson's counsel asked for a jury, which was denied. The evidence of Coulson's guilt, introduced at the trial was conclusive. After his conviction the case was appealed to the Supreme Court of the Canal Zone.

The only question raised in that court was the defendant's right to trial by jury, under the Constitution of the United States; it was argued that the denial of trial by jury was in contravention of the provisions of the Fifth and Sixth Amendments of the Constitution, that no person shall be deprived of life, lib-

erty or property without due process of law, and that in all criminal prosecutions the accused shall enjoy the right to a speedy and public trial by an impartial jury. The Supreme Court of the Zone, holding that legal proceedings according to the rules and forms established in the Canal Zone for the protection of private rights meet the Constitutional requirements of due process of law, after quoting from a decision of the Supreme Court of the United States, to the effect that "the Constitution is applicable to territories acquired by purchase or conquest only when and so far as Congress shall so direct," decided "that the Canal Zone is territory in the use and occupation of the United States of America, under its control, but not such territory that the Constitution would be legislative in, and of its own force carry its rights, privileges and limitations into."

Coulson, who was sentenced to be hanged on September 13, 1907, was, on August 30, 1907, reprieved pending the hearing and determination of the appeal in the United States Supreme Court. The date of his execution has not yet been fixed.

First Execution in Canal Zone.

Hubert Stout, a Barbadian negro, was hanged at the Zone penitentiary at Culebra, on November 20. Stout was convicted in the Second Circuit Court, at Empire, on May 6, 1908, of the murder of Josephine Phillipe, also a Barbadian negro, at Gorgona, on March 7, 1903. He was tried by a jury, under the provisions of the Executive Order of February 6, 1908. (see THE CANAL RECORD of February 26), and the conviction and sentence of death were affirmed, on appeal, by the Supreme Court of the Zone.

Stout's execution was the first in the Canal Zone since the organization of the Zone government.

The Cartago Ashore.

The United Fruit Company's steamer *Cartago*, one of the new boats of their fleet, which sailed from New Orleans on Saturday, November 14, went ashore on Utila Island off the coast of Honduras, about 110 miles from Puerto Barrios, on Thursday, November 19. The passengers are all safe and will be brought to Colon on the *Parismina*, which sailed from New Orleans on November 21, due at Colon, November 27. Wrecking vessels began work on November 23, and it is expected that the *Cartago* can be floated after her cargo and ballast have been removed.

Experimental Ovens.

The Subsistence Department has ordered four ovens of different type for experimental purposes at Commission hotels. It is the intention to use them for baking rolls, biscuit and other forms of fresh bread, and after a series of tests the kind best adapted for service on the Isthmus will be adopted and a number purchased to supply all the Commission hotels in the Zone.

Standard Specifications for Structural Steel.

The committee appointed by the Chief Engineer to prepare standard specifications which may be used to define the quality of material and of structural steel, with a view to secure uniformity in similar structures in the various divisions, has made its report. The preamble of the report discusses the subject under the headings "Loads," "Unit

Strains," "Material," "Shop Inspections" "Painting," and "General Requirements."

Masonic Work in Colon.

THE CANAL RECORD:

Sojourners' Lodge, No. 874, A. F. and A. M., holding of the grand lodge of Scotland, met Saturday evening, November 21, 1908, in extraordinary communication, in its hall at Fifth and Bolivar streets, Colon, and worked the third degree on four candidates, in the presence of fifty members representing the following jurisdictions; Scotland, England, Kansas, Rhode Island, Missouri, Pennsylvania, Iowa, Vermont, Louisiana, Minnesota, Georgia, Michigan, Massachusetts, Ohio, Washington, Illinois, and New York.

The degree was conferred by Right Worshipful Master Clinton G. Carty, assisted by Past Masters Ransom Stephens, (formerly assistant lecturer grand lodge of Kansas), Edmund W. Levy, England, and Graham G. DeEdge, Scotland. After work was completed, banquet was served in the Washington Hotel.

This lodge will meet in postponed ordinary communication, on Saturday, November 28, at 8 p. m., for ordinary business, including election of office bearers for the ensuing Masonic year. Sojourning Masons in good standing are fraternally invited to attend.

C. A. LESTER,
of Gate City Lodge, No. 522, Kansas City, Mo.
Cristobal, Nov. 22, 1908.

Pacific Masonic Club.

THE CANAL RECORD:

At the meeting of the Pacific Masonic Club on November 21, ten members were initiated into the mysteries of the ancient order of humility. The charter for this order will be held open until January 1, 1909, after which it will be closed and a membership fee of \$1 charged, to be used for the benefit of the new library.

There will be a class of twenty, on Saturday, November 28, and any Master Mason wishing to receive this degree will please communicate with the secretary at the earliest possible date.

Masonic clubs on the Line who desire to have this work done by the Ancon team will please notify the secretary at least ten days in advance.

Master Masons who have not yet affiliated with the clubs are cordially invited to meet with us.

H. A. GUDGER, *President*.
ROLLIN S. STILES, *Secretary*.
Ancon, C. Z., Nov. 22, 1908.

A committee has been appointed by the Chairman to consider the advisability of discontinuing the use of the hotel and commissary coupon books and substituting a system that will require less bookkeeping than the present one.

LOST—Class-pin bearing letters "Clio" interwoven in a crescent set with small pearls. Reward will be paid for return of this pin to the office of THE CANAL RECORD.

LOST—A gold ring has been lost on the beach at Ancon Cove, Taboga Island. The finder will be rewarded by returning this ring to Frank Anderson, Gatun, Canal Zone.

FOUND—A lady's rain coat was found in the dressing room of Lincoln House, Colon, after the dance on October 31. A brass door key and handkerchief were in the pocket. The coat was apparently left by mistake in identification as a smaller rain coat is missing. If the lady who has the smaller coat will communicate with Mrs. W. T. Coburn, Ancon, an exchange will be made.

DREDGING.

Work of the Sea-going Suction Dredges Ancon and Culebra.

The sea-going suction dredges *Ancon* and *Culebra* work twenty-four hours a day, six days a week, and the seventh day they spend not in rest, but in making ready for the six days to follow. In the making of the Canal each of them is doing the work of eight very good steam shovels and several dump trains, for an ordinary day's record is 15,000 cubic yards of material pumped from the prism. Each in itself epitomizes the whole great work, is a village like one of the Canal Zone settlements, for it is at once the place where men work, rest, eat, and sleep. Each of them has its quarters, mess halls, machine shop, power house, and tools for excavating; and the spirit of the men in each is like that of every Zone settlement—to make next week's work count for more than that of the week just passed. They are large ships, these dredges, 288 feet over all, 47½ foot beam, and 25 feet deep. They came to their work under their own steam from Chesapeake Bay, and one of them, the *Culebra*, made the long journey through the Strait of Magellan.

The *Ancon* is working in Limon Bay, from the point where the water is 45 feet deep, in toward the shore. She is making a channel 40 feet deep at mean sea-level, and 500 feet wide. Already 4,175,342 cubic yards of earth have been pumped into her mud bins and dropped out in deep water in the Caribbean Sea. A similar amount of work on land would make a big cut in a large hill, and people would see and comment on it. But the *Ancon* leaves no trail behind, no visible sign of the work, for the channel in Limon Bay does not show even at low water. Only the men on the ship, and the engineer who takes the cross section measurements, or an occasional leadman who casts just for curiosity, know that the channel is there, from one to thirty feet below the adjacent bottom.

It is a trifle different with the *Culebra*, which is dredging at the Pacific entrance in the Bay of Panama. One standing on the docks at La Boca, when the tide is low, can see the channel in which the *Culebra* is working, because the mud flits on either side rise above the water. The difference is only apparent, however, for the *Culebra*, also, is doing most of her work invisibly. In the ten months since she first lowered her suction pipes in the prism of the Canal she has excavated 3,852,794 cubic yards.

One night recently as the *Culebra* turned in the channel near the end of La Boca wharf she dropped her two suction pipes, one on either side the ship, into the mud of Panama Bay, started her 20-inch centrifugal pumps, and moved slowly down the prism of the Canal with two streams of mud rushing into each of her two big bins.

On the bridge, under the eye of the captain, two men turned the wheels that lowered the suction pipes or raised them as the contour of the bottom required. This is important work, for if the shoe at the end of the pipe rests too deep in the mud the pumps will not do their best work, while if it is raised a few inches too far above the bottom, little more than water will be poured into the mud bins. From habit the "pipe man" knows by the feel of his wheel and the

sound of the water falling into the bin, whether the shoe is in its proper position. Said one of them: "The man at the pipe makes the yardage."

In the kitchen the steward and his assistants were finishing their dinner work and preparing for breakfast. The crew works in four-hour watches, each shift being on duty two watches a day, and therefore the steward's work is continuous. He serves four meals a day—at 6 a. m., 12 noon, 6 p. m., and at midnight. Sixty men are not a big mess, but they don't all eat at one time. The food in the cabin is the same as that in the forecabin, and is much like the ordinary Commission hotel fare. "We don't handle yardage here," the steward said, "but the records wouldn't amount to much if the 'chow' gave out."

No one was at work in the ship's machine shop, but the tools were ready, and to begin repairs would be a matter of only a few minutes. In the pump room, on the third deck, the engines were turning with little or no noise, or at least no noise that could be distinguished in the rattle and chng of of the two big pumps, as they drew up from the bay and forced toward the mud bins, mud, rock, chain, anything that could pass through the 6 by 9-inch holes of the dredge shoe. Below the pump room was another engine room where the twin screws of the ship are driven, and there, too, the noise of the pumps penetrated and subdued all other sounds. A young man with a wad of cotton waste in his hand, smiled knowingly: "A dredge is an engine and a pump. We are making the yardage right down here."

It is so warm in the stoke hole, that stokers often leave the ship the day they are hired, after only one visit to the boiler room. One hundred and thirty degrees is an ordinary temperature, and the conditions are much better since a new ventilator was installed some months ago. They are using coal on the *Culebra*, although most of the floating equipment at La Boca has oil installation. "Getting down to first principles," said the chief engineer, "these are the men that run the dredge."

Forty minutes after the ship had turned for her seaward run, the pumps were stopped, the suction pipes were raised, and the run to the dumping grounds was begun. The captain was overseeing the gauging of the mud in the forward bin. Each of the bins is 20 feet deep and their combined capacity is nominally 2,400 cubic yards of material. The soundings in three different parts of the bin showed 12 feet of solid material under the water, and the experience is that this is about the average. Sixty per cent of the bin capacity is counted as the yardage. It was suggested to the captain that his dredge was working very smoothly. "Yes," he said, "we made 431,537 yards in October. But then dredging is easy with a crew like mine. Not a loifer in the lot."

The mud flats half a mile or more from the channel is the place where the *Culebra* dumps her spoil. All the work is done by power. An engine turns the machinery that drops the bottom of each bin, letting the mud into the sea, and then closes the doors again. When the spoil is disposed of the ship turns back toward the docks, and half an hour later the pumps are started and the work of excavating is resumed. On an average the dredge makes 10 trips a day, exca-

vating over a distance of two miles, and on each trip she makes two furrows in the bottom of the bay, each five feet wide. It is not possible so to steer the ship that each successive furrow will join with its predecessor, but wave action and the cross cutting of the dredge tend to make the bottom level, wearing off the high ridges and filling in the valleys. In places the cut runs down to 50 feet below mean sea-level, 20 feet more than is necessary, but this can not be regulated easily, as dredging at its best is more or less blind. The result, however, will be a channel not less than 40 feet deep at mean tide, although in many places it may be deeper, as the *Culebra* can dredge 60 feet below her water line.

Nothing that is small enough to pass through the 6 by 9-inch holes in the shoe can escape the suction of the *Ancon* and *Culebra*. The most favorable material is gravel, because it lies loose on the bottom, and the most difficult is heavy clay or rock. Solid rock can not be excavated, but lumps almost as big as a man's head are carried through the pumps without harmful effects. Recently the *Culebra* drew ten fathoms of chain from the bottom of the bay and passed it through one of the centrifugal pumps into the bin, and that is probably the strangest performance in Isthmian dredging, for it is difficult to understand how so much chain could pass through the pumps without becoming entangled. Not long ago the *Ancon* lifted a cannon ball from the bottom of Limon Bay. Fish, eels, shells, and rock poured into the bins are so common that they no longer cause comment.

On Sunday morning the *Culebra* ties up at La Boca to make light repairs, to coal, and to give her crew a few hours shore leave. The *Ancon* ties up at Cristobal for like purposes. On Monday both of them are at work again, and until the following Sunday morning their engines never rest.

Atlantic Division Steam Shovels.

The steam shovels of the Atlantic Division excavated 216,961 cubic yards in October. The best records for the month follow:

MINDI.				
Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
101	4,280	17,290	21,570	26
133	2,103	17,669	19,772	22
GATUN LOCKS.				
129	5,285	29,223	35,113	27
134 ....	.....	34,731	34,731	27
SPILLWAY—GATUN DAM.				
135	22,690	2,500	25,190	26

The best daily records were as follows:

Shovel No.	Location.	Date.	Character material excavated.	Cubic yds. excavated.
102	Gatun Locks.....	Oct. 20	Rock	1,883
139	Gatun Locks.....	Oct. 13	Rock	1,855
135	Gatun spillway.....	Oct. 8	Clay and rock..	1,800
119	Gatun spillway.....	Oct. 20	Clay and rock..	1,220
133	Mindi	Oct. 19	Clay and rock..	1,592
101	Mindi	Oct. 30	Clay and rock..	1,417

The Panama Railroad Company will operate its regular Sunday schedule of passenger trains on November 26, Thanksgiving Day.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Pedro Miguel Social Club and the Woman's Club combined to make the bazaar held at the Club rooms on Saturday evening, November 14, one of the most successful events ever given in the town. The rooms were decorated with palms and flags, and the several booths were made attractive with decorations of different colors. The candy booth, presided over and furnished by the president of the Woman's Club, was decorated with the club colors, royal purple and yellow. The red and cream of the Social Club were used in the decoration of the scales, and Mrs. Bitely and Mr. Kernealy were in charge. The fancy work booth was in red and white, with Mrs. Barnes and Mr. Hobby in charge. The prize offered for the most attractive decoration was awarded to this booth. A gypsy camp, with Mrs. Vacher as fortune teller; a fish pond, run by Mrs. Connell and Mr. Piper; grab bag for the children, Mrs. Roberts; and a wheel of fortune, operated by Mr. H. Henderson, were all attractive features. All the articles sold were donated by Pedro Miguel residents and the proceeds, \$243, have been divided between the Social Club and the Woman's Club and will be devoted to the children's Christmas festival. A special train from Paraiso brought a large crowd.

The Pedro Miguel Woman's Club met at the club room on Wednesday, November 18. In addition to regular business the arrangements for the Christmas celebration were advanced.

The literary meeting of the Cristobal Woman's Club was held November 18, and was well attended. Special invitations had been extended to the mothers having children in the Cristobal and Colon schools. An address was given by Prof. H. L. Smith, Superintendent of Schools, on child life and its nature and the responsibilities of the home and school in the training and developing of the young. At the close of the address those present were given an opportunity to meet the speaker in the half hour when refreshments were served by the social committee. On Monday, November 23, the Shakespeare study class met, "Macbeth" being the subject for the afternoon. The music study class takes up the subject of early operas and singers at its next meeting, December 14.

The reorganization of the Paraiso Woman's Club was affected on Thursday afternoon, November 19, ten charter members having enrolled. Women who were unable to be present at the first meeting have requested that the charter remain open until a future date. The chair was taken by Mrs. E. S. Waid, for the purpose of organization, and the following officers were elected: President, Mrs. E. B. Healy; vice-president, Mrs. McIntyre; secretary, Mrs. Wm. Downs; treasurer, Mrs. McLaughlin. The next meeting will be held on Thursday, December 3, when the organization will be completed and placed on a working basis.

The Ancon Woman's Club held its program meeting November 18, the guest of honor being Mr. Joseph Lefevre, Minister of Public Works, Republic of Panama, who gave an interesting survey of the history of Pan-

ama from the time of Columbus to the present day. There was a large attendance. The executive board held a called meeting the same day for the purpose of discussing bazaar matters. The sale will be open on the afternoons and evenings of December 4 and 5. All articles left over on the second evening will be sold at auction. Attractive booths are being arranged by the departments, and books, pictures, calendars and fancy articles will be sold. A Japanese tea room, a children's room, and a fortune teller are promised as special features. The regular meeting of the literary and educational department was held on Tuesday of this week instead of Wednesday as usual. The other departments have suspended meetings until after the bazaar. The next program meeting will be held December 2. The regular roll call will be answered with Indian legends. The club will issue its year book early next month.

The date of the January meeting of the Federation, which will be held in Ancon by invitation of the Ancon club, has not yet been fixed, but it will take place after the 15th of the month.

There was a large attendance at the meeting of the Las Cascadas Woman's Club, which was held at the residence of Mrs. F. S. Grosby, on November 19. It was a social meeting, and refreshments were served by the entertainment committee.

The cake sale, arranged by the Women's Guild, for the benefit of St. Luke's Church, Ancon, was held at the chaplain's house on afternoon and evening of November 20. The proceeds, about \$50, will be used to defray the expense of the Guild in the purchase of hangings and decorations for the new chapel, which, it is expected, will be open on Christmas Day.

Thanksgiving Day will be observed by special services at the Protestant chapel, Ancon Hospital, which will be suitably decorated for the occasion. Rt. Rev. Albion W. Knight, D. D., bishop of Cuba, who arrived on the Isthmus on November 23, for his second official visit, is expected to preach the sermon at the 9 o'clock service.

The Gatun Woman's Club met at the home of Mrs. W. C. Story, Friday, November 20, the president, Mrs. E. L. Bandy, in the chair. Nearly all the members of the club were present. The following chairmen of standing committees were appointed: Educational, Mrs. H. K. Higgins; domestic or philanthropy, Mrs. C. G. Carty; musical, Mrs. C. D. Corp. Mrs. Corp was also appointed chairman of the committee on the revision of by-laws, with Mrs. A. T. McCulloch, assistant. A calendar for the year, presented by a committee which included the president, was adopted by unanimous vote of the club. The schedule calls for a meeting on every Friday at 3 o'clock, in the following order: First Friday, business meeting; second, study, subject for the year, Panama; third, club program, furnished by the members; fourth, program, paper or address by an invited guest. The calendar is arranged up to May 1 and the programs will be varied and interesting. A year book containing all announcements will be issued shortly.

The sale of the Gatun "Sunshine" Club was held in the club room over the Commission hotel on Monday November 23.

The Christian Endeavor and other organ-

izations at Gatun are keeping up their interest well and add greatly to the life of the residents. The Christmas entertainment promises well. The teachers of the school have undertaken to drill the children for their share in the program.

The Wizard's Club will give a dance at the clubhouse, Empire, on Thanksgiving eve.

The program meeting of the Empire Woman's Club held on Tuesday, November 17 was well attended. The subjects chosen were as follows: "What I am thankful for in the Canal Zone," by the president. "The Spirit of Thanksgiving," by Mrs. H. C. Ball, and "The First Thanksgiving Proclamation." Musical numbers were given by Mrs. McTyrie and Mrs. F. M. Bell. The club will hold its meeting every alternate Thursday beginning with December 10, the next regular meeting.

PERSONAL.

Commissioner Jo C. S. Blackburn, accompanied by Mrs. Blackburn, sailed for the States on the *Colon* on Wednesday, November 25, for eight weeks' leave of absence.

Col. W. C. Gorgas, of the Isthmian Canal Commission, accompanied by Mrs. Gorgas, Miss Gorgas, Miss Laura Carter, Miss Keene, of Philadelphia, and Judge Evans, of Cincinnati, sailed for Valparaiso, Chile, on the P. S. N. Co. steamship *Panama* from La Boca, on Monday, November 23. Col. Gorgas was appointed by the Secretary of State one of the ten delegates from the United States to the Pan-American Scientific Congress, which will meet at Santiago, Chile, on December 25. He will present a paper during the sessions of the Congress, on "The Control of Yellow Fever in the Tropics." Colonel Gorgas expects to return to the Isthmus on February 8. Dr. Pedro Obarrio, Superintendent of Santo Tomas Hospital, Panama, a delegate to the Congress from the Republic of Panama, also sailed on the same steamer with Colonel Gorgas.

Mr. F. G. Maltby, formerly in the Isthmian Canal service, is expected to arrive on the Isthmus November 30. He will have charge, for the contractors, of the construction of the handling plant at Gatun.

Obituary.

Charles Vanne, of Baltimore, Md., died at Ancon Hospital on November 18. He came to the Isthmus about five years ago, was 62 years of age, unmarried, and was employed in the printing office of the Commission at Panama.

Missing Man.

Mr. Brent Woodall, of Covington, Ky., secretary of the University of Cincinnati and nephew of Dr. C. W. Dabney, head of that institution, disappeared from his home on November 1, and it is believed that he came to the Isthmus. If he will call on J. W. Belt, Administration Building, Ancon, he will receive information which will be valuable to him.

The grading of the road for the highway to connect Corozal with Camp Diablo is nearly complete and plans are being prepared for an extension of the Panama-Corozal road toward Miraflores. Work will begin on the extension as soon as the plans are approved.

CHAGRES RIVER TOPOGRAPHY.

Survey Begun on the Basin Above Gamboa.

A topographical survey of the watershed of the Chagres River was begun on November 11, when a party of three engineers and fifteen laborers made a camp on the Chilibre River above Gamboa. The survey is undertaken to determine as accurately as necessary the drainage area of the river in order to estimate as closely as possible the water supply for Gatun Lake. It will be a traverse survey, and will be extended to the limits of the watershed. The watershed of the river above Gamboa will be surveyed first, and then the work will be extended to include all the streams in the Chagres basin below Gamboa, including the principal tributaries, the Rio Trinidad and Gatuncillo River.*

In prosecuting the survey of the basin above Gamboa four parties will work along the river, two on each side, and will extend the lines from the river to the tops of the hills that bound the watershed. The survey will thus be completed in zones from the hills on the east to those on the west.

It is estimated that the length of the Chagres, from its mouth in the Caribbean Sea to its source in the mountains that skirt the shore of that sea, is 120 miles, and the area of the watershed is 1,200 miles. The basin above Gamboa, in which the surveyors are now at work, is estimated as about 600 square miles in area. About fifteen miles in direct line above Gamboa, but twenty-five miles by the river, the Chagres branches into two smaller streams, the Chagres and the Pequeni. The point where these streams join is known as Dos Bocas (two mouths). The headwaters of the Chagres are in the hills that skirt the Caribbean Sea, and are probably about ten miles from the coast. Its course is southeast to its confluence with the Pequeni, and between its source in the hills and Dos Bocas the river receives several tributaries, of which the Indio, Feo, Limpio, Chico, Piedras, and Esperanza rivers are the chief. The Pequeni also rises in the hills on the Atlantic coast, and its course is almost due south to the mouth at Dos Bocas. Its principal tributary is the Boqueron. The old royal road from Porto Bello to Panama runs along the east banks of the Boqueron and Pequeni to a point near Dos Bocas, where it cuts across country to Panama. The cobble pavement can still be found in the jungle, although it is covered with rank vegetation, and large trees have grown up between the stones.

The Chagres falls 179 feet between Santa Barbara, three miles above Dos Bocas, on the upper Chagres, and Gamboa, a distance by water of about 28 miles. There are 35 small rapids between these two points, and the current is so strong throughout that upstream navigation is entirely by cayuco and pole. Between Alhajuela and Dos Bocas, and above Dos Bocas on the Chagres, the stream has cut its way through a plateau or a series of low hills, making for itself a cañon-like channel. In many places the

banks are rock palisades, cut into fanciful shapes at the base by the erratic river, here scarred from top to bottom by tiny waterfalls, there festooned with ferns and long grasses, the rank foliage brightened now and again with the purple or yellow of the trumpet vine, or an occasional orchid. It is possible to go thirty or forty miles up the Chagres above Dos Bocas by cayuco, but farther up navigation is unsatisfactory. A five days' journey up the Pequeni from Dos Bocas brings one to a series of rapids around which the cayuco must be carried, but beyond that the journey may be continued by boat three days longer.

Between Dos Bocas and Gamboa the most important tributaries of the Chagres are the Gatun,* which flows in about nine miles above Gamboa, and the Chilibre, which joins the Chagres about five miles above Gamboa. Both of these rivers are small streams, draining small areas. It is along these affluents of the Chagres that the first surveys will be made. Hills, plateaus, and lowlands are comprised in the territory, and the land is so sparsely settled that the surveying parties will be supplied by cayuco on the Chagres and Pequeni rivers, as the country affords a bare living to the few negroes who inhabit it. It is a fertile region, but only a small part of it is under cultivation.

The survey now in progress will be the first complete one of the basin of the Chagres, although several have been made of portions of the basin, and under various auspices. In 1875, Commander E. P. Lull and Lieut. F. Collins, U. S. N., made a traverse survey along the Chagres from Gamboa to Las Campanas, between the present stations of Alhajuela and Vigia. They located a site for a dam which was to deflect the water of the Chagres into an aqueduct by which it would be carried to Gamboa to feed the upper level of a proposed lock canal. Previous to this the Colombian Government had made some surveys, the results of which were published in a map in 1864. Both the old and new French companies made surveys incident to their work of gaging the river. The Wyse map of 1885 contains the results of some of the surveys made by the old company. The results of the surveys made by the new company are embodied in the map which formed part of the property purchased by the United States in 1904. One of these maps gives the topography of the country up to the 60 meter (197-foot) contour.

In June, 1904, a survey of the whole Chagres basin was begun by the Isthmian Canal Commission. The valley above Gamboa was developed to the 200-foot contour, and this part of the work was finished in the summer of 1905. The basin below Gamboa was developed to the 100 foot contour, and this survey was finished in the summer of 1907. The survey above Gamboa included, in addition to topography, an investigation by borings of the Gamboa dam site, and on the site proposed for the diversion tunnel, which was to divert the water of the Chagres through Gatun River to the Gatuncillo. Two surveys recently attempted, but not finished, were undertaken to develop the upper Chagres basin. One of them was begun at Porto Bello, and the other developed a part of the watershed of the Esperanza River.

In connection with the topographical survey, the river gaging and rainfall work of

the Commission will be extended and completed. The data so far available are valuable, but not complete. They include the records of the old and new French companies, the records of the Isthmian Canal Commission since 1904, and the investigations by Gen. Harry L. Abbott and A. P. Davis, prior to the American occupation. The gaging station at Gamboa was established early in the French régime, but its records are complete only since 1892. The station at Alhajuela was opened on April 15, 1899, near the site chosen for the dam, which was part of the plan for controlling the Chagres and insuring a supply of water during the dry season. It is eleven miles by river from Gamboa and at elevation 92. The Commission has recently established a station at Vigia, 21 miles by river north of Gamboa, at elevation 129.

In the summer of 1899 rainfall and river gaging stations were established by the French company at Salamanca on the Rio Pequeni, 5.5 miles north of Dos Bocas at elevation 200; at Las Minas, on the Pequeni, 12 miles north northeast of Dos Bocas at elevation 250, and at Santa Barbara on the upper Chagres, three miles from Dos Bocas and at an elevation of 225. Rainfall stations were also opened on a hill between the Chigres and the Rio Feo, 4.5 miles north-east of Dos Bocas, at an elevation of 850 feet, and on a hill in the Rio Paente basin four miles southeast of Dos Bocas, at an elevation of 610 feet. All these stations, excepting that at Alhajuela, were abandoned after a few months and the records taken at them are therefore of very limited value.

EXECUTIVE ORDER.

Right of Appeal in Criminal Cases.

Under authority vested in me by law, it is ordered:

1. An appeal from the judgment of a district court of the Canal Zone may be taken by the defendant by giving notice in open court of his intention so to do at the time the judgment is rendered, or by filing with the court a written notice of appeal within five days thereafter. The appeal may thereupon be perfected by the defendant by filing with the district court or with the circuit court to which the appeal is taken, a bond in a sum fixed by the judge of said district court or the judge of said circuit court, but not exceeding two hundred and fifty dollars, and with one or more sufficient sureties approved by the court or clerk accepting the same, for his appearance and trial upon appeal in the circuit court: Provided, That if a money deposit be made in lieu of the bond, the amount to be deposited shall not exceed one-half of the sum required in the bond.

2. Sections 44, 45 and 46 of the Code of Criminal Procedure of the Canal Zone are hereby repealed.

THEODORE ROOSEVELT.

THE WHITE HOUSE,

November 7, 1908.

[No. 966.]

A High Shovel Record.

On November 19, nine steam shovels of 95-ton class, working in the Empire District, Central Division, loaded 837 cars, containing 15,696 cubic yards of material, mostly rock that had been blasted. The average per shovel for this day was 1,744 cubic yards.

*The river referred to as Gatuncillo is that which flows into the Chagres near Gatun, and when the Gatun River is spoken of the reference is to a small stream that flows into the Chagres between Gamboa and Alhajuela. These names have been used interchangeably by cartographers, and no little confusion has resulted.

OFFICIAL CIRCULARS.

Isthmian Purchasing Agent.

CULEBRA C. Z., November 19, 1908.

CIRCULAR No. 221.

Effective this date: Major E. T. Wilson, in addition to his other duties, is appointed Purchasing Agent on the Isthmus for subsistence and commissary supplies.

GEO. W. GOETHALS,

Chairman, Isthmian Canal Commission,
President, Panama Railroad Company.

Regulations for Reimbursement Vouchers.

DEPARTMENT OF EXAMINATION OF ACCOUNTS,
EMPIRE, C. Z., November 11, 1908.
CIRCULAR No. 5.

TRAVELING EXPENSES.

Effective December 1, 1908: The following regulations will govern in the preparation and rendition of reimbursement vouchers covering additional expenses incurred by officers and employes of the Isthmian Canal Commission while traveling on official business, under proper orders, on the Isthmus. These regulations do not apply when the order requires travel which begins beyond or extends beyond the Isthmus.

1. Reimbursements for expenses incurred by an employe while on duty away from his official station will be allowed only when such expenses are in addition to the ordinary daily living expenses of the employe at home and necessitated by the performance of the duty required. No tips of any kind will be allowed while traveling on the Isthmus. Sunday expenses, on verbal orders, require specific explanation by officer directing such.

2. Expense accounts should be presented immediately after the close of each month and should cover all expenses for that month.

3. Accounts must be rendered on the regular form and the instructions on back of same must be followed. The form at present in use is X-51.

REIMBURSEMENT FOR MEALS.

4. On account of the confusion resulting by reason of the different designations for the various meals, hereafter on reimbursement vouchers they will be described as "Morning Meal," "Noon Meal" and "Evening Meal."

5. In case of an employe who boards at an I. C. C. hotel when at his official station:

(a) If detailed to duty at a place where there is an I. C. C. hotel he is entitled to no reimbursement.

(b) If detailed to a place where no I. C. C. hotel is available he will be reimbursed for the actual cost of meals less 30 cents.

(c) The Tivoli Hotel is to be considered "accessible" to employes detailed to duty in the vicinity of Ancon and meals taken there will be at the regular hotel rates for employes of the Commission less 30 cents per meal. Such regular rates at present in effect at the Tivoli Hotel are as follow: 50 cents morning meal, 50 cents noon meal, 20 cents evening meal, which allows reimbursement of 20 cents each for morning and noon meals and 70 cents for the evening meal.

(d) If while traveling in the city of Panama, claim for reimbursement for meals at more than the rate specified in the foregoing paragraph (5c) is made, the voucher must show specifically that the "service was rendered and the meal taken in the vicinity of the old Administration Building."

6. In case of an employe who does not board at an I. C. C. hotel, but keeps house or boards at a monthly rate when at his official station:

(a) If detailed to duty where there is an I. C. C. hotel he is only entitled to reimbursement for 30 cents, or the price of a meal coupon.

(b) If detailed for duty at a place where no I. C. C. hotel is available or accessible he will be reimbursed for the actual and reasonable cost of his meals.

(c) The Tivoli Hotel is to be considered "accessible" to employes detailed to duty in the vicinity of Ancon and meals taken there will be at the regular hotel rates for employes of the Commission. Such regular rates at present in effect at the Tivoli Hotel are as follows: 50 cents morning meal, 50 cents noon meal, \$1.00 evening meal.

(d) If while traveling in the city of Panama, claim for reimbursement for meals at more than the rates specified in the foregoing paragraph (6c) is made, the voucher must show specifically that the "service was rendered and the meals taken in the vicinity of the Old Administration Building."

7. When it is necessary for employes to leave their regular stations prior to 7 a. m. for travel on special official business, allowance of 30 cents for the morning meal will be made for those who do not board at but are convenient to an I. C. C. hotel. At stations where there is no I. C. C. hotel or mess, the actual and reasonable cost of the morning meal will be allowed.

8. Employes who do not use hotel books for their

daily subsistence, and who are frequently detailed on official business away from their regular station may procure a sixteen-coupon meal book for use on such trips and thereby avoid the necessity of paying the cash rate of 50 cents per meal at the I. C. C. hotels and the disadvantage of being reimbursed for only 30 cents.

9. Meals in the cities of Colon and Cristobal are limited to 30 cents per meal. No reimbursement in excess of 30 cents will be made.

TRANSPORTATION.

10. No transportation on the Panama railroad will be reimbursed, as amounts paid to the Panama railroad by the Commission cover both passenger and freight transportation.

11. Should it be necessary at any time for an employe of the Commission to pay for transportation either for himself, his assistants, or necessary equipment, while carrying out official orders, he should secure receipt of the agent to whom payment is made, a present claim for reimbursement to the Panama Railroad Company.

12. Cab fare must always be in accordance with tariff rate, and the form followed when rendering claim for reimbursement of same must conform to that given on the back of voucher form.

13. In Panama particular care must be exercised in giving the places between which transportation is furnished, because certain portions of Ancon and Panama are covered by regular tariff prescribed by the Alcalde of Panama. It is not sufficient to say "Panama railroad station to Administration Building," because there are two Administration Buildings—one at Ancon, and one, known as the Old Administration Building, in the city of Panama.

SPECIAL REGULATIONS.

14. There are certain special regulations that will govern the expense accounts of policemen and others detailed to plain clothes duty. These men may be allowed the actual cost of meals taken, even though in excess of 30 cents and there is a Commission hotel accessible, provided in each case the voucher is accompanied by a special certificate stating "that to have availed themselves of the Commission rate would have revealed their identity and nullified efforts in investigations."

W. W. WARWICK,
Examiner of Accounts.

Approved:

H. F. HODGES,

Acting Chairman and Chief Engineer.

New Form of Meal Tickets.

DEPARTMENT OF EXAMINATION OF ACCOUNTS,
EMPIRE, C. Z., November 19, 1908.

CIRCULAR No. 6.

Effective, December 1, 1908: The form of meal tickets now in use will be discontinued.

The following form of meal tickets are now on hand, and will be used effective with issues on the afternoon of Tuesday, December 1, 1908:

30-Cent Colored Laborers' Meal Tickets.

443-A.....Atlantic Division.
443-C.....Central Division.
443-M.....Mechanical Division
443-P.....Pacific Division.
443-PR.....Panama Railroad.
443-Q.....Quartermaster's Department.
443-S.....Sanitary Department.
443-Misc.....Department
40-Cent European Laborers' Meal Tickets.
449-A.....Atlantic Division.
449-C.....Central Division.
449-M.....Mechanical Division.
449-P.....Pacific Division.
449-PR.....Panama Railroad.
449-Q.....Quartermaster's Department.
449-S.....Sanitary Department.
449-Misc.....Department.

These tickets are numbered consecutively for each department and will be furnished upon requisitions sent to the Examiner of Accounts, (as in the case of coupon books), upon form X-47. A supply of this form of requisition should be obtained from the Stationer and Printer.

Timekeepers will be charged with the value of all tickets furnished them and will render monthly stock report on form X-56, (now in press). Canceled tickets will be listed thereon and sent to the Examiner of Accounts with monthly stock report. The total number of tickets to account for, less stock on hand and canceled tickets, will represent the issues to laborers, for which deductions must appear on pay rolls.

In order to diminish the number of canceled tickets, the use of tickets punched in excess of the number required for the day, by punching the next succeeding date is authorized, it being understood that tickets are good for the last date punched. However,

tickets punched on the last day of the month in excess of the number required, must be handled as "canceled," as it is not desired to carry such tickets from one month to another.

Forms 448-Misc. and 449-Misc. are blank as to name of department or division, and should be used by any department or division that does not have a form for its special use. A rubber stamp should be used to indicate the issuing department or division. This form may also be used by the Quartermaster's Department for issue to laborers arriving on the Isthmus, to whom subsistence is furnished pending assignment to work. Such tickets will be stamped "Recruiting" and their value charged to the Quartermaster's Department.

W. W. WARWICK,
Examiner of Accounts.

Approved:

GEO. W. GOETHALS,

Chairman and Chief Engineer.

LEGAL NOTICES.

In re Estate of Anatole Laurence, Deceased.—To any and all persons having any claim or claims against the estate of Anatole Laurence, deceased, who died at Empire, Canal Zone, on the 18th day of September, 1908:

You are hereby notified to present your claims, duly verified, to Felix Laurence, administrator of said estate, or to the undersigned, on or before the 1st day of June, 1909, or your claims will be forever barred according to law.

Witness my hand, this 6th day of November, A. D. 1908.

E. M. GOOLSBY,

Clerk of the Circuit Court, Second Judicial Circuit,
Canal Zone, at Empire.

EMPIRE, C. Z., November 2, 1908.

Estate of } Administration.
Michael Doyle }

All relatives of the late Michael Doyle, an American, who died intestate at Ancon Hospital on the 20th of July, 1908, are hereby requested to communicate with the Administrator of the estate. Also all persons owing the said estate will likewise communicate with the Administrator in order that a settlement may be effected; and all creditors of the estate must file their claims, properly verified, with the Administrator within six months, or the same will be barred.

F. H. SHEBLEY,
Administrator.United States of America, } In the First Judicial
Canal Zone. } Circuit.

Frank Roch, American, died intestate on or about May 26, 1908, leaving an estate located at Ancon, Canal Zone, consisting of various personal belongings of little value, Isthmian Canal Commission pay certificates for \$250, and cash amounting to \$260.

James Tray, American, who resided at Ancon in the Canal Zone, died intestate on or about January 22, 1906, leaving an estate at Ancon, consisting of Isthmian Canal Commission pay certificate for \$110 Panama currency.

Louis M. Gilbert, alias Charles Gibson, American, who resided at Pedro Miguel, C. Z., died intestate on or about May 4, 1907, leaving an estate at Pedro Miguel, consisting of Isthmian Canal Commission pay certificate of the value of \$27.75 net, and \$1.50 cash.

Bartole Salcedo, a native of the Dutch West Indies, who resided at Ancon, C. Z., died intestate on or about June 29, 1907, leaving an estate at Ancon, consisting of Isthmian Canal Commission pay certificate for \$1 60 Panama currency.

Charles White, American (colored), who resided at Pedro Miguel, Canal Zone, died intestate on or about April 3, 1908, leaving an estate at Ancon, Canal Zone, consisting of \$5 U. S. Currency.

The Collector of Revenues has filed a petition for escheat in each of the above mentioned estates under section 779 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the courthouse in Ancon, Canal Zone, on January 13, 1909, at 9 o'clock a. m., to establish their claims to the said estates, or to show cause why the same should not escheat to the Canal Zone.

F. H. SHEBLEY,
Circuit Court Clerk Pro Tempore,
Ancon, Canal Zone.

Tug Service Porto Bello and Nombre de Dios.

Effective, August 6, 1908: The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Cristobal 6.30 p. m. for Porto Bello only; returning same day.

Monday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Tuesday: Leave Cristobal after Train 2 without tow, for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.

Wednesday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Friday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Saturday: Leave Cristobal after Train 2 for Porto Bello only; returning, leave Porto Bello 5.30 p. m.

COMMISSION CLUB-HOUSES.

Activities of the Young Men's Christian Association.

The standing of the bowling league on November 23, was as follows:

	Games Played.	Won.	Lost.	Percent.
Empire.....	69	44	25	637
Cristobal.....	69	40	29	579
Culebra.....	60	25	35	416
Gorgona.....	60	20	40	333

CRISTOBAL.

A walking contest from Panama to Colon has been organized and will be decided on Sunday, November 29. Twenty-five men from Cristobal have entered and other associations on the Isthmus have been invited to participate. Contestants will start from Panama early in the morning of the day mentioned.

A new term of educational classes will begin on Friday, November 27. Instruction in arithmetic, algebra, civil service examinations, mechanical drawing, first aid, and Spanish (beginning in advanced), will be given. The executive council has authorized the formation of classes to be composed of members and their families, which will afford an opportunity for ladies to take advantage of this instruction.

In the Boys' Department, eighteen boys are being instructed in exercises and indoor athletic games. They are divided in two teams—the "Coyotes" and "Jack Rabbits." The classes meet for instruction three times a week—on Tuesday and Thursday afternoons and on Saturday morning. A team will go to Culebra on Saturday, November 28, to meet the Juniors there at indoor baseball, athletic contest, and bowling.

GORGONA.

The Choral Club gave an entertainment called "An Old Folks' Concert," at the clubhouse, Friday evening, November 20. The program consisted of music by the orchestra, singing and recitations. The club is composed of twenty-nine members and the costumes were of the style in vogue in 1849. Although this was the first appearance of the club, there was a large audience present. The next entertainment by the Club will be "A Trial by Jury." Mr. Charles E. Jennings is the musical instructor of the club.

A reception will be given on Wednesday evening, November 29, to welcome the new secretary at Gorgona, Mr. Guy C. Mitchell, of Auburn, N. Y. The Woman's Club of Gorgona will assist the members of the Y. M. C. A. at the reception.

Mr. Freeman, who has been in charge at Gorgona for the past few months, will assume his duties as traveling secretary with headquarters at Culebra.

EMPIRE.

Empire defeated Gorgona in the pool tournament held at Empire on Saturday evening, November 21, by winning four of the five games played, three in pool and one at billiards.

The Empire indoor baseball team defeated the Cristobal team at Cristobal on Saturday evening, November 21 by a score of 23 to 13.

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., November 25, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

Acebo, Jose Fernandez	Martin, Miss Nell
Beach, Frank A.	Mitchel, Mrs. Jas.
Benson, Aaron	Morrison, W. P.
Brian, Hal	Moss, J. W.
Campbell, A. I.	Nixen, Mrs. Julia
Colburn, Edward, Mrs.	Par-ky, B.
Corp, Mrs. Charles	Pithier, H. A.
Craig, Robert F.	Peck, Miss Annie S.
Cutler, Albert	Pettit, Wm. N.
Dean, Robert	Price, Joseph
Ellison, Mrs. Laura D.	Quick, Mrs. Emma B.
(-kz.)	Rexinger, Henry
Fapia, O'tairo S.	Rice, H.
Fenton, George	Samuel, Daniel
Ford, Paul N.	Sargeut, Eugene V. St. V.
Frings, Conrad	Smith, H. Lester
Gianacon, Asterion	Soto, J. Fons.
Gillick, Thomas	Stammer, J. T.
Grayson, Floyd	Stephens, A. T.
Gustafson, Gust	Stevens, E. B.
Hamlin, Frank	Stone, A. K.
Herman, Fred	Stuart, Mrs. M. A.
Hicks, John	Surgeon, Cecil A.
Hills, F. C.	Thomas, Charles E.
Hoffman, C. D.	Thompson, M. L.
Johnson, Capt. Frank A.	Titus, Mrs. Wm.
Jukett, Dr. Thos.	Van Camp, Robert
Kent, Mrs. F. L.	Waldron, Itury L.
Klandie, Mr.	Westberg, Mrs. J. E.
Lewis, Miss Marie	Wheat, Mrs. E. G. (3)
McLean, Dr. I. W.	Wrelier, Mrs. Katie
Manion, James E.	Williams, Miss Rosetta
Manheim, Jos.	Woodson & Son, D. M.

COMMISSARY DEPARTMENT.

NOTICE.

Cristobal, November 20, 1908.
This Department will be closed on Thursday, November 26, Thanksgiving Day. Patrons will guide themselves in placing their orders accordingly.

JOHN BURKE,
Manager.

Approved:
EUGENE T. WILSON,
Subsistence Officer.

Patrons of the Commissary Department, when dealing with the Cristobal office, will address their individual orders, deposits, etc., to the Order Room, Commissary Department, Building No. 2, Cristobal.

Complaints should be made in separate letters and addressed to the Subsistence Officer, Building No. 2, Cristobal.

JOHN BURKE,
Manager.

Approved:
EUGENE T. WILSON,
Subsistence Officer.

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning November 22:

FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	6
Shoulder and neck (not under 6 pounds).....per lb	7
Entire forequarter (not under 10 pounds).....per lb	9
Leg (8 to 10 pounds).....per lb	16
Short-cut chops.....per lb	22
Lamb—Stewing.....per lb	6
Entire forequarter.....per lb	8
Leg (6 to 8 pounds).....per lb	27
Chops.....per lb	29
Veal—Stewing.....per lb	15
Entire forequarter (15 to 20 lbs.).....per lb	11
Loin for roasting.....per lb	21
Chops.....per lb	22
Cutlets.....per lb	26
Beef—Suet.....per lb	4
Soup.....per lb	8
Stew.....per lb	12
Corned.....per lb.	12, 14, 16
Pot roast (from sirloin bnt).....per lb	17
Rib-roast, second cut (not under 3 pounds).....per lb	19
Rib-roast, short cut (not under 3½ pounds).....per lb	23
Sirloin roast.....per lb	29
Rump roast.....per lb	29
Porterhouse roast.....per lb	29
Steak, round.....per lb	23
Rib.....per lb	24
Sirloin.....per lb	29
Porterhouse.....per lb	29
Rump.....per lb	29
Tenderloin.....per lb	30

MISCELLANEOUS.

Livers—Beef.....per lb	11½
Calif.....each	65
Sausage—Pork.....per lb	18
Frankfurter.....per lb	17
Leberwurst.....per lb	17
Bologna.....per lb	17
Sweet bread—Veal.....each	1.20
Beef.....per lb	30
Pigs' feet.....per lb	14
Eggs, fresh.....dozen	50
Oysters.....keg	90

POULTRY AND GAME.

Chickens—Fancy Roasting, large.....each, 1.40 and 1.20	
Fowls, medium and large.....each, 80c, and 1.00	
Ducks, fatted.....each	1.22
Chickens, broilers.....each	75
Turkeys.....per lb	25
Squabs.....each	45
Capons.....	2.40

CURED AND PICKLED MEATS.

Bacon—Strips.....per lb	23
English, breakfast sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Hunter's York cut.....per lb	25
Ferris.....per lb	20
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	40
Cheese—Neufchatel.....each	6
Young America.....per lb	22
Swiss.....per lb	31
Edam.....each	1.05
Camembert.....per lb	18
McLaren's.....jar	25
Pinkster's.....tin	22
Gouda.....per lb	34
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....tin	20
Milk, Briarcliff.....bottle	25

VEGETABLES AND FRUITS.

Lettuce.....per lb	12
Cauliflower.....per lb	7
White potatoes.....per lb	3½
Sweet potatoes.....per lb	2½
Cabbage.....per lb	4
Onions.....per lb	3½
Cucumbers.....per lb	18
Yams.....per lb	3½
Parsley.....per lb	15
Celery.....bunch	15
Lemons.....dozen	24
Oranges.....dozen	18
Apples.....per lb	5
Grapefruit.....each	3
Tangerines.....each	2

§ Sold only from cold-storage and not from Commissaries.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, November 21, 1908:

	STATIONS.					
	Vieja.	Alhajuela.	Gamboa.	Bohio.	Gatum (W. Diver'n).	Gatum (Canal).
Height of low water above mean sea level, feet.....	129	92	46	0	0	0
Maximum height above low water, feet:						
Sunday, Nov. 15.....	3.5	3.9	9.2	11.0	6.4	8.4
Monday, Nov. 15.....	2.1	2.6	4.3	10.4	5.8	7.3
Tuesday, Nov. 17.....	12.0	9.0	13.7	13.9	5.0	6.6
Wednesday, Nov. 18.....	19.9	8.2	12.7	17.0	8.2	10.1
Thursday, Nov. 19.....	7.4	6.1	11.8	17.5	3.8	11.0
Friday, Nov. 20.....	12.1	9.0	14.6	18.1	9.2	11.4
Saturday, Nov. 21.....	8.2	7.0	14.8	20.5	10.8	13.2
Maximum for week.....	12.1	9.0	14.8	20.5	10.8	13.2

Rainfall, November 1 to 21, 1908, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total.
<i>Atlantic Division—</i>		
Cristobal.....	3.65	27.52
Brazos Brook.....	2.86	24.29
Gatum.....	2.84	13.66
Bohio.....	3.00	15.75
<i>Central Division—</i>		
Taberuela.....	1.55	9.36
San Pablo.....	.96	7.74
Bas Obispo.....	1.32	6.78
Gamboa.....	1.00	6.88
Empire.....	.59	3.66
Camacho.....	1.67	6.03
Culebra.....	.59	4.20
Rio Grande.....	.72	4.56
<i>Pacific Division—</i>		
Pedro Miguel.....	.....	.....
La Boca.....	.95	6.54
Ancon.....	1.00	7.66
<i>Atlantic Coast—</i>		
Porto Bello.....	6.78	31.49
<i>Upper Chagres.</i>		
El Vieja.....	1.85	10.82
Alhajuela.....	2.75	9.53

The following steamers have recently arrived at La Boca: November 15, *Fuador* from Buenaventura; November 18, *Limari* from Valparaiso; November 19, *San Jose* from San Francisco. Departures were: November 16, *Aysen* to Valparaiso; November 17, *Barracanta* to Central America.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Lieut.-Col. Geo. W. Goethals, U. S. A., Culebra.
 Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
 Maj. D. D. Gaillard, U. S. A., Empire.
 Maj. Wm. L. Sibert, U. S. A., Gatun.
 Civil Engineer H. H. Rousseau, U. S. N., Culebra.
 Mr. Jo C. S. Blackburn, Ancon.
 Col. W. C. Gorgas, U. S. A., Ancon.
 Mr. Joseph Bucklin Bishop, Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.
 Lieut.-Col. Geo. W. Goethals, Chairman and Chief Engineer.
 W. H. May, Secretary to the Chairman.
 M. B. DePutron, Assistant to the Chairman.
 C. A. McKeune, Chief Clerk.
 Caleb M. Saville, Assistant Engineer.
 Lieut.-Col. H. F. Hodges, Assistant Chief Engineer.
 C. O. Carlson, Secretary.
 Edward Schildhauer, Electrical and Mechanical Engineer.
 Henry Goldmark, L. D. Cornish, H. F. Tucker and T. B. Mönnicke, Designing Engineers.

Civil Engineer H. H. Rousseau, Assistant to the Chief Engineer.
 J. C. Parsons, Secretary.
 A. B. Nichols, Office Engineer.
 P. O. Wright, Jr., Architect.

Central Division.

Headquarters, Empire.
 Maj. D. D. Gaillard, Division Engineer.
 A. F. Bronk, Chief Clerk.
 Louis K. Rourke, Assistant Division Engineer.
 A. S. Zinn, Resident Engineer.
 Mark W. Tenney, Assistant Engineer.
 R. W. Hebard, Assistant Engineer.
 W. L. Thomson, Assistant Engineer.
 Geo. H. Ruggles, Assistant Engineer.

Atlantic Division.

Headquarters, Gatun.
 Maj. Wm. L. Sibert, Division Engineer.
 R. M. Sands, Chief Clerk.
 Maj. Chester Harding, U. S. A., Assistant Division Engineer.
 Maj. Edgar Judwin, U. S. A., Resident Engineer.
 Maj. J. P. Jervey, U. S. A., Resident Engineer.
 Capt. G. M. Hoffman, U. S. A., Assistant Engineer.
 Capt. Horton W. Stickle, U. S. A., Assistant Engineer.
 I. G. Thom, Assistant Engineer.
 F. C. Stanton, Assistant Engineer.
 R. B. Smith, Superintendent of Dredging.

Pacific Division.

Headquarters, Corozal.
 S. B. Williamson, Division Engineer.
 E. A. LeMay, Chief Clerk.
 W. G. Comber, Resident Engineer.
 G. B. Strickler, Resident Engineer.
 Wm. F. M. Acheson, Assistant Engineer.
 James MacFarlane, Superintendent of Dredging.

Mechanical Division.

Headquarters, Culebra.
 Geo. D. Brooke, Superintendent of Motive Power and Machinery.
 F. W. Doty, Chief Clerk.
 Earle J. Banta, Mechanical Engineer.
 A. L. Robinson, Electrical Engineer.

Quartermaster's.

Headquarters, Culebra.
 Maj. C. A. Devol, U. S. A., Chief Quartermaster.
 C. H. Mann, Chief Clerk.
 Lieut. R. E. Wood, U. S. A., Assistant Chief Quartermaster.
 Capt. Courtland Nixon, U. S. A., Depot Quartermaster, Mount Hope.
 C. L. Parker, C. C. McColey, Inspectors.
 H. S. Parsons, Acting Survey Officer.

District Quartermasters.

B. C. Foote, Ancon.
 M. R. Currie, Bas Obispo.
 R. M. Gamble, (acting), Corozal.
 Ira A. Giles, Cristobal.

J. B. Jeffries, Culebra.
 C. P. Allen, Empire.
 R. R. Watson (acting), Gatun.
 K. C. Shady, Gorgona.
 W. H. South, La Boca.
 D. I. Shannon, Las Cascaidas.
 Harry Dundas (acting), Paraiso.
 Otto Mastrand, Pedro Miguel.
 C. E. Heisey, Porto Bello.
 J. H. Humphreys, San Pablo.
 J. M. King, Tabernilla.

Subsistence.

Headquarters, Cristobal.
 Maj. Eugene T. Wilson, U. S. A., Subsistence Officer.
 W. F. Shipley, Chief Clerk.
 Lieut. Frank O. Whitlock, U. S. A., Assistant Subsistence Officer.

Civil Administration.

Headquarters, Ancon.
 Jo C. S. Blackburn, Head of the Department.
 H. D. Reed, Executive Secretary.
 G. A. Ninas, Chief Clerk.
 Tom M. Cooke, Chief, Division of Posts, Customs and Revenues, Ancon.
 Herman A. Gudger, Deputy Collector, Ancon.
 E. Lewis Baker, Deputy Collector, Cristobal.
 George M. Shontz, Prosecuting Attorney, Ancon.
 George R. Stanton, Chief of Police, Ancon.
 D. E. McDonald, Chief Clerk.
 C. E. Weidman, Chief, Fire Department, Cristobal.
 Geo. L. Campen, Supt of Public Works, Ancon.
 C. R. Sargent, Chief Clerk.
 J. J. Reidy, Asst. Supt. Public Works, Cristobal.
 H. L. Smith, Superintendent of Schools, Ancon.
 H. A. A. Smith, Treasurer of Canal Zone, Empire.

Canal Zone Judiciary.

Headquarters, Ancon.
 Supreme Court—Dr. F. Mutis Durán, Chief Justice.
 Walter Emery, Clerk, Ancon.
 H. A. Gudger, Associate Justice, Empire.
 Lorin C. Collins, Associate Justice, Cristobal.
 Circuit Court, First Circuit—Dr. F. Mutis Durán, Judge, Ancon.
 Walter Emery, Clerk.
 Circuit Court, Second Circuit—H. A. Gudger, Judge, Empire.
 Elbert M. Goolsby, Clerk.
 Circuit Court, Third Circuit—Lorin C. Collins, Judge, Cristobal.
 Nelson R. Johnson, Clerk.
 M. C. Rerdell, Senior District Judge, Cristobal.
 S. E. Blackburn, District Judge, Ancon.
 Edgar S. Garrison, District Judge, Empire.
 J. B. March, District Judge, Gorgona.
 Thomas E. Brown, Jr., District Judge, Cristobal.

Law.

Headquarters, Washington, D. C.
 Richard Reid Rogers, General Counsel, Washington, D. C.
 George M. Shontz, Attorney for Isthmian Canal Commission and Panama Railroad Company, Ancon.
 George H. Bartholomew, Assistant Attorney.

Sanitation.

Headquarters, Ancon.
 Col. W. C. Gorgas, Chief Sanitary Officer.
 Capt. Robert E. Noble, U. S. A., Executive Officer.
 Harry E. Bovay, Chief Clerk.
 H. R. Carter, Director of Hospitals, Ancon.
 Surgeon, J. C. Perry, P. H. and M. H. S., Chief Quarantine Officer, Ancon.
 Maj. John L. Phillips, U. S. A., Superintendent Ancon Hospital, Ancon.
 Capt. Alexander Murray, U. S. A., Assistant to Superintendent.
 Maj. C. C. McCulloch, Jr., U. S. A., General Inspector, Ancon.
 J. F. Leys, U. S. N., Superintendent Colon Hospital, Colon.
 Surgeon Claude C. Pierce, P. H. and M. H. S., Quarantine Officer, Colon.
 Dr. Fleetwood Gruver, P. H. and M. H. S., Quarantine Officer, Panama.
 Dr. A. E. Mayner, Acting Health Officer, Panama.
 Dr. M. E. Connor, Health Officer, Colon.
 Joseph A. LePrince, Chief Sanitary Inspector, Ancon.

Disbursements.

Headquarters, Empire.
 Edward J. Williams, Disbursing Officer.
 Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.
 W. W. Warwick, Examiner of Accounts.
 Thomas L. Clear, Chief Clerk.

Purchasing Department.

Headquarters, Washington, D. C.
 Capt. F. C. Boggs, U. S. A., General Purchasing Officer.
 C. E. Dole, Chief Clerk.
 Capt. Courtland Nixon, Purchasing Agent on the Isthmus.
 Maj. Wendell L. Simpson, U. S. A., Purchasing Agent, 24 State Street, New York City.
 F. C. Nordsiek, Assistant Purchasing Agent, 24 State Street, New York City.
 S. B. Redfern, Assistant Purchasing Agent, Custom House, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
 (New York office, 24 State Street.)
 H. J. Slifer, Assistant to the President, and General Manager, Colon.
 G. E. Geer, Assistant to the General Manager.
 R. Budd, Chief Engineer.
 J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

FROM NEW YORK TO COLON.	
Prinz Joachi	.....H.-A.....Saturday.....Nov. 21
Finance	.....P. R. R.....Monday.....Nov. 23
Orinoco	.....R.-M.....Saturday.....Nov. 28
Advance	.....P. R. R.....Saturday.....Nov. 28
Allianca	.....P. R. R.....Thursday.....Dec. 3
Prinz Aug. Wilhelm	.....H.-A.....Saturday.....Dec. 5
Colon	.....P. R. R.....Tuesday.....Dec. 8
Atrato	.....R.-M.....Saturday.....Dec. 12
Panama	.....P. R. R.....Monday.....Dec. 14
Finance	.....P. R. R.....Saturday.....Dec. 19
Prinz Joachim	.....H.-A.....Saturday.....Dec. 19
Advance	.....P. R. R.....Thursday.....Dec. 24
Trent	.....R.-M.....Saturday.....Dec. 26
Allianca	.....P. R. R.....Tuesday.....Dec. 29
Colon	.....P. R. R.....Monday.....Jan. 4
Panama	.....P. R. R.....Saturday.....Jan. 9
Finance	.....P. R. R.....Thursday.....Jan. 14
Advance	.....P. R. R.....Tuesday.....Jan. 19
Allianca	.....P. R. R.....Monday.....Jan. 25
Colon	.....P. R. R.....Saturday.....Jan. 30
All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.	
FROM COLON TO NEW YORK.	
Colon	.....P. R. R.....Wednesday.....Nov. 25
Panama	.....P. R. R.....Monday.....Nov. 30
Atrato	.....R.-M.....Tuesday.....Dec. 1
Finance	.....P. R. R.....Sunday.....Dec. 6
Prinz Joachim	.....H.-A.....Tuesday.....Dec. 8
Advance	.....P. R. R.....Friday.....Dec. 11
Trent	.....R.-M.....Tuesday.....Dec. 15
Allianca	.....P. R. R.....Wednesday.....Dec. 16
Colon	.....P. R. R.....Monday.....Dec. 21
Prinz Aug. Wilhelm	.....H.-A.....Tuesday.....Dec. 22
Panama	.....P. R. R.....Sunday.....Dec. 27
Tatus	.....R.-M.....Tuesday.....Dec. 29
Finance	.....P. R. R.....Friday.....Jan. 1
Prinz Joachim	.....H.-A.....Tuesday.....Jan. 5
Advance	.....P. R. R.....Wednesday.....Jan. 6
Allianca	.....P. R. R.....Monday.....Jan. 11
Colon	.....P. R. R.....Sunday.....Jan. 17
Panama	.....P. R. R.....Friday.....Jan. 22
Finance	.....P. R. R.....Wednesday.....Jan. 27
Advance	.....P. R. R.....Monday.....Feb. 1
Allianca	.....P. R. R.....Sunday.....Feb. 7
Colon	.....P. R. R.....Friday.....Feb. 12
FROM NEW ORLEANS TO COLON.	
Parishina	.....U. F. C.....Saturday.....Nov. 21
Heredia	.....U. F. C.....Saturday.....Nov. 28
FROM COLON TO NEW ORLEANS.	
Parishina	.....U. F. C.....Tuesday.....Dec. 1
FROM COLON TO BARBADOS, CALLING AT TRINIDAD.	
Orinoco	.....R.-M.....Tuesday.....Dec. 8
Atrato	.....R.-M.....Tuesday.....Dec. 22
Trent	.....R.-M.....Tuesday.....Jan. 5
FROM COLON TO NEW ORLEANS VIA KINGSTON.	
Jamaican	.....Leyland Line.....about.....Nov. 22
Antillian	.....Leyland Line.....about.....Nov. 30
The Panama railroad steamships sail at 3 p. m. from the dock at Cristobal direct to New York.	
The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.	
All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.	

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 2, 1908.

No. 14.

The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Preparing for Concrete Work at Gatun Locks.

In the work preparatory to laying concrete at Gatun Locks the delivery of the handling plant is now the determining factor. Tracks are being laid for the unloading towers of the cableway system, which are expected on the Isthmus about December 15. The supply tunnels under the stone and sand piles have been started, and the excavation for the supply tunnel in the cement shed has been completed. Four pile drivers are at work on the foundations for the cement shed and dock. The dock will be 500 feet long and 140 feet wide. Part of the pile driving has been in material so hard that it has been necessary to shoe the piles with cast-iron points in order to penetrate it. The channel connecting the old French canal with the east diversion has been completed so that vessels drawing ten feet of water can tie up at the docks along the diversion. Dredge No. 82 was unable to excavate the rock on the bottom of the channel, and when it is necessary to deepen it to fifteen feet a dipper dredge will be set at the work.

Small Slide at Porto Bello.

Excessive rains at Porto Bello have loosened the earth: on the hillside above the power plant and the material has slid to the foot of the hill, forcing the two boilers out of their settings and shifting foundations that were ready for the installation of the air compressor and the engine. The slide has delayed the work a week, but not long enough to interfere with the delivery of stone for the Gatun spillway concrete work. In order to make a similar occurrence impossible, the earth will be washed off the hillside down to the rock face, leaving no material to slide.

Gatun Storehouses.

The framework of the Atlantic Division storehouse at Gatun has been completed and

the roof is on. The building will be ready for use in a few days. Work has been finished on the temporary storehouse for electrical machinery at Gatun.

November Excavation.

The grand total of excavation during the month of November was 2,920,494 cubic yards. All of this excepting 70,228 cubic yards was taken from the Canal prism. This is 304,144 cubic yards less than the record for October, and 559,776 cubic yards less than the highest record, that for March, 1908. There were 23 working days in November, four less than in October, and three less than in March. Of the grand total for November, 1,282,311 cubic yards were taken out by dredges and the remainder was dry excavation. The mean rainfall for November, for the territory in which excavation was in progress, was 11.66 inches, as compared with 10.51 inches in October.

The daily average of excavation in November was the highest ever made in the rainy season, but falls short of the daily average for March, the record dry month, by 6,878 cubic yards. A comparison with the output for November, 1907, when the daily average was 76,604 cubic yards, shows that the daily average of excavation in November, 1908, was 64 per cent greater. The daily average for each month since March follows:

	Cubic Yards.
November	126,978
October	119,431
September	126,355
August	125,096
July	121,878
June	117,704
May	108,157
April	131,844
March, (record month)	133,856

In the Atlantic Division the excavation from the site of the locks fell 26,140 cubic yards below that in the month of October, while the excavation from the cut at Mindi was 1,708 cubic yards greater than the October record. The excavation from the Gatun Dam spillway was 13,702 cubic yards less than in October. The excavation for the channel to the receiving docks at Gatun is not considered part of the Canal excavation, but is regarded as excavation on account of building. The dredges excavated 570,832 cubic yards as compared with 505,260 cubic yards in October, and with 638,217 cubic yards in August, which is the highest record for the Atlantic dredges. The daily average for the Atlantic dredges was therefore greater in November, when it amounted to 24,819 cubic yards, than in August, when it amounted to 24,547 cubic yards. The dipper dredge *Chagres* was out of service one week, undergoing repairs.

The highest record for one day was broken in the Central Division on November 30, when 67,130 cubic yards were taken out. The total excavation fell 240,015 cubic yards short of October and 265,934 cubic yards

short of the best dry season record, that of March. A comparison of the daily average for the three months shows:

	Cubic Yards.
March	62,496
October	59,221
November	59,055

This division includes the Culebra Cut and the excavation in the territory formerly called the Chagres Division.

The total excavation in the Pacific Division fell 74,145 cubic yards short of that for October, which was the highest record made in this division, but the daily average for November was 36,056 cubic yards, as compared with 33,460 for October. The daily average for the dredges in November was 30,934 cubic yards, as compared with 28,366 cubic yards in October.

A detailed statement of the excavation in the three divisions follows:

ATLANTIC DIVISION.

Locality.	From Canal Prism	Outside Canal Prism	Total excavation
	cu. yds.	cu. yds.	cu. yds.
Dry excavation—			
Gatun spillway		30,695	30,695
Gatun Locks	83,527		83,527
Mindi	47,183		47,183
Total	130,710	30,695	161,405
Wet excavation—			
Colou dredging	570,832		570,832
Total wet and dry excavation	701,542	30,695	732,237

CENTRAL DIVISION.

All dry excavation—			
Chagres section	336,390		336,390
Culebra section	985,302	37,274	1,022,576
Total	1,321,692	37,274	1,358,966

PACIFIC DIVISION.

Dry excavation—			
Miraflores Locks	47,109	2,259	49,368
Pedro Miguel Locks	56,204		56,204
Cardenas Hill	12,240		12,240
Total	115,553	2,259	117,812
Wet excavation—			
Pacific entrance	656,356		656,356
Miraflores Locks	55,123		55,123
Total	711,479		711,479
Total wet and dry excavation	827,032	2,259	829,291
TOTAL EXCAVATION, ENTIRE CANAL.			
Dry excavation	1,567,955	70,228	1,638,183
Wet excavation	1,282,311		1,282,311
Total	2,850,266	70,228	2,920,494

Mean rainfall along Canal (eleven stations), 11.66 inches.

Figures of monthly excavation are based upon telephone reports from the Division Engineers, and are subject to slight alterations when the official reports are received.

Atlantic Dredges.

At the Atlantic entrance the dredges are continuing their excavation of rock blasted in the dry, and are constantly reducing the

NOTES OF PROGRESS.

(Continued).

cost per cubic yard. The dipper dredge *Chagres* was laid up for general repairs last week, and the sea-going suction dredge *Ancon* lost one day while being fumigated after the death of one of the crew.

Dredging in Gatun Locks.

Excavation on the site of the lower or north locks at Gatun will be done by the 20-inch suction dredge, No. 82. As soon as the dredge has completed the little that remains for it to do in the channel leading to the material docks, it will go down the east diversion channel and cut its way across to the site of the lower locks. It is estimated that the dredge will remove about 400,000 cubic yards. The rate of excavation can not be estimated until the material to be handled is known. Wash borings show that this material is earth, but it may be tough clay, like that which was encountered in the channel to the material docks, and in that event the dredge will not be able to work nearly so fast as it would in soft earth.

New Corral at Colon.

On November 23, the new corral at Colon, built by the Panama Railroad Company, was opened to the public, and already a majority of the small stables in and about the city have been abandoned by the owners of horses for the new quarters. Out of 256 stalls provided in the new corral 220 have already been leased. The corral consists of stalls, coach sheds, cart yards, blacksmith shop, and stock yards. It is located on E street, and extends from Teuth street to Thirteenth street. When the lateral streets of the city shall have been opened it will be accessible by half a dozen highways from all parts of the town.

The stables consist of nine detached buildings, seven of them 24 feet wide and 135 feet long, and two of them 12 feet wide and 130 feet long. These buildings are separated from one another by macadamized alleys nine feet wide, and a macadam road 20 feet wide runs along the back. Each building is divided into a feed and harness locker room, 12 feet by 18 feet, stalls, and a cart yard or coach shed 45 feet long. The stalls are 4 feet 6 inches wide by 9 feet long, and they are arranged in two parallel lines with a feed passageway between them. They have plank floors, which drain into a concrete gutter. The corral is in charge of a corral-master, who is assisted by enough hostlers to keep the stables and the premises in a sanitary condition. Regular inspections are made by a veterinary surgeon. A stable for private stock is located near the public corral, and consists of feed and harness locker room and stalls for 20 horses. The stockyards consist of four pens 30 feet wide by 60 feet long, with a runway which extends from the line of the pens to the railroad siding that runs through E street.

Suction Dredge at Nombre de Dios.

It has been ascertained that the machinery on the 16-inch dredge which sank at Nombre de Dios on November 5, has not been injured. An investigation is being made of the condition of the hull and, if it is not seriously injured, it will be raised. In case the hull is not raised the machinery will be

taken off and installed on a float in the harbor and used as originally intended in the sand excavation.

Panama Trade Statistics.

Mr. Claude Coventry Mallet, British Minister to Panama, makes the following statement in regard to the trade and commerce of the Panama Republic in his annual report to his Government for the year 1907:

Improvements—In commercial circles energies have been put forth in various directions; shops have been enlarged, and merchandise of more variety and better quality is kept in stock, for it is clearly recognized that the foundations of future prosperity are being gradually but surely laid now that the Republic, in consequence of the cessation (guaranteed by the United States Government) of civil discords, has entered upon a period in which industry and commerce will be free from the injurious effects of such disturbances; and such statistics as are available show a marked increase in importations and revenue.

Imports Into the Republic—The value of British and foreign goods paying duty which have been introduced into the ports during the past two years is as follows:

From.	1906.	1907.
United States.....	£ 729,684	£ 1,039,392
United Kingdom.....	387,114	377,143
Germany.....	152,965	212,371
France.....	27,955	65,951
Spain.....	20,699	38,351
Italy.....		37,942
Belgium.....		29,953
British possessions.....		28,479
Other countries.....	154,201	82,247
Total.....	£ 1,472,619	£ 1,912,889

Increase in 1907.....£ 440,270

"Of the total imports in 1907, Panama city received £ 1,079,586, Colon, £ 619,381, and Bocas del Toro, £ 213,922. The total value of the imports into Panama city for 1903, the last year for which statistics are available for comparison, was £ 411,816, so that the increase in 1907 over that year was £ 667,770.

"Nevertheless, the merchants complain of bad times on account of the large quantities of goods imported and sold by the Canal Commission commissaries, and, while there is no doubt the sales are seriously reduced thereby, it is probable, in view of steadily increasing importations for consumption, that the cause is more likely to be found in the fact that local competition, through the establishment of new firms, has increased in greater proportion than the business done.

"The preceding figures do not include the material and equipment for Canal construction, or supplies for the commissaries, which bring no revenue to the Government of Panama, and therefore can not be strictly regarded as part of the regular trade of the country.

Imports Into the Canal Zone—Imports of the value of £ 2,282,726 entered the Canal Zone without payment of duty in 1907, as compared to £ 1,616,157 in 1906."

Highest Daily Excavation.

The best record for excavation in one day since the beginning of the canal work by the Americans was made in the Central Division on November 30, when 67,130 cubic yards of material, car measurement, were taken out by 53 steam shovels. This was an average of 1,256 cubic yards for each shovel.

EXECUTIVE ORDER.

Amendment to Civil-Service Rules.

Schedule A, section VIII, paragraph 1, of the civil-service rules is hereby amended by the addition of the following words at the end of the paragraph:

Unless he was classified by the Executive order of November 15, 1904, in a position which was then and is at the time of the proposed transfer in the competitive service.

As amended the paragraph will read as follows:

1. All officers and employes in the service of the Isthmian Canal Commission upon the Isthmus of Panama except those who are to perform the duties of clerk, bookkeeper, stenographer, typewriter, surgeon, physician, trained nurse, or draftsman. Appointments to clerical positions on the Isthmus of Panama paying less than \$75 in gold per month may be made without examination under the civil-service rules. No person appointed to the service on the Isthmus of Panama otherwise than through competitive examination or by transfer or promotion from a competitive position shall be transferred to a competitive position unless he was classified by the Executive order of November 15, 1904, in a position which was then and is at the time of the proposed transfer in the competitive service.

THEODORE ROOSEVELT.

THE WHITE HOUSE,

November 9, 1908.

[No. 967.]

Minstrels at Camp Elliott.

On the evening of Thanksgiving Day the enlisted men of Camp Elliott gave a minstrel and vaudeville show in the new gymnasium building which they had converted into a theater for the occasion. Part 1 of the performance consisted of "Ye Soldier Boy Minstrels," composed of W. H. Westlake, interlocutor; *Bones*: Buck Brodie, W. W. Graff, J. W. Cotter, and J. Neough; *Tambos*: E. C. White, J. G. Harrigan, W. H. Taber, J. F. Womeldorf, endmen, and R. Collins, R. W. Allen, E. W. Osborn, A. E. Fields, H. Haven, W. Sippl, F. W. Carrington, F. C. Anderson, F. Barlow, and J. M. Johnson, middlemen. The musical numbers were much enjoyed. Part 2 was made up of vaudeville acts and three farces, "Down and Out," "The Lieutenant and the Girl," and "Room 44-45."

The committee on arrangements consisted of J. W. Cotter, E. Arnold, R. W. Perry, and W. H. Westlake, and the executive staff directly in charge of the performance were Ralph W. Perry, stage director; E. Arnold, musical director; P. C. Anderson, stage carpenter; E. Ream, stage electrician, J. W. Cotter, properties, and Newton G. Garret, chief usher. The scenery and effects were designed by R. W. Perry, and the stage was built by W. Carmichael. There were about five hundred people present and the entire performance was very successful.

Isthmian Canal Rebekah Lodge, No. 1.

The meetings of the Isthmian Canal Rebekah Lodge, No. 1, will be held the first and third Saturday of every month, at 7.30 p. m. in Fraternity Hall at Gorgona.

Joseph Doyle.

Joseph Doyle, civil engineer, late of Porto Bello, Panama, is requested to communicate with M. B. Sheridan, Empire, C. Z.

LOSS OF THE FINANCE.

P. R. R. Steamship Sunk Off New York Harbor.

The steamship *Finance* of the Panama Railroad Steamship Company's line, was run into off Sandy Hook on the morning of November 26, by the White Star steamer *Georgic*, and was sunk. The *Finance* was scheduled to leave New York on November 23, but was delayed in the harbor by a dense fog until the morning of November 26. The accident occurred about 8.20 o'clock. Henry Muller, an Isthmian Canal Commission conductor, Charles N. Schweinler, of the Canal Zone police, William Todd, third assistant engineer of the *Finance*, and Irene G. Campbell, a Jamaican woman, were drowned. All the other passengers and members of the crew were saved. The *Finance* carried 771 sacks of mail, of which 171 sacks were for delivery in the Canal Zone, 27 in Colon, 38 in Panama, 404 to the British Packet Agent, 116 for Salvador, 12 for Mexico, and three containing United States State Department dispatches, one each to Guayaquil, Quito, and Panama. It is expected that the greater part of the mail will be recovered. No further advices have been received, but full details are expected on the *Advance*, which was scheduled to sail from New York, on November 28.

The *Finance* was built in Chester, Pa., in 1882, was 295 feet long, 33.4 feet broad, 23.4 feet deep, had an indicated horsepower of 1,600, gross tonnage of 2,603 tons, and net tonnage of 1,649 tons. She was a single screw steamship, and carried a crew of 55 men. Under the provisions of the Sundry Civil Appropriation Act of May 27, 1908, the insurance of the ship was provided for as follows:

Sec. 2. The foregoing appropriations shall be available to reimburse the Panama Railroad Company for marine losses, or for losses due to destruction of or damage to its plant, equipment, or commissary supplies by fire: Provided, however, That upon this appropriation becoming effective the Panama Railroad Company shall cease to carry insurance against loss from causes covered by this appropriation.

Charles N. Schweinler was born January 10, 1876, in New York city, and reported for duty as a first class policeman on the Canal Zone December 20, 1907. He was stationed at Empire and was returning on the *Finance* from his first vacation in the States. His nearest surviving relative is an aunt, Miss K. Schreck, of 598 Madison street, Brooklyn, N. Y.

Henry Muller, was 32 years old, married, and up to May 11, 1908, had his family with him on the Isthmus, his home being at Las Cascadas. He was a resident of Newark, N. J. He arrived on the Isthmus, May 11, 1906, and immediately entered the service of the Isthmian Canal Commission as a conductor. His last employment was in the Central Division.

As the personnel files of the Panama Railroad Company are kept in the New York office no authentic information is available with regard to William D. Todd, the third assistant engineer of the *Finance*.

Oil Supply for P. R. R. Locomotives.

An order has been placed by the Panama Railroad Company for a 50,000-gallon steel tank and a 30-foot tower to be erected at Cristobal. The tank will be used in supplying oil to the oil-burning locomotives, 12 of which have been ordered and are expected

on the Isthmus in February. The oil will be piped from the Union Oil Company's storage tanks at Mount Hope into the supply tank. This will be the only tank used by the Panama Railroad Company, as each locomotive will take enough oil at Cristobal for a round trip.

The Work of the Culebra.

The work of the sea-going dredge *Culebra* is to make a channel 500 feet wide and 45 feet deep at mean tide at the Pacific entrance to the Canal from the wharf at La Boca out to deep water in Panama Bay, and farther inside if practicable. In the outside part of the channel the desired depth has been procured, and in some parts it has been dug five feet deeper than is necessary. This will probably fill from the slipping of the sides in the near future. Up to the present this outside channel has not been dredged to the full width. On the inside or La Boca end of the channel, where the *Culebra* is now working, from the La Boca wharf two miles out to sea, a depth of about 30 feet at mean tide, has been secured.

At its present work inside the dredge is taking and dumping sixteen loads of material each day of twenty-four hours, provided there are no running repairs to make. The amount of material being taken out each day is about 15,000 cubic yards. Each load is measured as taken by scow measurement, and the results are checked every four months by a cross-section measurement of the channel. It is deemed necessary to follow this plan of checking the bin measurement, because the dredging extends over such a large area that a slight difference in the depth would show quite a large difference in the yardage. The last cross-section check on the scow measurement shows a difference of about seven per cent, this shortage covering the whole new channel at La Boca, including the work performed by all the dredges, both ladder and suction. That is, the cross-section measurements show that the computation of yardage based on bin measurement for the *Culebra* and place measurement for other dredges was seven per cent less than the summation of monthly estimates. This is probably due to fill caused by tidal cross-currents.

The material being dredged by the *Cule-*

bra is probably 75 per cent clay, and great difficulty is sometimes experienced in dumping it from the hoppers as it is peculiarly tough and adhesive. Plans are being prepared with a view of driving two streams of water on to each hopper door, to facilitate the washing out of the material that is so difficult to dislodge.

As the capacity of the *Culebra* is about 2,400 cubic yards when the bins are entirely filled with solid material, and as the dredge is making 15,000 cubic yards a day in 16 loads, it follows that the amount of material carried out at each load is only about 39 per cent of the actual capacity of the dredge. This apparently light loading is necessary, because a large portion of the clay being excavated is so mixed with water that it does not settle readily, and after pumping a certain length of time, which has been determined in the Pacific Division to be about 40 minutes, it is not economical to pump longer. This shrinkage from what the dredge can actually contain is largely made up by the frequent trips.

Entertainment for the Sailors.

The Young Men's Christian Association of the Canal Zone is planning to care for and entertain the sailors of the Pacific Fleet that will be at Panama from December 12 to 22. Arrangements have been made with the Canal Commission for the use of the vacant rooms in the old Canal Administration building in Panama. Several hundred cots will be furnished and there will be a restaurant with soft drinks, a money exchange, reading and writing rooms, and information bureau. The scheme is made possible by the assured support and cooperation of the Canal Commission, and the Panaman Government through its President, J. D. de Obaldia.

Mr. F. C. Freeman, traveling Secretary of Y. M. C. A., will be in direct charge of this special work and a citizens' committee will be organized for cooperation. As soon as this committee organization is effected further details of the plan will be made public.

Lost—On Tuesday morning between steam shovel No. 207 and steam shovel No. 260, one note book and an ivory rule. Will finder please return same to the office of the Master Mechanic, Empire, or to their owner, Wm. G. Hull, Car Foreman, Cableway, Empire, C. Z.

STATEMENT OF CLASSIFIED EXPENDITURES TO SEPTEMBER 30, 1908.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1907. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Civil Administration.	Sanitation.	Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.	\$1,445,104.99	\$4,623,853.39	\$13,406,940.25	\$4,281,656.69	\$19,278,425.34	\$43,035,980.66
July.....	51,183.84	149,270.94	962,477.19	146,131.93	550,562.68	1,889,626.58
August.....	67,548.53	214,018.03	1,196,803.45	192,227.75	767,153.24	2,437,751.00
September.....	63,239.62	253,108.77	1,194,304.85	107,840.85	1,068,300.58	2,686,794.67
October.....	53,227.97	159,196.38	1,372,311.81	123,939.88	1,131,450.91	2,870,126.95
November.....	54,529.02	166,851.82	1,217,120.31	115,625.44	1,105,590.16	2,659,246.75
December.....	64,903.04	213,725.16	1,369,822.79	125,420.96	591,298.02	2,365,169.97
1908—						
January.....	66,802.92	221,866.30	1,468,021.44	156,956.22	1,584,821.98	3,498,468.86
February.....	72,514.14	174,076.77	1,523,011.72	100,700.40	859,405.82	2,759,708.85
March.....	63,653.60	165,311.77	1,460,229.91	110,232.15	1,307,321.82	3,106,749.25
April.....	74,046.55	178,041.65	1,580,416.19	138,115.21	797,137.63	2,767,757.23
May.....	73,340.26	184,381.35	1,580,369.11	69,824.83	955,405.12	2,863,320.67
June.....	379.34	200,833.07	1,755,771.69	107,940.79	905,767.19	2,969,933.40
July.....	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August.....	77,019.80	145,870.37	1,599,556.90	60,798.76	517,046.09	2,400,291.92
September.....	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
Total.	2,381,500.12	7,407,624.24	34,776,109.66	5,982,122.23	32,727,402.90	83,274,759.15

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION.
MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	62,835	65,652	62,835	65,652
February.....	81,850	67,436	81,850	67,436
March.....	54,333	32,022	54,333	32,022
April.....	73,500	15,257	73,500	15,257
May.....	16,309	28,837	16,309	28,837
June.....	40,003	45,475	40,003	45,475
July.....	46,945	47,183	46,945	47,183
August.....	172,851	528,702	172,851	528,702
September.....				
October.....				
November.....				
December.....				
Totals.....				

Total to December 1, 1908—701,553 cubic yards.

COLON—DREDGES.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	90,700	111,100	44,403	46,298
February.....	105,500	110,002	40,187	25,833
March.....	126,680	84,148	51,223	31,663
April.....	87,200	69,889	36,866	
May.....	64,875	133,842	56,386	
June.....	73,500	107,118	572,769	
July.....	58,050	17,000	625,497	
August.....	53,183	104,322	3,610	1,873
September.....	48,337	89,470	5,127	5,789
October.....	38,000	111,020	5,485	
November.....	38,000	63,260	5,400	
December.....	92,250	47,253	570,832	
Totals.....	399,820	1,027,645	1,969,316	652,598

Total to December 1, 1908—10,112,771 cubic yards.

* No work done inside of Canal Prism.
There were also 35,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Months.	1906*		1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	47,539	70,177	193,567	98,588	193,567	98,588
February.....	100,151	100,151	176,291	106,506	176,291	106,506
March.....	100,151	100,151	202,763	171,835	202,763	171,835
April.....	70,528	70,528	196,109	177,347	196,109	177,347
May.....	70,528	70,528	138,815	127,932	138,815	127,932
June.....	59,537	59,537	3,532	116,998	127,953	127,953
July.....	87,423	78,357	14,628	136,816	136,816	136,816
August.....	3,055	136,777	26,866	104,780	37,999	37,999
September.....	11,517	121,633	36,315	109,667	61,210	61,210
October.....	12,056	160,795	114,222			
November.....						
December.....						
Totals.....	26,628	1,107,589	232,620	1,620,291	1,620,291	1,047,732

Total to December 1, 1908—4,034,830 cubic yards.

* No work done outside of Canal Prism.

CENTRAL DIVISION.

CULEBRA SECTION—STEAM SHOVELS.

Months.	1904		1905		1906		1907		1908	
	From Canal Prism	Outside Canal Prism								
January.....	243,472	914,254	70,650	120,990	566,750	1,227,022	683,410	1,227,022	683,410	1,227,022
February.....			75,200	168,410	83,271	156,883	132,840	239,178	156,883	239,178
March.....			132,840	213,749	879,325	1,242,374	27,556	196,209	1,242,374	1,962,858
April.....			27,556	75,985	212,653	134,032	31,959	78,270	134,032	134,032
May.....			31,959	78,270	139,433	171,927	70,876	171,927	171,927	171,927
June.....			44,285	59,453	753,468	1,122,860	53,488	112,256	1,122,860	1,122,860
July.....			23,226	277,002	830,499	1,132,498	28,666	221,642	1,132,498	1,132,498
August.....			28,666	50,540	790,632	1,022,576	42,935	50,540	1,022,576	1,022,576
September.....										
October.....										
November.....										
December.....										
Totals.....	243,472	914,254	2,702,991	9,177,130	12,668,804					

Total to December 1, 1908—25,706,651 cubic yards.

CHAGRES SECTION—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	159,447	159,447	159,447	159,447
February.....	324,233	324,233	324,233	324,233
March.....	235,902	235,902	235,902	235,902
April.....	322,145	322,145	322,145	322,145
May.....	345,757	345,757	345,757	345,757
June.....	366,810	366,810	366,810	366,810
July.....	2,900	2,900	2,900	2,900
August.....	21,546	346,948	346,948	346,948
September.....	25,627	424,911	424,911	424,911
October.....	44,044	336,390	336,390	336,390
November.....	98,652			
December.....	192,769	3,402,171	3,402,171	3,402,171
Totals.....				

Total to December 1, 1908—3,602,602 cubic yards.

FRENCH AND AMERICAN RECORDS.

Months.	1906*		1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	95,940	95,940	95,940	95,940	95,940	95,940
February.....	116,820	116,820	116,820	116,820	116,820	116,820
March.....	110,700	110,700	110,700	110,700	110,700	110,700
April.....	112,340	112,340	112,340	112,340	112,340	112,340
May.....	62,697	62,697	64,352	69,223	64,352	69,223
June.....	41,533	98,400	108,338	696,170	98,400	696,170
July.....	54,530	165,284	165,284	68,274	165,284	68,274
August.....	114,308	105,780	144,625	9,250	105,780	9,250
September.....	81,836	97,170	357,122	762,276	97,170	357,122
October.....	71,176	92,988	365,423	656,356	92,988	365,423
November.....	71,094	90,528	349,551		90,528	349,551
December.....	485,153	1,191,233	1,557,695	586,094	1,191,233	586,094
Totals.....	485,153	1,191,233	1,557,695	586,094	1,191,233	586,094

Total to December 1, 1908—11,193,517 cubic yards.

* No work done inside Canal Prism

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	18,984	6,186	18,984	6,186
February.....	21,203	3,686	21,203	3,686
March.....	28,750	1,014	28,750	1,014
April.....	47,688	1,187	47,688	1,187
May.....	56,204		56,204	
June.....				
July.....				
August.....				
September.....				
October.....				
November.....				
December.....				
Totals.....	179,641	12,364	179,641	12,364

Total to December 1, 1908—192,005 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY.

Months.	Dredges—1908.		Steam Shovels, 1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	7,203	7,203	38,661	385
February.....	67,963	67,963	67,963	5,231
March.....	92,261	92,261	92,261	6,682
April.....	54,606	54,606	54,606	18,417
May.....	68,691	68,691	68,691	
June.....	87,675	87,675	87,675	4,204
July.....	91,065	91,065	91,065	375
August.....	88,605	88,605	88,605	501
September.....	71,201	71,201	71,201	497
October.....	47,109	47,109	47,109	2,259
November.....				
December.....				
Totals.....	715,040	715,040	715,040	38,551

Total to December 1, 1908—833,307 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at the La Boca locks and dams in 1907, and 137,275 cubic yards at Cardenas Hill in March, April, May, June, July, August, September, October and November, 1908.

LA BOCA—DREDGES.

Months.	1906*		1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	95,940	95,940	95,940	95,940	95,940	95,940
February.....	116,820	116,820	116,820	116,820	116,820	116,820
March.....	110,700	110,700	110,700	110,700	110,700	110,700
April.....	112,340	112,340	112,340	112,340	112,340	112,340
May.....	62,697	62,697	64,352	69,223	64,352	69,223
June.....	41,533	98,400	108,338	696,170	98,400	696,170
July.....	54,530	165,284	165,284	68,274	165,284	68,274
August.....	114,308	105,780	144,625	9,250	105,780	9,250
September.....	81,836	97,170	357,122	762,276	97,170	357,122
October.....	71,176	92,988	365,423	656,356	92,988	365,423
November.....	71,094	90,528	349,551		90,528	349,551
December.....	485,153	1,191,233	1,557,695	586,094	1,191,233	586,094
Totals.....	485,153	1,191,233	1,557,695	586,094	1,191,233	586,094

Total to December 1, 1908—11,193,517 cubic yards.

* No work done inside Canal Prism

FACTS ABOUT GATUN DAM.

The Foundation and the Methods of Its Construction.

A portion of the rock toe on the up-stream end of Gatun Dam sank about 20 feet on November 21. During several weeks prior to this date a slide under the high trestle of the relocated Panama railroad at Gatun made necessary the dumping of an additional quantity of rock before the roadbed was brought to grade. In the week of November 15, high water in the Chagres River flooded the tracks of the Panama railroad at Gatun. About the same time a rumor was circulated that the borings on the site of the Gatun Dam revealed the existence of a great lake beneath it. In order that all misapprehension and doubt as to the foundations of both the dams and the locks at Gatun may be dispelled, the following official statement of conditions there is published:

The purpose of the dam at Gatun is to impound the waters of the Chagres River and its tributaries in a lake that will be formed in the valley of the Chagres River. This dam will extend from the ridge of hills in the west across the valley to the ridge on the east, and will be about one and one-half miles long. At the extreme east end the locks are being built through a small hill on which the dam abuts. The dam itself is divided into two parts, one extending from the site of the locks to the spillway, the other extending from the spillway to the hills on the west. The spillway will be located through a small hill which rises in the middle of the site of the dam. The excavation for a temporary spillway 300 feet wide through which the flow of the Chagres will pass during construction has been completed, and concrete will be laid there early in January. There are three old channels running through the dam site, first, that of the Chagres River and the east diversion, which runs along the foot of the east hills; second, that of the old French canal which had been dug from Cristobal to a point near Bohio, and third, the west diversion channel, made by the French to keep the water of the Chagres from the excavation while they were digging the canal.

The plan for constructing the Gatun Dam is to pump sand and clay upon the site selected until a hill with top at reference 135 feet above sea level and 1,700 feet wide extends across the valley. This sand and clay have been found in large quantities down the valley of the Chagres River convenient to the site and have been proved by thorough test to be good material for an earthen dam. The dam will be made by suction dredges, which will pump the material mixed with water upon the site, and the water running off will leave a closely packed deposit of homogeneous material. For the purpose of adding weight to the dam and for the further purpose of keeping the material from sliding north and south, as a great mass of earth is likely to do, two walls or toes of rock are being built across the valley.

The north or downstream toe is composed of rock and earth taken from the cut at Mindi and from the site of the locks. The south or up-stream toe is composed of the hard rock taken from the cut at Bas Obispo

and of material excavated from the lock site and at Mindi. The ridge of Bas Obispo rock is 30 feet broad at the top, and when completed will be 60 feet high. It already has reached that height in one place and has a 1 to 1½ slope. Back of this ridge of rock, or up-stream, the excavation taken from the works at and near Gatun, and which is not needed in the north toe, will be dumped. This wall of rock and of mixed material forms the south or up-stream toe. Between the north and south walls, or toes, of the dam, three million cubic yards of the sand and clay from the valley of the Chagres River will be pumped. These toes are not part of the dam proper, but are merely built to hold the material of the hydraulic fill until the water has drained off, and to make unnecessary the greater fill that would be required if the material were allowed to seek its natural slope.

The rock wall of the south toe has been extended from the foot of the east hill to the spillway. This extension closed the old channel of the Chagres River and east diversion, and of the old French canal, and the water of the river found an outlet through the west diversion channel dug by the French. The old French canal crosses the Chagres River in five places between Gatun and Bohio and has become the channel through which a large part of the water of the Chagres River flows to Gatun. A short distance above the site of the dam the Gatuncillo River flows into the Chagres. The building of the toe forces the water from the Gatuncillo River and that which comes through the channel of the old French canal to seek an outlet at a right angle to its natural course, and in consequence each high water during the rainy season has flooded the flats south of Gatun, simply because the old French diversion channel is not large enough to carry off the water as rapidly as it comes down the valley. The high water in the week of November 15 merely repeated what had happened several times during the present rainy season, namely, flooded the flats south of Gatun, and, as the flood was unusually heavy, the water rose over the tracks of the old line of the Panama railroad. In some places it was eight inches above the tops of the rails.

Half way between the foot of the east hill and the spillway the old French canal channel runs through the dam site, but it has been closed by the construction of the south toe. The silt and soft mud that had collected in the bottom of this channel for the past twenty years was not removed when the construction of the toe was begun, and when the weight of the rock became great enough it displaced the soft bottom of the old channel and forced it up 200 feet north of the toe into the site of the dam. This was anticipated and desired. It is also anticipated that other parts of the toe may settle in the same way. The more they settle the firmer will be the foundation of the toe, for the result is simply what it would have been if a big trench had been dug across the valley down to the stratum of stiff clay which underlies the dam site, and had then been filled with stone. The work on the dam is not in any way interrupted by these small settlements. Rock will be dumped until the toe has reached the desired height of 60 feet, and each settling will only result in more rock being dumped

there until the solid foundation is reached and an equilibrium established.

The idea that there is a lake under the site of Gatun Dam probably originated from the fact that the borings made at close intervals all over the dam site discovered water in about 10 per cent of the holes sunk. The result of these borings was published in THE CANAL RECORD of September 2, 1908, and nothing has developed further. The report on these explorations, which will appear in the annual report of the Chairman and Chief Engineer to Congress, covers the matter thoroughly from a technical standpoint. Briefly it shows that water under pressure was found in several places under the dam site. The fact that there was no communication between the various holes shows beyond question that the water under the dam site is in pockets and is not a pool or lake, and the fact that the water was under pressure and rose in the test holes shows that it has no outlet. In addition to the borings two test pits were sunk 100 feet below sea-level and they merely confirmed what the borings had already shown, that the dam is being built on a very firm foundation of impervious clay.

What is true of the foundation of the dam is also true of the foundation of the locks. There is no question at all of its satisfactory character. The locks are being constructed in a series of three double locks, making a rise from sea-level to the 85-foot level of the Gatun Lake. Each lock is 1,000 feet long, 110 feet broad at the entrance, and 41½ feet deep in fresh water over the sills.

The excavation for the south or upper lock is practically completed, and the concrete work will be begun as soon as the power handling and mixing plants are delivered on the Isthmus, and can be put in running order. The excavation in the second and third locks involves the removal of 1,400,000 cubic yards of material by steam shovel and 400,000 cubic yards by suction dredge. The steam shovel work is already well advanced, and the dredging will be begun soon. The locks will be built entirely of concrete, forming a series of three water-tight boxes, each divided into two parts. Beneath the level of the floor of the upper and second locks a curtain wall will be sunk to a sufficient depth to keep out whatever water is now finding or is likely to find its outlet beneath the lock site. The excavation on the curtain walls will be begun in a few weeks. The plans for the locks have been completed in all but a few details. The stone and sand necessary can be delivered at the handling plant in Gatun as soon as they are required.

The slide on the relocated line of the Panama railroad at Gatun is similar to those which occurred at Cucaracha and at other points along Culebra Cut and at Miraflores tunnel. It is caused by the earth, which has become saturated from the excessive rains and has been burdened with the weight of the fill, sliding on the surface of the rock which underlies it. This slide has reached its angle of repose for the present, but it is expected that during the next rainy season, when the fill is continued to the 95 foot grade, the slide will begin again. More material will then be dumped into the depression and the filling will be continued until the material has reached its angle of repose, when no further trouble is anticipated.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The music department of the Gorgona Woman's Club entertained the members on Thursday afternoon, November 24, with an interesting program, consisting of vocal and instrumental selections arranged under the direction of the chairman, Mrs. Beetham. There was a good attendance. A meeting called by the president was held earlier on the same day for the purpose of acting upon the resignation of the treasurer, Mrs. James Cockett. Mrs. Toberer was elected as her successor. The club presented the outgoing treasurer with a set of souvenir spoons as a token of appreciation of her faithful and untiring services. Mrs. Cockett left the Isthmus on Monday, November 30, for New York.

In order to facilitate the work of the local club with the Canal Zone Federation of Women's Clubs, the Gorgona Woman's Club has arranged to pay all expenses of the members of Federation committees or their representatives at all called meetings of the Federation. The club has also adopted the rule that all reports shall be presented in writing for the convenience of the recording secretary. The regular monthly meeting of the philanthropy department was held on December 2 at the home of the chairman. The next regular general meeting of the club will be held December 3. The club has under consideration an entertainment to be given sometime in January. Arrangements for the Christmas celebration are about completed, and the tree will be provided with presents for sixty children. There will be a program limited to forty minutes.

The Gorgona Dramatic Club is rehearsing for its next entertainment which will be given just before the holidays. A farce comedy, entitled "The Doctor," will be produced. The date will be announced later.

Thanksgiving Day was observed by special services at the chapels in Gorgona, Empire and other points in the Zone, including the colored missions, where the services, arranged by Protestant chaplains, were largely attended.

There was good attendance at the regular meeting of the study club, in connection with the Culebra Woman's Club, Thursday, November 19. The president of the club has returned and will preside at the meeting on December 4. The Woman's Guild holds its regular meetings the first and third Tuesday in the month at 4 o'clock.

The Ancon Woman's Club holds its regular meeting, December 3, the program being under the direction of the philanthropy department.

The Empire Woman's Club will hold its next meeting on December 10. The plan of work has not yet been determined upon, but it is expected that the outline will be given at this meeting. The Gamble Concert Company gave a concert at Empire on Thanksgiving evening, at which there was a large attendance.

Interest in the Cristobal Sunday school work is well sustained, the average attendance being 80, which is a large increase over last year. Mr. H. L. Stuntz is the superintendent and a number of teachers have volunteered their services. The development of the school has been remarkable. The pupils are arranging an entertainment for

the benefit of the colored Sunday schools of Christ Church and of the Wesleyan church, Colon, at Christmas, when they will contribute toys and suitable gifts.

The Paraiso Woman's Club, will hold its meetings on Thursday afternoon at 2.30. The members are taking up the work with interest. The chair appointed Miss Lulu Grobe, chairman of the entertainment committee at the organization meeting. Other appointments will follow, and the club will soon be on a good working basis.

The social meeting of the Pedro Miguel Woman's Club will be held at the clubroom on Wednesday December 3. There will be a special program.

The Canal Zone Christian Federation, founded September, 1908, has issued a printed copy of its constitution. The organization is purely nonsectarian, and all members of Christian religious bodies are eligible for membership upon election and payment of \$1 yearly. The executive committee, consisting of officers of the Federation, a member from each of the religious bodies in the Canal Zone, holds its meeting six times during the year, in September, November, January, March, May, and July. The first direct activity of the Federation is to secure the services of Dr. L. W. Munhall, of Germantown, Philadelphia, who will come to the Isthmus for the purpose of holding a series of evangelistic meetings during the month of January, and possibly longer. Dr. Munhall, who is one of the most distinguished evangelists in the States, especially as a speaker to men, will be accompanied by Prof. John Lowe, of Philadelphia, singer and leader, who will bring stereopticon views as a special attraction.

Christmas Sale in Ancon.

The Ancon Woman's Club will hold a bazaar for the sale of Christmas articles in the building occupied by the District Quartermaster, on Friday and Saturday, December 4 and 5, beginning at 2 p. m. on each day. The sale will be open also in the evenings. On the second evening, it is proposed to auction off the remaining articles. A large variety of attractive articles will be displayed. A Japanese tea room, a booth containing home-made delicacies and a children's room are among the special features offered. There will be no admission fee and the public is cordially invited.

New Concert Orchestra Company.

The Isthmian Canal Commission Concert Orchestra Company has recently been organized at Cristobal with Prof. J. J. Proschaska as musical director and Mrs. W. J. Donaldson associate director. The orchestra will be composed of a piano, first and second violins, cornet, clarinet, flute, trombone, cello, and drums. It is the intention of the company to give a series of entertainments in the Commission clubhouses. A concert was given at Culebra on November 29, and one will be given at Empire on December 7. Anyone wishing information in regard to the company may address either the director at Culebra or the associate director at Cristobal.

Minstrels at Empire.

The second annual minstrel performance by the United States Marines, which proved such a success at their theater at Camp Elliott on Thanksgiving Day, will be repeated by request at Kangaroo Hall, Empire, Friday evening, December 11, 1908, under the auspices of Empire Court, I. O. P. K.

PERSONAL.

Capt. G. M. Hoffman and Capt. Horton W. Stickel, assistant engineers of the Atlantic Division, are on their vacation in the States.

Mr. W. G. Tubby, former chief of the old division of Material and Supplies, is on the Isthmus in the interest of the Union Oil Company of California, of which he has been made Assistant to the President.

Episcopal Church Notes.

The Rt. Rev. Albion W. Knight, bishop of Cuba, arrived on the Isthmus November 23, for his second official visitation. During the week confirmations were held at Christ Church, Colon; St. Andrew's, Gorgona; St. James's and St. Mary's, Empire; St. Mark's, Culebra; St. Phillip's, Las Cascadas; St. Luke's, Ancon; Grace Church, Cristobal, and the La Boca mission. Over 86 persons were confirmed.

The Rev. W. H. Decker of Scranton, Pa., has arrived on the Isthmus to take up his duties in connection with the Panama mission of the Protestant Episcopal Church of America. Mr. Decker will be stationed at Empire in charge of the church there and will also have charge of the churches in Gorgona and Culebra.

The week just past has been celebrated as the twenty-fifth anniversary of the establishment of the Anglican Church on the Isthmus, the history of which was given in THE CANAL RECORD of November 4. Rev. S. Purcell Hendricks, late archdeacon of Panama, who for 16 years was in charge of the work, was invited to come for the anniversary, and to preach the historic sermons. Services were held at Christ Church, Colon, on Sunday, November 22; at Gorgona on November 24; and at St. Paul's, Panama, on November 29, the bishop of Cuba being present on the latter occasion, and took part in the service. All the clergy of the Protestant Episcopal Church on the Isthmus were also present. The local choirs were augmented by those from the other parishes.

On Thanksgiving Day the anniversary picnic was held at Gorgona for the West Indians. Special trains were run from Colon and Panama and the picnic was attended by from 2,500 to 3,000 persons.

A reception in honor of Bishop Knight and the Rev. Mr. Decker was given by Archdeacon and Mrs. Bryan on Monday evening, November 30, at the residence of the chaplain at Ancon, to which the residents of Ancon, Corozal and La Boca were invited. Bishop Knight and Archdeacon Hendricks sailed for Kingston, Jamaica, on the R. M. S. P. *Atrato* on December 2.

Missionary Tea.

There will be a missionary tea given under the auspices of the Woman's Foreign Missionary Society at the parsonage of the Methodist Church in Panama, on Thursday evening, December 10, to which all persons interested in this work are most cordially invited. Refreshments will be served as 6.30 o'clock. Price of supper, 15 cents gold.

Brotherhood of Locomotive Engineers.

The regular meeting of Division 756, Brotherhood of Locomotive Engineers, will be held at Pedro Miguel, Sunday afternoon, December 5, at 1 o'clock. Important business will be transacted.

W. H. BUCKINS, F. A. E.

OFFICIAL CIRCULARS.

Surveying Officer.

CULEBRA, C. Z., November 23, 1908.

CIRCULAR No. 222.

Effective this date: Mr. H. S. Farish is appointed Surveying Officer.

GEO. W. GOETHALS,
Chairman

Transfer of Claim Officer.

CULEBRA, C. Z., November 23, 1908.

CIRCULAR No. 223.

By Circular No 195, a Claim Officer was appointed, with station in the office of the Chairman, for the purpose of administering the provisions of the Act of Congress, approved May 30, 1908, granting to persons employed by the Isthmian Canal Commission in hazardous employment the right to receive compensation for injuries sustained in the course of their employment.

Effective, December 1, 1908: The Claim Officer will be transferred to the office of the Examiner of Accounts, at Empire, and the duties devolving upon him, as set forth in Circular No. 195, will be performed under the direction of the Examiner of Accounts.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Vacation Leave.

CULEBRA, C. Z., November 27, 1908.

CIRCULAR No. 225.

It has been the practice, in computing vacation leave, to reckon authorized leave, without pay aggregating less than thirty days as service. This practice will be discontinued, and employes will be required in future to serve ten full months from the beginning of the service year, exclusive of authorized leave without pay, before entering upon their annual vacation leave.

GEO. W. GOETHALS,
Chairman.

Transportation for Commission Employees.

CULEBRA, C. Z., November 28, 1908.

CIRCULAR No. 224.

Commencing January 1, 1909, the following forms of transportation on the Panama railroad will be issued by the Commission:

SIXTY-TRIP TICKETS.

Will be issued, as heretofore, to I. C. C. employes who are compelled to make frequent trips on official business. This form of transportation will also be issued to school children residing at points where proper school facilities are not available, and to members of the I. C. C. band for use in attending regular band meetings and rehearsals.

EMPLOYES' OFFICIAL BUSINESS TRIP-TICKETS.

This is a new form which will be issued to I. C. C. employes for use on official business. Also to patients traveling to and from Zone hospitals and Taboga Sanitarium. This ticket is similar to, and will supersede Form A. 1. 74, now in use, except that it will be printed on red paper, and space will be provided for stating the nature of business on which employe is traveling, which must appear on every ticket issued. Under no circumstances must this ticket be issued for other than the purposes stated above. Supply will be furnished your department, with instructions for use, as soon as received from the States.

EMPLOYES' TWENTY-FOUR TRIP-TICKETS.

This is also a new form which is now being printed. Each employe on the gold roll will be furnished a book containing twenty-four single trip coupons, covering his monthly allowance of transportation for the year. This ticket will be similar in form to the present Sixty Trip-Ticket, and the following instructions for use will appear on cover:

"Employes will fill in on coupon stations between which it is desired to travel. Coupons must be signed in the presence of conductor, who will note that signature of holder corresponds with that on cover. Conductors will not accept detached coupons. Coupons will not be accepted unless presented during the month stamped on ticket.

"This transportation is issued for the personal use of the employe whose name appears within. Upon termination of employe's service with the Commission, this book, with unused coupons, must be surrendered to timekeeper before receiving pay check.

"Any attempt to misuse this transportation will result in immediate dismissal from the service."

The granting of this transportation must not be considered a vested right, and the Commission reserves the right to cancel same at any time. In view of the penalty for misuse of this ticket, employes are

warned against any attempt to transfer or otherwise dispose of same.

A supply of "Requests for Employes' 24-Trip Ticket Books," Form 188-C. E., will be forwarded to you under separate cover. Upon receipt of same, kindly submit at once, in duplicate, a list of all employes on the gold roll in your department. Tickets will then be issued direct from this office and forwarded to you for distribution prior to January 1. Each book contains a form of receipt, which must be signed by employe and forwarded at once to this office.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Transportation on Freight Trains.

PANAMA RAILROAD COMPANY,
OFFICE OF THE GENERAL MANAGER,
COLON, R. P., November 25, 1908.

TO ALL CONCERNED.

On and after December 1, 1908, no permission will be granted to anyone to ride on freight trains, excepting such as may be arranged for through the Heads of Departments of the Isthmian Canal Commission

HIRAM J. SLIPPER,
General Manager.

Sale of Unclaimed Packages.

In order to recover its freight and storage charges, the Panama railroad will dispose of the accumulation of "over" and "unclaimed" shipments now in its possession, by public auction, Monday, December 28, 1908, at 9 a. m. Sale to be held on Dock No. 11, Cristobal, Canal Zone.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery, and merchandise general, all of which has been held six months and over in an effort to locate owners.

LEGAL NOTICES.

In re Estate of Anatole Laurence, Deceased.—To, any and all persons having any claim or claims against the estate of Anatole Laurence, deceased, who died at Empire, Canal Zone, on the 18th day of September, 1908:

You are hereby notified to present your claims, duly verified, to Felix Laurence, administrator of said estate, or to the undersigned, on or before the 1st day of June, 1909, or your claims will be forever barred according to law.

Witness my hand, this 6th day of November, A. D. 1908.

E. M. GOOLSBY,

Clerk of the Circuit Court, Second Judicial Circuit,
Canal Zone, at Empire.

EMPIRE, C. Z., November 2, 1908.

Estate of Michael Doyle Administration.

All relatives of the late Michael Doyle, an American, who died intestate at Ancon Hospital on the 20th of July, 1908, are hereby requested to communicate with the Administrator of the estate. Also all persons owing the said estate will likewise communicate with the Administrator in order that a settlement may be effected; and all creditors of the estate must file their claims, properly verified, with the Administrator within six months, or the same will be barred.

F. H. SHEBLEY,
Administrator.

United States of America,) In the First Judicial
Canal Zone.) Circuit.

Frank Roch, American, died intestate on or about May 26, 1908, leaving an estate located at Ancon, Canal Zone, consisting of various personal belongings of little value, Isthmian Canal Commission pay certificates for \$250, and cash amounting to \$260.

James Tray, American, who resided at Ancon in the Canal Zone, died intestate on or about January 22, 1906, leaving an estate at Ancon, consisting of Isthmian Canal Commission pay certificate for \$110 Panama currency.

Louis M. Gilbert, alias Charles Gibson, American, who resided at Pedro Miguel, C. Z., died intestate on or about May 4, 1907, leaving an estate at Pedro Miguel, consisting of Isthmian Canal Commission pay certificate of the value of \$27.75 net, and \$1 50 cash.

Bartole Salcedo, a native of the Dutch West Indies, who resided at Ancon, C. Z., died intestate on or about June 29, 1907, leaving an estate at Ancon, consisting of Isthmian Canal Commission pay certificate for \$1.60 Panama currency.

Charles White, American (colored), who resided at Pedro Miguel, Canal Zone, died intestate on or about April 3, 1908, leaving an estate at Ancon, Canal Zone, consisting of \$5 U. S. Currency.

The Collector of Revenues has filed a petition for escheat in each of the above mentioned estates under section 779 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the courthouse in Ancon, Canal Zone, on January 18, 1909, at 9 o'clock a. m., to establish their claims to the said estates, or to show cause why the same should not escheat to the Canal Zone.

F. H. SHEBLEY,
Circuit Court Clerk Pro Tempore,
Ancon, Canal Zone.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The official score of the 1908 bowling tournament for the Canal Zone championship held at Empire on Thanksgiving Day, November 26, follows:

		SINGLES			Total
Name.	Residence.	1st.	2d.	3d.	
Edwards	Empire	191	165	166	522
Bullard	Cristobal	189	155	177	521
McCormack	Cristobal	194	185	137	516
Potter	Empire	190	171	142	503
Brown	Empire	190	170	173	502
Bardelson	Empire	194	161	144	499
Dougherty	Empire	160	171	154	485
Huson	Empire	148	177	150	475
Lamster	Culebra	130	170	174	474
Vogel	Culebra	135	164	169	468
Barte	Cristobal	150	124	190	464
Righey	Culebra	162	163	144	459
Varenkamp	Gorgona	129	152	161	442
Driscoll	Gorgona	139	131	161	431
Morgan	Culebra	140	160	129	429
Gustavson	Empire	134	162	120	416
Hinkley	Gorgona	169	142	111	422
Robertson	Cristobal	145	130	139	414
Winters	Culebra	121	154	138	413
McConaughy	Gorgona	121	134	119	374

		DOUBLES		Grand Total
Town.	Name	Scores.	Total	
Empire	Brown	144 197	175 517	1,069
	Dougherty	199 178	205 522	
Empire	Bardelson	173 153	199 525	1,032
	Edwards	151 181	175 507	
Cristobal	Bullard	167 166	167 500	998
	McCormack	188 142	168 498	
Empire	Gustavson	144 201	168 513	971
	Huson	122 150	186 458	
Cristobal	Barte	179 182	122 483	953
	Robertson	176 124	170 470	
Culebra	Vogel	178 179	145 502	930
	Lamster	118 153	147 428	
Gorgona	Varenkamp	121 139	205 465	906
	McConaughy	131 160	150 441	
Culebra	Winters	123 162	118 403	879
	Morgan	168 131	177 476	
Gorgona	Hinkley	130 133	146 409	875
	Driscoll	165 173	127 466	

Empire won two firsts and one second, which equal 13 points. Cristobal won one second and two thirds, which equal 5 points.

EMPIRE.

Empire defeated Gorgona at indoor baseball on Saturday evening, November 28, by a score of 62 to 22.

Empire defeated Cristobal in the pool and billiard tournament on Saturday evening, November 28, 4 to 0.

CULEBRA.

The boys from Cristobal defeated the Culebra boys in a return athletic meet, held at the latter place on Saturday, November 28. The following is a summary of the events:

Fifteen-yard dash—First, Atkins of Culebra; second, Sims of Cristobal; third, Roe of Culebra.

Running high jump—First, Sims of Cristobal; second, Turner of Cristobal; third, Vard of Cristobal.

Hurdle ball relay race—Won by Culebra.

Baseball game—Won by Cristobal by the score of 19 to 12.

Bowling matches: Duck pins—Won by Culebra, with first, second and third in high scores. Large pins—Won by Cristobal, with first in high score and tie for second, Culebra taking third place. The result was a victory for Cristobal with a total of 48½ points to Culebra's 37½.

At the first rehearsal of the mixed chorus under the leadership of Mr. C. E. Jennings there were thirty people present. Rehearsals are in progress for an entertainment to be given in the near future.

CRISTOBAL.

Judice Thos. E. Brown, Jr., has been elected chairman of the Y. M. C. A. executive council, vice Mr. W. G. Tubby, resigned. The executive council has authorized the taking of heart and lung test for all men taking gymnasium work or recreative games.

Committees representing the Woman's Club, Public Schools, Union Church, Episcopal Church, and Y. M. C. A. have been appointed and are preparing for a community Christmas celebration, to be given at the clubhouse.

A pennant has been adopted for the Cristobal Y. M. C. A., and a full supply is expected about Christmas time. The words, Y. M. C. A. Cristobal, Canal Zone, in orange, will be inscribed on a black field.

A baseball field is being laid off in the space back of the clubhouse for the junior members. A cinder track and other features for outdoor athletics will be worked out for the dry season.

Mr. Thomas Poulson was the only contestant to complete the walk across the Isthmus. His time was thirteen hours, of which one and one-half hours were spent in rest, making the actual walking time eleven and one-half hours for forty-eight miles of railroad ties.

COMMISSARY DEPARTMENT

NOTICE.

Patrons of the Commissary Department, when dealing with the Cristobal office, will address their individual orders, deposits, etc., to the Order Room, Commissary Department, Building No. 2, Cristobal.

Complaints should be made in separate letters and addressed to the Subsistence Officer, Building No. 2, Cristobal.

JOHN BURKE,
Manager.

Approved:
EUGENE T. WILSON,
Subsistence Officer

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning December 1
FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	6
Shoulder and neck (not under 6 pounds).....per lb	7
Entire forequarter (not under 10 pounds).....per lb	9
Leg (8 to 10 pounds).....per lb	16
Short-cut chops.....per lb	22
Lamb—Stewing.....per lb	6
Entire forequarter.....per lb	8
Leg (6 to 8 pounds).....per lb	27
Chops.....per lb	29
Veal—Stewing.....per lb	10
Entire forequarter (15 to 20 lbs).....per lb	11
Loin for roasting.....per lb	21
Chops.....per lb	22
Cutlets.....per lb	26
Pork—Cuts.....per lb	20
Beef—Suet.....per lb	4
Soup.....per lb	8
Stew.....per lb	12
Corned.....per lb, 12, 14, 16	12, 14, 16
Pot roast (from sirloin butt).....per lb	17
Rib-roast, second cut (not under 3 pounds).....per lb	19
Rib-roast, short cut (not under 3½ pounds).....per lb	23
Sirloin roast.....per lb	29
Rump roast.....per lb	29
Porterhouse roast.....per lb	29
Steak, round.....per lb	23
Rib.....per lb	24
Sirloin.....per lb	29
Porterhouse.....per lb	29
Rump.....per lb	29

MISCELLANEOUS.

Livers—Beef.....per lb	11½
Calf.....each	65
Sausage—Frankfurter.....per lb	17
Leberwurst.....per lb	17
Sweet bread—Veal.....each	1.20
Beef.....per lb	30
Pigs' feet.....per lb	14
Eggs, fresh.....dozen	50
Oysters.....keg	90

POULTRY AND GAME.

Chickens—Fancy Roasting, large.....each, 1.40 and 1.20	1.40 and 1.20
Fowls, medium and large.....each, 80c, and 1.00	80c, and 1.00
Ducks, fatted.....each	1.22
Chickens, broilers.....each	75
Turkeys.....per lb	28
Squabs.....each	45
Capons.....each	2.40

CURED AND PICKLED MEATS

Bacon—Strips.....per lb	23
English, breakfast sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Hunter's York cut.....per lb	25
Ferris.....per lb	20
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	40
Cheese—Neufchatel.....each	6
Young America.....per lb	22
Swiss.....per lb	31
Edam.....each	1.05
Camembert.....per lb	28

Cheese—McLaren's.....jar	15
Pinxter's.....tin	22
Gouda.....per lb	34
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....tin	20
Milk, Briarcliff.....bottle	25
VEGETABLES AND FRUITS	
Cauliflower.....per lb	7
White potatoes.....per lb	3½
Sweet potatoes.....per lb	2½
Cabbage.....per lb	4
Onions.....per lb	3½
Yams.....per lb	3½
Lemons.....dozen	24
Oranges.....dozen	18
Apples.....per lb	5
Grapefruit.....each	4
Tangerines.....each	2

§ Sold only from cold-storage and not from Commissaries

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, November 28, 1908:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. Diver'n)
Height of low water above mean sea level, feet.....	129	92	46	6	0	0
Maximum height above low water, feet:						
Sunday, Nov. 22.....	5.7	5.0	7.9	20.0	13.2	11.0
Monday, Nov. 23.....	8.2	6.6	10.1	16.7	12.5	10.9
Tuesday, Nov. 24.....	3.5	3.8	6.6	16.5	11.9	10.2
Wednesday, Nov. 25.....	2.9	3.1	5.1	13.3	10.6	8.9
Thursday, Nov. 26.....	4.5	4.1	6.0	11.7	9.1	7.2
Friday, Nov. 27.....	3.0	3.4	5.3	11.4	7.9	6.3
Saturday, Nov. 28.....	2.8	3.1	4.8	9.8	7.0	5.6

Rainfall, November 1 to 28, 1908, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations	Maximum in one day	Total.
<i>Atlantic Division—</i>		
Cristobal.....	3.65	29.35
Brazos Brook.....	2.86	26.32
Gatun.....	2.84	20.96
Bohio.....	3.00	18.65
<i>Central Division—</i>		
Tabernilla.....	1.55	10.69
San Pablo.....	.96	8.32
Bas Obispo.....	1.32	6.59
Gamboa.....	1.00	7.16
Empire.....	.59	3.99
Camacho.....	1.67	0.62
Culebra.....	.59	4.71
Rio Grande.....	.72	4.98
<i>Pacific Division—</i>		
Pedro Miguel.....	2.24	8.16
La Boca.....	.95	7.23
Ancon.....	1.00	8.78
<i>Atlantic Coast—</i>		
Porto Bello.....	6.78	33.38
<i>Upper Chagres.</i>		
El Vigia.....	1.85	11.59
Alhajuela.....	2.75	9.80

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., December 2, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

Aznoe, Jas. L.	Mede, C. H.
Buschmann, Henry	Myers, James
Comer, Robert	Noon, M. B.
Dempster, Miss G	O'Neal, Michael
Emerson, C. W.	Orr, Miss Minnie
Ferguson, Miss B. K.	Podé, Steve
Fogg, Mrs. Belmont	Pross, Louis
Poster, Frank	Roberts, Dr. G. J.
Hackenburg, Mrs. A. L.	Smith, S. W.
James, Ruf	Taylor, Owen
LaCaton, Rafael O.	Townsley, Miss Jeanne
Leonard, Mrs. Sarah	Van den Heurck, C. I.
Love, Mrs. William	

The following steamers have recently arrived at La Boca: November 21, *Quito* from Buenaventura; November 25, *Henryck Ibsen*, collier from the South; November 27, *California* from Southern ports; November 27, *Acapulco* from San Francisco. Departures were: November 21, *Newport* to San Francisco; November 21, *Ecuador* to Buenaventura; November 23, *Panama* to Valparaiso.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Advance.....P. R. R. Saturday.....Nov. 28	28
Allianca.....P. R. R. Thursday.....Dec. 3	3
Prinz Aug. Wilhelm—H.-A.....Saturday.....Dec. 5	5
Colon.....P. R. R. Tuesday.....Dec. 8	8
Atrato.....R.-M.....Saturday.....Dec. 12	12
Panama.....P. R. R. Monday.....Dec. 14	14
Prinz Joachim.....H.-A.....Saturday.....Dec. 19	19
Advance.....P. R. R. Thursday.....Dec. 24	24
Trent.....R.-M.....Saturday.....Dec. 26	26
Allianca.....P. R. R. Tuesday.....Dec. 29	29
Colon.....P. R. R. Monday.....Jan. 4	4
Panama.....P. R. R. Saturday.....Jan. 9	9
Advance.....P. R. R. Tuesday.....Jan. 19	19
Allianca.....P. R. R. Monday.....Jan. 25	25
Colon.....P. R. R. Saturday.....Jan. 30	30

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Prinz Joachim.....H.-A.....Tuesday.....Dec. 8	8
Advance.....P. R. R. Friday.....Dec. 11	11
Trent.....R.-M.....Tuesday.....Dec. 15	15
Allianca.....P. R. R. Wednesday.....Dec. 16	16
Colon.....P. R. R. Monday.....Dec. 21	21
Prinz Aug. Wilhelm—H.-A.....Tuesday.....Dec. 22	22
Panama.....P. R. R. Sunday.....Dec. 27	27
Tagus.....R.-M.....Tuesday.....Dec. 29	29
Prinz Joachim.....H.-A.....Tuesday.....Jan. 5	5
Advance.....P. R. R. Wednesday.....Jan. 6	6
Allianca.....P. R. R. Monday.....Jan. 11	11
Colon.....P. R. R. Sunday.....Jan. 17	17
Panama.....P. R. R. Friday.....Jan. 22	22
Advance.....P. R. R. Monday.....Feb. 1	1
Allianca.....P. R. R. Sunday.....Feb. 7	7
Colon.....P. R. R. Friday.....Feb. 12	12

NEW ORLEANS TO COLON.

Parismina.....U. F. C. Saturday.....Dec. 12	12
Heredia.....U. F. C. Saturday.....Dec. 19	19
Parismina.....U. F. C. Saturday.....Jan. 2	2
Heredia.....U. F. C. Saturday.....Jan. 9	9
Parismina.....U. F. C. Saturday.....Jan. 23	23

COLON TO NEW ORLEANS.

Heredia.....U. F. C. Tuesday.....Dec. 8	8
Parismina.....U. F. C. Tuesday.....Dec. 22	22
Heredia.....U. F. C. Tuesday.....Dec. 29	29
Parismina.....U. F. C. Tuesday.....Jan. 12	12
Heredia.....U. F. C. Tuesday.....Jan. 19	19
Parismina.....U. F. C. Tuesday.....Feb. 2	2

COLON TO BARBADOS, CALLING AT TRINIDAD.

Orinoco.....R.-M.....Tuesday.....Dec. 8	8
Atrato.....R.-M.....Tuesday.....Dec. 22	22
Trent.....R.-M.....Tuesday.....Jan. 5	5

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colou via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

Concert by the I. C. C. Band.

HOTEL TIVOLI, ANCON.

Sunday, December 6, 1908, at 7.30 p. m.:

PROGRAM

1 March— <i>Col. Estey</i>.....Bigley	
2 Selection— <i>The Red Mill</i>.....Herbert	
3 (a) Intermezzo— <i>Rainbow</i>.....Wenrich	
(b) Popular march— <i>Prussian Lamb Rag</i>.....Wenrich	
4 Morceau— <i>After Sunset</i>.....Pryor	
5 Solo for Trombone— <i>Rocked in the Cradle of the Deep</i>.....Knight	
(Five Trombones in Unison.)	
6 Selection— <i>Hits of the Day</i>.....Remick	
(a) Mazurka— <i>Brather Bells</i>.....Losey	
(b) Tone poem— <i>Lilacs</i>.....Roberts	
8 Overture— <i>Beautiful Galatia</i>.....Suppe	
9 Humoresque on <i>The Merry Widow</i> —Haltz-Belstedt	
Introducing this popular melody from the opera "The Merry Widow" burlesqued in the following manner: 1. A little German band; 2. A flute solo with organ effect; 3. An amateur trombonist, who is willing to show what he can do if only requested to; 4. A street piano; 5. A ragtime as played on a banjo; and finally—the result, the popularity of this melody has produced—a brainstorm.	
10 March— <i>Flag of Victory</i>.....Von Blon	

CHAS. E. JENNINGS, Musical Director.

The next concert will be given at Porto Bello, Sunday, December 13.



The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Extending Electric Lighting System.

Within the next few days every village and hamlet on the Canal Zone between La Boca and Gorgona will be lighted by electric lights. A 400 k. w. generator, direct connected with a horizontal cross compound engine, running at 150 revolutions per minute, has been added to the equipment at the Empire power plant, making the extension of the present line possible. All the work of wiring the various villages and camps not yet supplied with the current has been completed and electricity will be furnished as soon as the new generator is in perfect running order. The number of lights that have been added to the circuit is 1,185, distributed as follows:

Camp Chagres, 80; Haut Obispo, 75; Santa Cruz, 200; Matachin, 100; Miraflores, 130; Pedro Miguel, 150; Rio Grande, 100; Cucaracha, 75; Cocoli shops, 100; Cunette, 75; miscellaneous, 100. The lights between Matachin and Gorgona are supplied as heretofore from the Gorgona power house.

Recovered from the Jungle.

The three ladder dredges left by the old French company on the banks of the Chagres near Frijoles, two at Frijoles and one at Chagrecito, have been floated down the river and will be utilized in the work of the Atlantic Division. It has been decided to use the hull of one of them as the float for a clam shell dredge that will presently be set at work at Nombre de Dios in the loading of sand. What disposal will be made of the other two is not determined, but one of the hulls may be used as the hull of a suction dredge for excavating in the lowland between the Mindi cut and Gatun Locks.

The often repeated marvel of excellent condition of machinery in the French equipment, is repeated in the case of these dredges. The engines are said to be in almost perfect condition, twenty or more

rainy seasons not having penetrated the heavy coating of paint which the caretakers put on the machinery when they abandoned the dredges to the jungle. In many places the hulls show the effects of the weather, but they also are in such preservation as to make it highly profitable to repair them.

On the banks alongside the dredges were four tenders and two old suction dredges. They are worthless for the purposes for which they were intended, but the hulls are in good condition, and an effort is being made to get them into the river. A gang of men is at work at Frijoles and Chagrecito lowering them to the level of the river on the chance that there may be a flood in the Chagres, big enough to float them, before the end of the rainy season. Most of the machinery in the dredges and their tenders can be utilized.

November Record of Track Shifters.

The six track shifting machines in the Central Division moved a total of 333,378 feet, or 129.2 miles of track during November. In the Tabernilla district track shifter No. 5 moved 95,100 feet, or 35.9 miles, and No. 6 moved 37,735 or 14.6 miles, a total for the district of 132,835 feet, or 51.5 miles. In the Gorgona district, No. 7 moved 74,900 feet, or 29.1 miles and No. 1 moved 11,985 feet, or 4.6 miles, a total of 86,883 feet, or 33.7 miles. In the Pedro Miguel district track shifter No. 9 moved 56,954 feet, or 22.1 miles, and No. 2 moved 56,706 feet, or 21.9 miles, a total of 113,660 feet, or 44 miles.

Panama Railroad Relocation Work.

Preparations are being made to push the work on the relocation of the Panama railroad as soon as the dry season opens. This work may be divided into three parts, that from Gatun to Gamboa, from Gamboa to Pedro Miguel, and from Pedro Miguel to Panama. Between Gamboa and Pedro Miguel the line will run on the east berm of the Canal at elevation 95, and the road can not be completed there until the construction work in the Cut has been further developed. From Pedro Miguel to Panama the track is already laid to the end of Miraflores tunnel, leaving only a short stretch to be built. A force of 200 men will be at work during the dry season on the Miraflores end.

Most of the work of the coming season will be done on the stretch between Gatun and a point on the relocated line opposite San Pablo. From the point opposite San Pablo to Gamboa Bridge the track has already been laid over a series of high trestles which are being filled by spoil from Culebra Cut. No work has been done between San Pablo and Gatun. Early in January two steam shovels and a pile driver, and a force of 700 men will be set at work on the Gatun end and will work up the Gatuncillo Valley. In the Gatuncillo Valley the work is almost wholly

along the side of the hills. A pioneer steam shovel will be sent through to excavate for a track, and will be followed by another which, in almost all cases, will complete the excavation back to the slope. The material to be handled is earth and rock. A few short trestles will be built across gullies. It is anticipated that the roadbed can be completed three miles up the valley by the beginning of the rainy season of 1909.

From San Pablo to the point where the line will turn west in the Gatuncillo Valley the construction is across the drainage system of the Chagres basin, and therefore consists of alternating cuts and fills. The larger part of the excavation will be rock and some of it will be heavy steam shovel work. It is thought that by the beginning of the next rainy season four miles of this part of the line will be finished. This will extend the track on the south end of the relocation as far north as Tabernilla. Two steam shovels and a pile driver will be used in this work and 500 laborers will be employed.

Dredging in November.

In November the dredging fleets of the Atlantic and Pacific Divisions excavated a total of 1,334,577 cubic yards, of which amount 1,179,921 cubic yards were taken from the Canal prism. Three 20-inch pipe line suction dredges, two sea-going suction dredges, three dipper dredges, and five ladder dredges were at work during the month.

In the Atlantic Division the total amount excavated was 623,098 cubic yards, of which 570,832 cubic yards were taken from the Canal prism. Of the 52,266 cubic yards excavated outside of the Canal prism, the dipper dredge *Chagres* took out 5,850 cubic yards at one of the piers in Cristobal, and the 20-inch pipe line suction dredge, No. 82, excavated 46,416 cubic yards in the channel at Gatun leading from the old French canal to the site of the unloading docks. During the month the dipper dredge *Chagres* was out of service one week while undergoing repairs, and the suction dredge *Ancon* lost one day while being fumigated. The record of the Atlantic dredges follows:

DREDGES.	Cubic Yards.		
	Earth.	Rock.	Total.
20-inch suction, No. 82	46,416	.....	46,416
20-inch suction, No. 85.	60,928	.....	60,928
Ladder, No. 1.....	116,025	.....	116,025
Ladder, No. 6.....	17,659	33,630	51,299
Dipper, Chagres.....	11,804	3,317	15,121
Dipper, Mindi.....	45,825	5,000	50,825
Sea-going suction, Ancon.....	282,484	.....	282,484
Total.....	581,151	41,947	623,098

The total excavation by the dredges of the Pacific Division was 711,479 cubic yards, of which amount 609,039 cubic yards were taken from the Canal prism. All of the dredges were working at the Pacific entrance excepting the 20-inch suction dredge *Sandpiper*,

NOTES OF PROGRESS.

(Continued).

which is excavating in the site of the lower locks at Miraflores. The record of the Pacific dredges follows:

DREDGES.	Cubic Yards.		
	In prism.	Outside prism.	Total.
Dipper Dredge.....	26,368	15,735	42,103
Ladder, Mole.....	31,595	86,655	118,250
Ladder, Gopher.....	87,342	.....	87,342
Ladder, No. 14.....	67,192	.....	67,192
Sea-going suction, Culebra.....	341,469	.....	341,469
20-inch suction, Sand-piper.....	55,123	.....	55,123
Total for month.....	609,089	102,390	*711,479

*About 1 per cent. of this was rock.

Lidgerwood Unloaders in November.

The seven Lidgerwood unloaders in the Central Division during the month of November unloaded a total of 1,666 trains, composed of a total of 28,475 cars. Of this number, 574 trains composed of 10,311 cars, were unloaded by the three unloaders at the La Boca dump, and 1,092 trains, composed of 18,164 cars were unloaded by the four unloaders at Tabernilla. As all the cars were of 20-yard capacity, the material unloaded represented about 569,500 cubic yards.

Sinking of the Finance.

In addition to the facts printed in THE CANAL RECORD of December 2, the New York newspapers of November 27 and 28 contain details of the sinking of the Panama railroad steamship *Finance*, which are corroborated by passengers on the ship who have since arrived on the Isthmus. The fog in which the *Finance* began her voyage to Cristobal was the heaviest in a quarter of a century, and the ship anchored three times between the dock and Sandy Hook. When the fog showed a rift about 8.30 o'clock on the morning of November 26 the *Finance* was in the main ship channel about three miles east of the Sandy Hook Lightship, and one mile off shore. She was started ahead at quarter speed, with her whistle sounding. At the time there were twenty-two ocean liners at anchor off Sandy Hook or slowly picking their way toward the harbor. A few minutes after the *Finance* got under way, the *Georgic*, a White Star freighter, came out of the fog bank, on a course at right angles to that of the Panama boat. Both vessels stopped their engines, and the *Finance* backed. The *Georgic* rammed the *Finance* in the port side amidships, and fifteen minutes later the Panama railroad boat had sunk on even keel with only her superstructure out of water. Excellent discipline prevailed among the crew and passengers, and a single tendency to a stampede among the crew was checked by Capt. Mowbray, who directed the work of rescue with a revolver in his hand.

Immediately after the collision the ammonia tank in the hold exploded and William D. Todd, the third assistant engineer, was almost suffocated by the gas. He rushed on deck, jumped overboard, and was not seen again. Henry Muller, the Isthmian Canal Commission conductor, was drowned while swimming about the boat. Irene Campbell, the 14-year-old negro girl, clung to the rail of the boat and two men could not unloose her hold, although they tried

until the rising water drove them back from the rail. Particulars are lacking as to the cause of the death of Charles W. Schweinler.

After the passengers had been saved Capt. Mowbray, refusing offers of rescue, returned to the bridge and stayed there until the ship went down. Unless heavy seas prevent the wrecking work the ship will be saved.

November Police Report.

The November report of the Chief of Police shows that 477 persons, representing 44 nationalities, were arrested in the Canal Zone during the month. This is a decrease of 12 for the month, there having been 489 arrest in October. Of the 477 persons arrested 450 were men and 27 were women, and they were charged with 52 different offenses. They were divided among the towns of the Zone as follows: Ancon, 30; Las Sabanas, 1; La Boca, 24; Corozal, 2; Miraflores, 17; Pedro Miguel, 10; Paraiso, 28; Culebra, 38; Empire, 49; Las Cascadas, 16; Bas Obispo, 16; Gorgona, 53; San Pablo, 17; Tabernilla, 22; Bohio, 7; Gatun, 50; Cristobal, 97.

The total effective police force on November 30 was 164, and the pay roll amounted to \$19,532.10.

One hundred and twenty-two cases were tried in the courts, 21 of which were dismissed, 86 continued, 14 in which convictions were secured, and one in which bail was forfeited. Of the 14 persons convicted, 5 were fined, 1 received a jail sentence, and 8 were sentenced to the penitentiary. Three convicts were discharged from the penitentiary during the month, leaving a total of 117 in the penitentiary on November 30. The number of district prisoners on the same date was 191, an increase of 62 for the month. The value of work performed by the convicts on roads, etc., amounted to \$1,740.75.

There were 11 deaths by violence, requiring action by the coroner, during the month. Six of these deaths were caused by drowning and two by railroad accidents.

Teachers' Meeting.

The third teachers' meeting of the year was held in the Ancon school building December 5, the white teachers meeting in the morning, from 8.30 to 11.30, and the colored teachers meeting in the afternoon, from 1.30 to 4.30.

The work done in each meeting was a continuation of the work outlined for the year and begun at the November meeting. The subject taken up for discussion at last Saturday's meeting was oral and written compositions in the grades with special emphasis placed upon the primary grades where the difficulties of the work are greatest.

Mimeograph copies of imaginary lessons in composition work throughout the grades were placed in the hands of the teachers for reference in illustrating the practical application of the principles of composition teach-

ing under discussion. As a guide for the discussion of the principles underlying the method of instruction in the different subjects of the curriculum, McMurray's Method of the Recitation was used.

A part of the morning meeting was given over to a study under Mr. W. L. Perry of the route of the Canal and of some of the principal features of the canal construction. This study was the beginning of a series of similar studies designed to get before the teachers facts concerning the geography, history, sanitation, etc., of this particular locality. An excellent opportunity exists here for the school children to learn, as they could not possibly learn in the States, about construction work, transportation, the Army, Navy, and various industries. As a basis for this work Mr. A. B. Nichols has furnished maps of the canal line for each school. Mr. Perry, who made the maps, interpreted them so that the teaching in the schools can be made more effective. The next teachers' meeting will be held soon after the holidays'.

Ancon Library Association.

A meeting will be held at the Tivoli Hotel on Monday evening, December 14, at 8 o'clock, for the purpose of forming the organization of the Ancon Library Association. About one hundred and fifty pledges of membership have been secured from persons at Ancon, La Boca and Corozal, and funds have been collected by the ladies sufficient to insure a satisfactory beginning. A constitution will be adopted, and officers will be elected. Those who signed the pledges, and all other persons interested in the association, are urged to be present.

Isthmian Baseball League

At a meeting of the Isthmian baseball league held at Culebra on Friday, November 22, the following officers were elected: Lieut.-Col. Geo. W. Goethals, president; H. H. Rousseau, vice-president, and W. M. Wood, secretary and Treasurer.

November Rainfall for Two Years.

Stations—	1907.	1908.	Average No. since sta. estab'd.	Average No. of rainy days.
<i>Atlantic Division—</i>				
Cristobal.....	15.37	31.72	21.26	29
Erazos Brook.....	13.90	27.12	21.56	28
Gatun.....	14.27	21.37	19.26	30
Bohio.....	11.38	19.01	18.13	28
<i>Central Division—</i>				
Tabernilla.....	10.80	10.85	10.82	26
San Pablo.....	10.93	8.90	9.92	30
Bas Obispo.....	9.65	6.95	10.48	26
Gamboa.....	10.43	7.32	11.76	22
Empire.....	10.40	4.46	9.77	21
Camacho.....	9.51	6.65	11.10	26
Culebra.....	6.91	5.10	12.10	23
Rio Grande.....	7.62	5.30	8.24	19
<i>Pacific Division—</i>				
Pedro Miguel.....	.....	8.65	.....	26
La Boca.....	10.03	7.37	9.56	22
Ancon.....	10.51	9.12	11.15	22
<i>Upper Chagres—</i>				
Alhajuela.....	4.32	10.55	12.53	26
<i>Atlantic Coast—</i>				
Porto Bello.....	.....	41.73	.....	30

WEATHER CONDITIONS, CANAL ZONE, NOVEMBER, 1908.

Stations.	Pressure (reduced to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.			
		Mean.	Maximum.	Date.	Minimum.	Date.		Total.	Number of days.	Station average per month.	Total movement in miles.)	Prevailing direction.	Max. velocity (in miles.)	Date.
Cristobal.....	29.84	77	83	27	71	23	91	31.72	29	21.26	6.339	w.	34	6
Bas Obispo.....	29.68	77	90	10	69	23	55	6.95	26	10.48	2.986	n.w.	25	2
Ancon.....	29.75	79	90	25	70	21	91	9.12	22	11.15	4.985	n.w.	22	21

A PICTURE HISTORY.

Official Photographs Showing Progress of Canal Work.

In a portfolio in the administration office at Culebra is a photograph showing six old French excavators at work in Culebra Cut in December, 1904. These land ladder dredges with an endless chain of dippers carried earth and rock from the Cut on one side and dropped them into a hopper whence they fell into dump cars on the other side. In another portfolio is a series of pictures showing the same location, between Contractor's Hill and Gold Hill, in June, 1908. These photographs mark the present limits of a series showing the progress that has been made in Culebra Cut since the beginning of the American occupation. This series is only one part of the picture history that is being compiled by the official photographer, and that, if continued until the Canal is completed, will furnish one of the most interesting and authentic accounts of the way in which the work was done.

At present there are five hundred pictures in the portfolios, and in addition to these the official photographer has many negatives which almost complete the record, some extending back to the time when the old and new French companies were at work. The negatives which tell of the work of the French are not in good condition, because of improper keeping, and have the appearance of having been poor plates from the beginning. From these two facts it is believed that they form the remnant of a larger collection, and that the good plates were probably preserved in the home office of the company. Pictures in the *Bulletin du Canal Interocéanique*, published by the old French company, add color to this belief. It is only a supposition, but, if it is true, no doubt a good collection of prints from these old plates will ultimately form a part of the picture history of the Canal. Many pictures taken since the beginning of the American occupation, in May, 1904, are also missing, both prints and plates, and when collected these will be an important addition to those already on file.

The picture story of Culebra Cut runs farther back in point of time than that of any other part of the work, because it was in this section that the new French company continued excavation almost up to the day when the Americans took charge of the French machinery and employes, but the record is no less complete for the work in the Atlantic and Pacific Divisions, where operations were begun at a later date.

The Colon dredges, old French equipment in the marine graveyard of Folks River, and the work in the cut at Mindi all are represented in one or more pictures. The suction dredge *Ancon* coaling at Cristobal harbor soon after her arrival on the Isthmus in August, 1907; the 16-inch suction dredge at work in the Chagres River in September, 1907; the old and the new dry dock at Cristobal, and the dry dock in course of construction, are a few of the pictures typical of the work in progress at the Atlantic entrance.

There appears to be no picture of the Chagres Valley at Gatun before operations were begun there. The first photograph shows the site already cleared of jungle growth, and with some work in progress. In point of time the old village of Gatun in November, 1906, is the first of the Gatun series. A picture taken August 10, 1907, shows the closing of the Chagres River on the south toe of the dam, and one taken on the 2d of December following, shows the work on the toe already begun. On January

30, 1908, and again on May 22, of the same year, the official photographer climbed the water tower at Gatun and took a series of pictures that show in panorama the surrounding country, from the jungle on the south, over the site of the dam and the locks to the village, and as background for all, the hills on the west side of the valley and a glimpse northward of the ocean where the dredges are working in the shore of Limon Bay. There are many nearer views of the work, some showing the channel cut for the locks, some the excavation of the spillway, almost completed, and others, parts of the village at various dates. Completing the Gatun series are a number of pictures showing the harbor and village at Porto Bello, where the stone for the concrete of the spillway and locks is being quarried.

Work in the old Chagres Division began in August, 1907, and before it had advanced far, pictures of the conditions at San Pablo, Matachin, and Santa Cruz were taken. Photographs of the hills at San Pablo before they were removed, blasts of dynamite, the shovels working at grade, and the hills almost leveled, tell the story on that part of the Canal. On December 28, 1907, a picture was taken of the cut at Matachin, and a panoramic photograph taken in June, 1908, shows clearly how much was accomplished in six months.

Culebra Cut is represented by scores of photographs, many series showing great contrasts. Those showing conditions between Gold Hill and Contractor's Hill in 1904, and in 1908, have for their main features the two high hills and a deep trench between them. The great amount of work the French did appears very distinctly, but only a close inspection shows what the Americans have already accomplished, because one is likely to consider only the depth of the channel, and not give credit for the widening of the Cut since 1904. The views at Bas Obispo, Las Cascadas, and Empire show more clearly how the work is advancing, for at these places what has been done by the Americans has changed the whole aspect of the channel.

There are pictures of the lock site at Miraflores when the brush only had been cleared away, of the very beginning of the excavation work, the shovels tearing away the hill in the center of the site, and finally of the present condition, a long, broad channel, in place of the hill. Views of the lock site at Pedro Miguel, of the abandoned Sosa-Corozal dam, and the dredges at work in the Pacific entrance, tell the story of the excavation in the Pacific Division.

Not the least interesting chapter in this picture story is that which tells how the work has been prosecuted at various times, by showing the tools that were used. Photographs of the self-propelling cranes with which the French used to lift spoil from the cut to the banks, of the excavators at work and abandoned, of the little wooden dump cars, the five-yard iron dumps, the Decauville cars and engines, and the Belgian locomotives, show with what implements the work was carried on by the French. To understand the significance of these pictures one must turn to those showing the present equipment. Instead of excavators, there are 45, 70 and 95-ton steam shovels; ten and twenty-yard cars in the place of the five-yard and three-quarter-yard cars of the French period, and locomotives twice the size and several times the tractive power of the engines used by the French.

The picture, already referred to, showing the old excavators at work in Culebra Cut, is the first of a series that tells of the im-

provement in equipment since 1904. In the cut at Bas Obispo in September, 1907, the little Decauville dump cars were still in use; in 1906 the old French locomotives were hauling old French dump cars and new 10-yard cars from the Cut, and photographs taken only a few months ago at San Pablo and a few weeks ago at Miraflores show old French rolling stock still in use. In short, the pictures show that the introduction of new equipment was gradual, and that while waiting for it, that left by the French was used. The unloaders at work on the dumps at Tabernilla and La Boca, the spreaders leveling the unloaded spoil, and track shifters lifting and placing track, these and other machines are pictured as part of the equipment introduced by the Americans. The suction and dipper dredges now working at either entrance to the Canal, are part of the new equipment, but the Scotch ladder dredges that are making such good records were brought to the Isthmus by the French and rebuilt by the Americans.

Much has been said about the slides that have retarded the work, and this story also the pictures tell. One photograph shows conditions in the Cut after the flood of December 3, 1905. It gives an idea of the torrential rains that saturate the earth and cause it to slide on the rock bottom. Another photograph shows the Cut at Cucaracha after the slide of October 5, 1907, with steam shovels partly buried in the mud, the railroad tracks covered, and the break in the side of the hill from which the earth slid into the Cut. On October 25 the removing of the slide was well begun; on December 5 the edge of the material had been crowded back so that the construction tracks were cleared; on March 5, 1908, there was apparently little earth yet to be removed, and on June 20 the slide was cleared away. Three hundred thousand yards of material were deposited in the Cut by this one slide, and yet how small an incident in the great work this most troublesome of the slides was is shown by the scores of pictures taken during this period, telling of unabated activity all along the line. A similar series of pictures shows the Paraiso and Culebra slides at various stages. Akin to the slides was the settling of the Panama railroad tracks in Black Swamp on September 20, 1907, and this, too, is pictured in one of the portfolios.

The story of municipal improvements is told in part in three different portfolios. Most of this work is only indirectly connected with that of the Canal construction, and yet it was vital as a precaution against disease. So far as the Canal Zone is concerned the pictures deal principally with the four large sources of water supply—Brazos Brook, Carabali, Comacho, and Río Grande reservoirs. It was in the cities of Panama and Colon that most of the municipal improvements were made. The streets of these cities in 1904 and 1905, and again in 1907 and 1908 are photographed. None of the "Before and after taking" pictures of the newspapers show greater contrasts.

The human side of the great task is revealed in the photographs of quarters, hotels, mess houses, clubs, and hospitals, and in pictures of the men who do the work. No class is neglected. West Indians, Europeans, and Americans alike, are represented. The interiors and exteriors of the homes they live in, the places where they eat, the buildings assigned for recreation, churches, and lodge rooms, baseball grounds—all phases of Canal Zone life have a place in this picture story of the Panama Canal.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The sale held recently by the Sunshine Club of Gatun was well patronized, and the members feel gratified at the results of their few months' work. The five booths in the hall over the Commission hotel contained attractive displays of fancy articles and home baked delicacies. A doll, a cake and a sofa pillow were sold by raffle. The club originally was formed for the purpose of sewing for patrons, the proceeds of the sales to be devoted to charity, but the past few months have been given to making articles for the sale. A number of articles made to order were displayed. The proceeds of the sale will go to the New York Sunshine Society.

The Gatun Woman's Club held its regular meeting on Friday, December 4, at the home of Mrs. C. G. Carty, when the program for the study meeting of this week was mapped out. The class will finish the geography of the Isthmus, and then proceed with the history.

The new Commission chapel at Las Cascadas was dedicated November 29, at 2.30 o'clock in the afternoon. The superintendent of the Sunday school, Mr. A. C. Stowe, and the secretary, Mr. W. G. Thompson, were in charge of the arrangements. Rev. J. W. Holland, Commission chaplain at Culebra, delivered the address and the Rev. Mr. Smith, of Panama, made the dedicatory prayer. Special music was provided, solos, being sung by Mrs. W. J. Thompson and Mr. Holland.

The Thanksgiving services in the Commission chapel, Culebra, were conducted by the Rev. J. W. Holland who read the President's Proclamation and preached a sermon appropriate to the day. On the same day an important mission service was held at Frijoles in connection with the reopening of the chapel building, after a considerable time spent in making repairs and improvements. The services were conducted by the Revs. S. Moss Loveridge of Culebra, J. H. Sobey of Empire, and M. Britton King of Panama.

The ladies of Alfretta will give a dance at the Commission clubhouse, Culebra, on Wednesday evening, December 16, to which the public is invited. The proceeds will be donated to the Y. M. C. A. for the Christmas tree.

A basket picnic will be given by Alfretta council, No. 1, Daughters of Pocahontas, at Taboga Island on New Year's Day. Train will leave Colon at 6.45 a. m., and the boat will leave the American wharf at 8.30 a. m. Tickets are \$1 (gold) and can be purchased at the wharf and on the train.

The meeting of the Pedro Miguel Woman's Club held December 2 was well attended. A program in charge of the literary department was given, consisting of recitations by Mrs. A. L. Waters, Mrs. L. M. Vacher, a short paper on phrenology by Mrs. E. M. Wales, and a report of club work and federation effort, dealing especially with the papers read at the Boston biennial. This was followed by a general discussion in which all the members took part. The social committee served refreshments, consisting of salad, sandwiches and coffee, cakes and sweets, the guests being seated at small decorated tables. The president of the club, Mrs. Waters, has issued invitations for a reception to be given to Mrs. F. W. Roberts,

the former president, on Thursday, December 10. Mrs. Roberts will move to Aucon during the present month.

The Ancon Woman's Club held its regular meeting on Wednesday, December 2, the program being under the philanthropy department. A paper on the recent expeditions of the Austrian scientist, Dr. A. B. Von Teuber to the San Blas Indian territory was read by Dr. R. W. Nauss. There was a large attendance. The social committee, consisting of Mrs. W. T. Dozier and Mrs. R. S. Stiles introduced the guests and served tea. The executive board held its regular monthly meeting at the Hotel Tivoli, on Monday, December 7.

The Woman's Guild held its meeting at the Tivoli on December 7, at 3.30, the guests of Mrs. Frank I. McAllister, of Las Cascadas, and Mrs. W. J. Smith, of Gorgona, both members of the Guild.

The Christmas sale held by the Ancon Woman's Club on December 4 and 5 was a gratifying success. The rooms over the District Quartermaster's office were decorated with flags, bunting, and palms by the decorating committee. The booths of the different departments were placed in the large room, and refreshments were served in the small rooms adjoining. It is estimated that between 500 and 600 people visited the sale. At the close of the second evening all the articles remaining were auctioned off to the highest bidder. The exact amount realized by the sale is not known, but the committee of finance announces that the expectations of the managers were more than realized. A meeting of the executive board has been called for Wednesday, December 9, when a report of all the committees will be submitted.

The Cristobal Woman's Club held a short business meeting November 27. Reports from the different departments were read. The calendar committee reported that the calendar for the year has been sent to the States to be printed. Mrs. Edward Beverly was elected first director of the philanthropy department, Mrs. Thomas E. Brown, Jr., chairman. The literary meeting was held December 2, the second vice-president, Mrs. H. J. Slifer, presided, and introduced Mr. M. J. Stickel, secretary of the Cristobal Young Men's Christian Association, who gave an address on "The Man Down and Out," being a survey of what the Association has done in Chicago. The meeting closed with the usual social half hour. The literary department will be entertained by the second director, Mrs. C. C. Pierce, December 21. Papers will be read on Shakespeare plays by Mrs. Albert Herman, Mrs. Frances Colip and Mrs. Frederic Mears. Mrs. Colip will entertain the home department December 14, when Mrs. Ralph Budd and Mrs. Charles Owens will talk on "A Cup of Tea" and "A Cup of Coffee."

The business meeting of the Las Cascadas Woman's Club was held on December 4 in the new hall. The Shakespeare reading course was begun, "The Tempest," being the play taken. The committees for the month were appointed as follows: entertainment, Mrs. C. F. Merry, chairman, Mrs. J. G. Williamson, Mrs. C. M. Decker, Mrs. H. H. Boylan; visiting, Mrs. F. S. Crosby, and Mrs. F. S. Dorson.

The Tivoli Club will hold its regular dance at the Hotel Tivoli, the night of December 12. In the event of the arrival of the Pacific squadron of the U. S. Navy on that date, the officers will be invited to attend the dance.

PERSONAL.

Mr. Henry V. Garland, Superintendent of Palo Seco Leper Colony on Panama Bay, returned to the Isthmus on the *Advance* on December 5, after an absence of 132 days. Mr. Garland's home is in New Zealand, and he has been entirely around the world since leaving the Isthmus, on July 26. He went to New Zealand via New York, Suez Canal, Ceylon, and Australia, and while in Ceylon visited the leper colony on that island. His return was made via the Fiji Islands, Honolulu, Vancouver, and New York.

Obituary.

William Beale died at Colon Hospital December 1, after six days' illness. He was 59 years of age, and had been on the Isthmus three years. He is survived by his wife, who is living at Woodstown, N. J.

Mrs. F. E. Shuck, wife of F. E. Shuck of Gatun, died at Colon Hospital on November 24. She was born in Michigan 32 years ago and had resided on the Isthmus for two months.

Resolutions of Sympathy.

Lock City Lodge, K. of P., No. 5, of Gatun, has adopted the following minute:

WHEREAS, The Supreme Ruler of the Universe has removed from our midst Mrs. Grace Andrus Shuck, beloved wife of Brother Frank E. Shuck, who departed this life November 24, 1908; and

WHEREAS, By this act Brother Shuck has lost a true, devoted and loving wife, the community, a lady of culture, refinement and the highest traits of character, whom to know was to love; therefore, be it

Resolved, That we, his brothers of Lock City Lodge, No. 5, Knights of Pythias, desire to express our great sense of bereavement at her untimely end, and our sincere sympathy to Brother Shuck and to her parents in this, their dark hour of sorrow; and be it further

Resolved, That a copy of these resolutions be spread upon the minutes of Lock City Lodge, No. 5, Knights of Pythias, and that a copy be furnished Brother Shuck, and a copy also sent to THE CANAL RECORD for publication.

W. E. BARROW,
T. H. LOCKHART,
F. A. SHEPARD,
Committee.

Missing Men.

Information is wanted in regard to the following men:

Angel Sanchez y Sanchez alias Francisco Alvarez, who was last heard from at his home in Madrid, Spain, in May, 1907. He is about 38 years old, of low stature, black hair, thick mustache, and is somewhat lame.

Fred. C. Peters, who was employed as a steam shovel craneman in the Gatun Dam Division, and who resigned on June 10, 1908.

Anyone having knowledge of these men is asked to communicate with M. B. DePatron, Assistant to the Chairman, Culebra, C. Z.

Mr. Murphy, an electrical engineer, formerly of Richfield Springs, New York, will learn something to his interest by addressing at once Frank A. Beach, Gatun, C. Z.

Tests of fats and oils for use in lubricating Canal Zone machinery are being conducted at Empire.

FIRE PROTECTION.

No Insurance Makes Thorough System Necessary.

Ten and a quarter million dollars have been spent by the United States in buildings in the Canal Zone. This amount takes no account of the value of the buildings purchased from the French, both in the Canal Zone and the Republic of Panama, nor the value of the property in all the buildings, including the large amount of stores. These buildings are scattered along a line 50 miles in length, and no insurance is carried on them. In fact the only guarantee against fire is in the precautionary measures taken, and in the fire department, which has companies in every large village.

A report recently made places the number of buildings owned by the Isthmian Canal Commission at 3,338. With but a few exceptions these are frame buildings and of very light construction. Precautions against fire is in the precautionary measures taken, and in the fire department, which has companies in every large village. A report recently made places the number of buildings owned by the Isthmian Canal Commission at 3,338. With but a few exceptions these are frame buildings and of very light construction. Precautions against fire is in the precautionary measures taken, and in the fire department, which has companies in every large village. A report recently made places the number of buildings owned by the Isthmian Canal Commission at 3,338. With but a few exceptions these are frame buildings and of very light construction. Precautions against fire is in the precautionary measures taken, and in the fire department, which has companies in every large village.

Weather conditions during eight months of the year, from May to January, are favorable to fire protection as heavy showers are of almost daily occurrence in every part of the Canal Zone. In the other four months however, there is little rain, and the frame buildings become very dry. Notwithstanding this difference fires are no more frequent in the dry than in the rainy season, so well are the precautionary rules enforced. In fact, practically all fires in the Canal Zone have originated inside the buildings.

On December 1, 1905, the personnel of the Canal Zone Fire Department consisted of one man who had been employed as chief of the department and who had just arrived at Cristobal. The equipment consisted of 195 three-gallon chemical fire extinguishers in the storehouse. The villages along the line of the Canal were entirely without protection from fire, although millions of dollars had been expended in buildings and material. On the 1st of December, 1908, the personnel of the department consisted of 49 paid firemen, and 226 volunteers. The equipment included over 40,000 feet of hose, 1,428 fire extinguishers, steam fire engine, hook and ladder truck, chemical engine with two 45-gallon tanks, seven hose wagons, with

a capacity of 1,000 feet of hose each, and 17 volunteer hand hose reels, each with a capacity of 500 feet of hose.

At first the department consisted entirely of volunteers, excepting the administrative force, which included the Chief and his clerical assistants. In 1905 volunteer companies were organized, two at Cristobal, two at Gorgona, two at Empire, two at Culebra, two at La Boca, two at Ancon, and one at Pedro Miguel. The following year companies were organized at Tabernilla, Gatun, Paraiso, and Corozal, and in 1903 at San Pablo, Porto Bello, and Bas Obispo. At the present time the department is composed of six paid companies, and 17 volunteer companies captained and drilled by a paid fireman, who also has charge of the fire station. The first company to be placed on a paid basis was that at Cristobal which was changed from a volunteer to a paid organization in November, 1905. In February, 1907, a paid company of four men was installed at Ancon, and in April, 1908 a company of four men each was installed at Gorgona, Empire, Culebra, and Ancon, respectively.

The wages of the paid firemen are \$100 a month for the first six months of service and \$125 thereafter. As compared with wages for similar work in the States this amount has not been sufficient to induce many qualified men to make application for the position, and there has even been some difficulty in keeping the places filled. The volunteers are paid \$1 an hour for their services when called to a fire, are paid for the time lost from their work while on duty at a fire or drill, and are given one pass a month in addition to their regular monthly pass on the Panama railroad to any point along the line.

The first company organized was that at Cristobal. On December 27, 1905, an order was placed for the following equipment: One steam fire engine, with spiral water tube boiler, capable of delivering 600 gallons of water a minute under 200 pounds pressure through a 1½-inch nozzle, with all parts that are touched in the pumping of salt water made of the best bronze; one 4-wheel chemical engine with two horizontal cylinders of a capacity of 45 gallons each, two horse hitch; one truss hook and ladder, extension not over 41 feet, with small ladders; one 2-horse hose wagon, and 2,500 feet of 2½-inch rubber-lined woven fire hose with cotton jacket, tested to 400 pounds, in 50-foot sections; and two 5-gallon chemical extinguishers. All this equipment, with the necessary fittings, was intended for the Cristobal company and is now in use there. The fire station house was completed in July, 1905. It includes quarters for the men, and is modern in all its appointments.

The company is made up of one captain, one lieutenant, one engineer, thirteen firemen and one clerk, all of whom are paid and who are relieved from duty one day in fifteen. In addition to the equipment at the station the tug *Cristobal*, owned by the Panama Railroad Company, is equipped with two pumps, each capable of delivering 750 gallons of water a minute, with two turret nozzles, and four hose connections. The fire alarm system extends throughout Cristobal and to points in Colon convenient to property of the United States and the Panama Railroad Company. It is a modern Gamewell system and has connections with the Mount Hope pumping station

and the Cristobal electric light plant. In all there are 14 boxes in the two cities.

At the time the equipment was ordered for Cristobal an order was also placed for 15 two-wheel hose carts with a capacity of 500 feet of 2½-inch hose each and wheels 5 feet high. This equipment arrived in the summer of 1905 and was distributed along the line of the Canal to the hose companies already organized; one at Corozal, two at Empire, two at Culebra, two at Ancon, one at Miraflores, one at Pedro Miguel, two at Gorgona, two at La Boca, and two at Cristobal. In April, 1905, 250 three-gallon chemical extinguishers arrived, and in June 250 more were distributed. In September, 1907, 500 additional chemical extinguishers arrived and in April, 1908, two new hose wagons for Ancon, and one each for Culebra, Empire, and Gorgona were added to the equipment.

A summary of the fire-fighting facilities along the line follows:

Mount Hope—At this place a fireman is stationed who constantly patrols the storehouse, and there are a hose reel, 500 feet of hose, and 20 chemical extinguishers. The Cristobal company can make the run to the storehouse and have water on the buildings in 6½ minutes.

Gatun—Volunteer company with one paid fireman, hose reel and 500 feet of hose; hose reel and 250 feet of hose at the camp near the hospital, and 94 fire extinguishers.

Tabernilla—Volunteer company and one paid fireman, hose reel and 500 feet of hose, small reel and 250 feet of hose, and 39 chemical extinguishers. The paid fireman has charge also of the San Pablo station.

San Pablo—Volunteer company, hose reel and 300 feet of hose, 20 chemical extinguishers, and 13 extinguishers in Caimito Malato.

Gorgona—One paid company of four men and two volunteer companies, one at the shops and one in the village proper; equipment includes one hose wagon with 1,000 feet of hose, and the Gamewell fire alarm system with eight boxes, with connections in the shops, and 153 chemical extinguishers.

Bas Obispo—Volunteer company, hose cart and 500 feet of hose, and 45 chemical extinguishers.

Camp Elliott—Volunteer company of the marines, hose cart with 500 feet of hose and 16 chemical extinguishers.

Las Cascadas—One hose company with one paid fireman, a reel with 500 feet of hose, a small reel with 300 feet of hose, and 100 chemical extinguishers.

Empire and Culebra—The paid fire company at Empire consists of four men, and is backed up by a volunteer company composed chiefly of men in the Empire shops. A Gamewell alarm system, which connects with Culebra, one hose wagon with 1,000 feet of hose and 144 chemical extinguishers, distributed where they are most likely to be needed, form the equipment. The Culebra company is of the same size and is also assisted by a volunteer company. It likewise has a hose wagon with 1,000 feet of hose, and 143 extinguishers are distributed throughout the village.

Paraiso—One volunteer company and one paid fireman, hose reel with 500 feet of hose, and 58 chemical extinguishers.

Pedro Miguel—Volunteer company with one paid fireman, hose reel with 500 feet of hose, and 44 chemical extinguishers.

Miraflores—At present the only protection at Miraflores consists of 15 chemical extin-

guishers, but it is planned to revive a volunteer company organized there at one time, as its services may now be needed, since the growth of the settlement has become rapid and is assured.

Corozal—Volunteer company, hose reel with 500 feet of hose, hose reel with 300 feet of hose, and 37 chemical extinguishers.

Camp Diablo (near Corozal)—Hose reel with 300 feet of hose, and four extinguishers.

La Boca—Two volunteer companies, one composed of white men and one composed of negroes; each company has a hose cart and 500 feet of hose, and there are 75 extinguishers distributed in appropriate places. The floating equipment in the harbor, the docks, and the machine shops and shipways are given additional protection by the Panama Railroad Company's tug *Bolivar*, which is equipped with a turret nozzle and a pump that will deliver 750 gallons of water a minute. There is a paid fireman at this station, and the alarm system extends from Ancon to La Boca. Ancon company, No. 2, responds to all alarms at La Boca, East La Boca, and from the docks.

Ancon—There are two paid companies of four men each; and a negro volunteer company in the corral. The equipment consists of a hose wagon for each station, 2,000 feet of hose and 169 extinguishers distributed throughout various parts of the colony. A Gamewell system of 15 boxes connects all parts of Ancon and extends to La Boca and to Commission and railroad property in Panama.

In addition to the companies along the Line, a volunteer company with one paid man has been organized at Porto Bello, where there is a hose reel with 300 feet of hose and 24 fire extinguishers. At the new quarantine station on Culebra Island 300 feet of hose and 9 chemical extinguishers have been placed; at Taboga Sanitarium, 600 feet of hose, and 4 chemical extinguishers, and at Palo Seco Leper Colony, 10 chemical extinguishers.

The efficiency of the paid department has been tested several times by fires in Colon. On February 24, 1907, fourteen buildings on the block bounded by Fourth, Fifth and D streets and Hudson alley in Colon, were destroyed by fire. The fire was under control in two hours and was extinguished in three and one-half hours, although it had gained great headway before the companies arrived. On December 10, 1907, the Hotel Central on Front street, corner of Seventh, in Colon, was destroyed with a loss of \$15,000. The house adjoining was partially destroyed, but all other buildings threatened were saved. On April 28, 1907, the Wesleyan schoolhouse and two small dwellings were destroyed by fire with a loss of \$10,000. In all three of these fires the Cristobal department assisted the volunteer department of Colon which was poorly equipped to fight against fire in frame buildings or that had already gained headway. The small loss in each case was due in great measure to the prompt arrival and systematic work of the Cristobal company.

On the morning of April 1, 1907, a big storehouse at Mount Hope caught fire. The road to Mount Hope at that time was not completed so that it was necessary to take the apparatus to the fire on flat cars and 15 minutes were consumed in getting the train ready. In addition to the fact that the company did not arrive at the scene until twenty-four minutes after it was summoned, the water pressure was very poor, yet half of the storehouse was saved and the total loss was only \$100,000.

On March 26, 1907, the Ancon department made a run to Cathedral square in Panama

and had water on a fire in a house fronting the plaza in less than eight minutes.

Opportunity has not been wanting for the volunteers to show their mettle. The I. C. C. hotel at Empire was burned on the morning of July 9, 1907. The fire caught in a store house beneath the hotel and the alarm was sounded at 4.40 o'clock. The volunteer company located nearest to the hotel had two streams of water on the fire within five minutes. The building was destroyed with a loss of \$16,500, but the prompt and effective work of the department saved adjoining buildings, one of which was only ten feet in the rear of the hotel. Two fires at Gorgona in 1907 tested the efficiency of that department. One of them was in the municipal building and was discovered at 2.05 o'clock in the afternoon of January 4. In four minutes the paid fireman and volunteer companies of that place were pouring water on the fire and the flames were confined to two rooms. No adjoining structures were injured. Out of a possible loss of \$2,000 only \$500 worth of damage was done. At 5.40 o'clock in the afternoon of July 23, 1907, a type 14 house in Gorgona caught fire and was destroyed with a loss of \$5,500. The two adjoining buildings were only slightly damaged. At the time the above fires occurred only one paid fireman was stationed at each of these points.

A misunderstanding prevented effective work at a fire in some houses owned by the Panama Railroad Company in Panama on September 29, 1907. As a result it has been agreed between the two Governments that all Canal Commission and Panama railroad buildings in Panama and Colon are included within the districts of the Ancon and Cristobal regular companies, respectively. In the event of fire in either of those cities, unless the captain of the regular company has definite information that Canal Commission or railroad property is not in danger, he will take his company into the city. After arriving in the city, if it appears that Canal Commission or Panama railroad property is not in danger, he will take no part in fighting the fire unless requested to do so by the Chief of the Panama or Colon Fire Departments as the case may be, or the Alcalde of the city. In the event Canal Commission or railroad property is in danger, or the captain is requested by the Chief of the Panama or Colon Departments. If the fire occurs in a Canal Commission or railroad building, he will assume complete charge of the work of fighting it.

On the occasion of the visit of the President of the United States to the Canal Zone in 1906, the fire department at Cristobal gave an exhibition run. Four minutes after the alarm was given, the fire department had made the run from the engine house to the passenger station in Colon, had attached hose to nine two-way hydrants on Front street, and had 18 streams, 65 feet high, playing on the buildings. As a result of the exhibition the following letter was sent to the Chief of Department:

DEPARTMENT OF
CONSTRUCTION AND ENGINEERING,
CULEBRA, November 19, 1906.

Mr. C. E. Weidman, Chief, Fire Department, Cristobal.

Sir—President Roosevelt was very much impressed by the practical test made by our fire department at Colon, on Saturday.

He directs me to convey to you, and through you to the department, his thanks for affording to him an opportunity to witness such a display.

I may add on my own behalf that there are few towns of a much larger size in the United States that could even approximate such results.

Truly yours,

JNO. P. STEVENS,
Chief Engineer.

NOVEMBER STEAM SHOVEL RECORD.

In November the steam shovels at work on Canal excavation took out 1,638,183 cubic yards of earth and rock, all but 70,228 cubic yards of which was taken from the prism.

A new record for excavation in one day was made on the last day of the month, when the 53 shovels at work in the Central Division took out 67,130 cubic yards.

The high record for the month was made by shovel 262, at work in the Bas Obispo District, which took out 44,768 cubic yards in 23 days. The best record for a shovel in the 70-ton class was made by shovel 104, working in the Gorgona District, which took out 31,799 cubic yards in 23 days.

Shovel 262 at work in the Bas Obispo District, made the highest record for one day by excavating 2,851 cubic yards of rock on November 11. The records follow:

Best Records for the Month.

CENTRAL DIVISION,
TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
253	15,878	16,527	32,405	23
254	11,410	16,421	27,831	23

GORGONA DISTRICT.

256	9,072	25,818	34,890	23
255		34,047	34,047	22

BAS OBISPO DISTRICT.

262		44,768	44,768	23
211	13,082	24,294	37,376	23

EMPIRE DISTRICT.

265	14,707	22,061	36,768	22
207	1,788	33,980	35,768	23

CULEBRA DISTRICT.

205		40,525	40,525	23
217		35,506	35,506	23

PEDRO MIGUEL DISTRICT.

209	20,143	20,144	40,287	22
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OBISPO DIVERSION.

126	19,251		19,251	20
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ATLANTIC DIVISION.

MINDI.

101	3,869	21,212	25,081	21
120	7,122	14,980	22,102	22

GATUN LOCKS.

102	3,842	25,415	29,257	23
134	6,431	21,773	28,204	23

SPILLWAY—GATUN DAM.

135	15,262	1,624	16,886	22
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Best Records for One Day.

CENTRAL DIVISION.

Shovel No.	Location.	Date.	Character material excavated.	Cubic yds. excavated.
253	Tabernilla	Nov. 4	Rock and earth	2,100
254	Tabernilla	Nov. 16	Rock and earth	1,960
256	Gorgona	Nov. 19	S. rock	2,440
255	Gorgona	Nov. 9	Rock and earth	2,150
262	Bas Obispo	Nov. 11	Rock	2,851
218	Bas Obispo	Nov. 25	Rock	2,644
216	Empire	Nov. 19	Rock	2,711
207	Empire	Nov. 19	Rock	2,466
230	Culebra	Nov. 7	Rock-soft	2,630
217	Culebra	Nov. 7	Rock and earth	2,390
209	Pedro Miguel	Nov. 17	Rock and earth	2,440

ATLANTIC DIVISION.

120	Mindi	Nov. 23	Rock	1,802
101	Mindi	Nov. 13	Rock	1,681
134	Gatun Locks	Nov. 17	Rock	1,965
112	Gatun Locks	Nov. 21	Clay and rock	1,920
135	Gatun spillway	Nov. 2	Clay and rock	1,750
119	Gatun spillway	Nov. 10	Clay and rock	1,470

FRATERNAL SOCIETY NOTICES.

Sojourners' Lodge.

Sojourners' lodge, No. 874, A. F. and A. M., will meet Saturday evening, December 12, at 7.30 o'clock, at its hall in Colon, in regular stated communication (postponed). Masons in good standing are fraternally invited to attend.

G. G. DEDGE, *Acting Secretary.*

Pacific Masonic Club.

The regular meeting of the Pacific Masonic Club will be held on Saturday evening, December 12. The degree of the Ancient Order of Humility will be conferred at this meeting.

R. S. STILES, *Secretary.*

Paraiso Sojourners' Club

A meeting of the Paraiso Sojourners' Club will be held on Wednesday evening, December 16. Business of special importance will come before the meeting, including the semi-annual election of officers. All members who possibly can do so are urged to attend.

W. J. VANNAH, *Secretary.*

Woodmen of the World.

A new camp, Woodmen of the World, has been organized at Empire, Canal Zone, designated as Panama Camp, No. 1, and all "Choppers" who have their membership in the States are cordially invited to come over on the first and third Saturday nights of each month (our regular meeting nights,) and be with us. Place of meeting—new I. C. C. lodge hall, just south of Y. M. C. A. building.

Visitors will be provided accommodations if the clerk is notified in advance.

WALTER T. GREENE,
Consul Commander.

C. L. WHITAKER, *Clerk.*

Entertainment at Paraiso.

The Improved Order of Red Men, Chiriqui Tribe, No. 1, will meet at their wigwam at 7.30, Saturday evening, December 12, when they will immediately adjourn to attend in a body the entertainment to be given by Aztec Tribe, No. 4, at their wigwam, at Paraiso. All members and their paleface friends are invited to attend.

Minstrels at Empire

The date for the performance to be given by the U. S. Marine Minstrels at Kangaroo Hall, Empire, under the auspices of Empire Court of I. O. P. K., on December 11, has been changed to Tuesday evening, December 15.

Gorgona Athletic Park Association.

A meeting of the stockholders of the Gorgona Athletic Park Association is called for Sunday, December 13, at 9.00 o'clock a. m., at the Gorgona hotel (upstairs), for the purpose of electing new officers and the transaction of other necessary business.

A game of baseball will be played at the Plaza de Bomberos No. 2, Colon, on Sunday morning, December 13, between teams from the Panama railroad "Material Stores" and "General Offices."

A golf club has been organized at Culebra, and work is now in progress laying out a course between the Panama railroad and the Administration building.

OFFICIAL CIRCULARS.

Preference to Porto Ricans.

CULEBRA, C. Z., November 23, 1908.

HEADS OF DEPARTMENTS AND DIVISIONS:

It is ordered that, in the event of any reduction in force of employes on the gold and silver rolls, citizens of Porto Rico shall be accorded preference over aliens.

GEO. W. GOETHALS,
Chairman.

Transfer of District Quartermasters.

CULEBRA, C. Z., December 4, 1908.

TO WHOM CONCERNED:

Effective December 7: The following transfers of District Quartermasters are announced:

D. J. Shannon, from Las Cascadas to San Pablo
J. H. Humphreys, from San Pablo to Las Cascadas

Respectfully,
C. A. DEVOL,
Chief Quartermaster.

Commissary Coupon Books.

DEPARTMENT OF EXAMINATION OF ACCOUNTS.

EMPIRE, C. Z., December 7, 1908.

CIRCULAR No. 7.

Heads of Departments and Divisions—Attention is invited to the large number of commissary coupon books returned to this office as undelivered, after having been filled out, signed and witnessed by the timekeeper for some employe and for which deduction has been made on the pay roll, and the amount remitted to the Panama Railroad Company.

Such a practice of completing books before delivery requires that the book be cancelled and bill issued against the railroad company to recover the amount, which must then be held for refund to the employe on individual voucher if application is made therefor.

Please instruct timekeepers that every effort must be made to deliver coupon books that have been applied for, and in no case should a book be signed until the employe is present to receive it.

Deductions must not be made on the pay roll for an undelivered book. If delivery can not be effected before deduction sheets and pay rolls are made up, the book should be cancelled.

W. W. WARWICK,
Examiner of Accounts.

Approved:

GEO. W. GOETHALS,
Chairman and Chief Engineer.

LEGAL NOTICES.

United States of America } In the First Judicial
Canal Zone. } Circuit.

Raimundo Saenderal, a Colombian, who resided in the Canal Zone, died intestate on or about the 10th day of October, 1905, leaving an estate at Ancon consisting of \$7.20 Panamanian currency and personal belongings of little value.

Castis Lephdaikes, a Greek, who resided in the Canal Zone, died intestate on or about the 16th day of May, 1907, leaving an estate at Ancon, consisting of 50 francs, French gold.

Pedro Juan, presumably a Greek, who resided at La Boca, Canal Zone, died intestate on or about the 3d day of October, 1907, leaving an estate at La Boca consisting of \$70 U. S. Currency and \$10 Panamanian currency.

Kurilla Stevan, nationality unknown, who resided in the Canal Zone, died intestate on or about the 4th day of April, 1908, leaving an estate at Ancon consisting of \$1.60 Panamanian currency, 10 cents U. S. Currency, and one Chilean coin of small denomination.

Lucas Alvarez, Chilean, died intestate in the Canal Zone on or about the 20th day of June, 1908, leaving an estate at Ancon consisting of personal belongings of little value and \$48.50 U. S. Currency.

The Collector of Customs has filed a petition for escheat in each of the above mentioned estates under Section 779 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the courthouse in Ancon, C. Z., on February 1, 1909, at 9 o'clock a. m., to establish their claims to the estates, or to show cause why the same should not escheat to the Canal Zone.

F. H. SHIBLEY,
Circuit Court Clerk Pro Tempore,
Ancon, Canal Zone.

United States of America, } In the First Judicial
Canal Zone. } Circuit.

Frank Roch, American, died intestate on or about May 26, 1908, leaving an estate located at Ancon, Canal Zone, consisting of various personal belongings of little value, Isthmian Canal Commission pay certificates for \$250, and cash amounting to \$260.

James Tray, American, who resided at Ancon in the Canal Zone, died intestate on or about January 22, 1906, leaving an estate at Ancon, consisting of Isthmian Canal Commission pay certificate for \$110 Panamanian currency.

Louis M. Gilbert, alias Charles Gibson, American, who resided at Pedro Miguel, C. Z., died intestate on

or about May 4, 1907, leaving an estate at Pedro Miguel, consisting of Isthmian Canal Commission pay certificate of the value of \$27.75 net, and \$1.50 cash.

Bartole Salcedo, a native of the Dutch West Indies, who resided at Ancon, C. Z., died intestate on or about June 29, 1907, leaving an estate at Ancon, consisting of Isthmian Canal Commission pay certificate for \$1.60 Panamanian currency.

Charles White, American (colored), who resided at Pedro Miguel, Canal Zone, died intestate on or about April 3, 1908, leaving an estate at Ancon, Canal Zone, consisting of \$5 U. S. Currency.

The Collector of Revenues has filed a petition for escheat in each of the above mentioned estates under section 779 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the courthouse in Ancon, Canal Zone, on January 18, 1909, at 9 o'clock a. m., to establish their claims to the said estates, or to show cause why the same should not escheat to the Canal Zone.

F. H. SHIBLEY,
Circuit Court Clerk Pro Tempore,
Ancon, Canal Zone.

ANCON, CANAL ZONE, November 23, 1908.

Estate of }
Fletcher E. Joyner. } Administration.

Any and all persons owing the estate of Fletcher E. Joyner, deceased, who died at Ancon, Canal Zone, on the 21st day of October, 1908, are hereby requested to communicate with the administrator of said estate in order that a settlement may be effected. And all persons having any claim or claims against said estate must present the same, duly verified, to the administrator within six months, otherwise said claims will be forever barred according to law.

All communications with reference to the estate should be addressed to Empire, Canal Zone.

F. H. SHIBLEY,
Administrator.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

Miss Annie S. Peck, the noted mountain climber, spent a few days on the Isthmus en route from Peru to New York and while here she gave lectures in the Commission clubhouses as follows: Culebra, December 7; Gorgona, December 8; Cristobal, December 9; Empire, December 10. Miss Peck's lectures are descriptive of Peru and Bolivia. During her recent trip in South America she climbed Mount Huascarán, the summit of which had never before been reached.

The Martha Alexander Recital Company, from the States, will give performances in the clubhouses as follows: Cristobal, December 12; Culebra, December 14; Gorgona, December 15; Empire, December 16. The company is composed of Martha Alexander, violinist; Maud Higby, soprano-accompanist, and Edith Hale, reader and whistler. Miss Alexander, leader of the company, visited the Isthmus in August, 1907 and was the first violinist brought from the States to play in the clubhouses.

The final standing of the players in the local individual bowling tournament recently held at Cristobal was as follows:

Name.	Played.	Won.	Lost.	Pts.	Pinfall.	Avg.
Gilmartin.....	45	38	7	844	8,044	178.8
Bullard.....	45	32	13	711	7,080	157.3
Robertson.....	45	30	15	667	7,456	155.7
Morrill.....	45	30	15	667	6,662	148
Strong.....	45	29	16	644	7,433	155.2
Van Zant.....	45	29	16	614	6,686	148.6
Stickel.....	45	27	18	600	7,002	155.5
Burdge.....	45	27	18	601	6,979	155.1
Scribner.....	45	26	19	578	6,840	152
Thomas.....	45	24	21	533	6,955	154.6
Hemling.....	45	22	23	489	6,354	141.2
Hertel.....	45	13	32	289	5,346	118.8
Van Wagner.....	45	11	34	244	4,478	121
McKinley.....	39	7	32	179	3,783	140.1
McCormick.....	39	1	35	103	2,109	140.6
Moyer.....	39	2	37	051	1,794	119.6

Concert by the I. C. C. Band.

PORTO BELLO.

Sunday, December 13, 1908, at 2.30 p. m.:

PROGRAM

- 1 March—Santiago Flynn.....Morse
- 2 Selection—Mill's Merry Melodies.....Wi Is
- 3 Waltz—Idle Hours.....Wood
- 4 { a Intermezzo—Rainbow.....Wenrich
b Schottische—When a Roy Says "Will You?".....Allen
- 5 Medley Selection—The Sunny South.....Lampe
- 6 Tone poem—Apple Blossoms.....Roberts
- 7 Caprice—The Whistler and His Dog.....Pryor
- 8 Overture—Lustspiel.....Kelt-Bell
- 9 Humoresque on The Merry Widow Waltz—Bilstedt

Introducing this popular melody from the opera "The Merry Widow" hurled in the following manner: 1. A little German band; 2. A flute solo with organ effect; 3. An amateur trombonist, who is willing to show what he can do if only requested to; 4. A street piano; 5. A tin ragtime as played on a banjo; and finally—the result, the popularity of this melody has produced—a brainstorm.

10 Galop—Telemachus.....Bennett
CHAS. E. JENNINGS, *Musical Director.*

The next concert will be given at Las Cascadas, Sunday, December 20.

COMMISSARY DEPARTMENT

NOTICE.

Patrons of the Commissary Department, when dealing with the Cristobal office, will address their individual orders, deposits, etc., to the Order Room, Commissary Department, Building No. 2, Cristobal.

Complaints should be made in separate letters and addressed to the Subsistence Officer, Building No. 2, Cristobal.

JOHN BURKE,
Manager.

Approved:
EUGENE T. WILSON,
Subsistence Officer.

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning December 8:
FRESH MEATS.

Mutton—Stewing.....per lb	6
Shoulder and neck (not under 6 pounds).....per lb	7
Entire forequarter (not under 10 pounds).....per lb	9
Leg (8 to 10 pounds).....per lb	16
Short-cut chops.....per lb	22
Lamb—Stewing.....per lb	6
Entire forequarter.....per lb	8
Leg (6 to 8 pounds).....per lb	27
Chops.....per lb	29
Veal—Stewing.....per lb	10
Entire forequarter (15 to 20 lbs.).....per lb	11
Loin for roasting.....per lb	21
Chops.....per lb	22
Cutlets.....per lb	26
Pork—Cuts.....per lb	20
Beef—Suet.....per lb	4
Soup.....per lb	8
Stew.....per lb	12
Corned.....per lb.	12, 14, 16
Hot roast (from sirloin butt).....per lb	17
Rib-roast, second cut (not under 3 pounds).....per lb	19
Rib-roast, short cut (not under 3 1/2 pounds).....per lb	23
Sirloin roast.....per lb	29
Rump roast.....per lb	29
Porterhouse roast.....per lb	29
Steak, round.....per lb	23
Rib.....per lb	24
Sirloin.....per lb	29
Porterhouse.....per lb	29
Rump.....per lb	29

MISCELLANEOUS.

Livers—Beef.....per lb	11 1/2
Calf.....each	65
Sausage—Pork.....per lb	18
Leberwurst.....per lb	17
Bologna.....per lb	17
Frankfurter.....per lb	17
Sweet bread—Veal.....each	1.20
Beef.....per lb	30
Pigs' feet.....per lb	14
Eggs, fresh.....dozen	50
Oysters.....keg	1.00

POULTRY AND GAME.

Chickens—Fancy Roasting.....each	1.20 and 1.40
Fowls, medium and large.....each	.80c. and 1.00
Ducks, fatted.....each	1.22
Broilers.....each	.75
Turkeys.....per lb	.28
Squabs.....each	.45
Capons.....each	2.40

CURED AND PICKLED MEATS.

Bacon—Strips.....per lb	23
English, breakfast sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Hunter's York cut.....per lb	25
Ferris.....per lb	20
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	45
Cheese—Roquefort.....per lb	15
Neufchatel.....each	65
Young America.....per lb	22

Cheese—Swiss.....per lb	31
Edam.....each	1 05
Camembert.....per lb	28
McLaren's.....jar	15
Pinxters.....tin	22
Gouda.....per lb	34
Philadelphia Crer m.....each	22
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....tin	20
Milk, Briarelf.....bottle	25

VEGETABLES AND FRUITS.

Farsnips.....per lb	7
Lettuce.....per lb	12
Cauliflower.....per lb	12
White potatoes.....per lb	3 1/2
Sweet potatoes.....per lb	2 1/2
Cabbage.....per lb	4
Onions.....per lb	3 1/2
Yams.....per lb	3 1/2
Parsley.....per lb	15
Turrips.....per lb	3 1/2
Carrots.....per lb	4
Beets.....per lb	4
Lemons.....dozen	24
Oranges.....dozen	18
Apples.....per lb	6 1/2
Grapefruit.....each	4
Tangerines.....each	2
Pears.....per lb	10
Cranberries.....per lb	17

§ Sold only from cold-storage and not from Commissaries

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, December 7, 1908:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	6 in (W. Diver)
Height of low water above mean sea level, feet.....	129	92	46	1	0	0
Maximum height above low water, feet:						
Sunday, Nov. 29.....	4.7	4.2	6.5	8.9	5.5	4.5
Monday, Nov. 30.....	12.4	9.2	14.0	15.5	8.8	7.5
Tuesday, Dec. 1.....	4.0	3.9	6.2	13.4	8.8	7.5
Wednesday, Dec. 2.....	3.3	3.4	5.6	9.2	6.6	5.1
Thursday, Dec. 3.....	3.0	3.3	5.1	7.9	4.7	3.9
Friday, Dec. 4.....	2.3	2.7	4.7	7.7	4.3	3.5
Saturday, Dec. 5.....	2.2	2.5	4.2	6.9	3.8	3.2

Rainfall, December 1 to 5, 1908, Inclusive.

(MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total.
<i>Atlantic Division—</i>		
Cristobal.....	.26	.47
Brazos Brook.....	.82	1.25
Gatun.....	.14	.29
Bohio.....	.33	.49
<i>Central Division—</i>		
Tabernilla.....	.31	.53
San Pablo.....	.74	.84
Bas Obispo.....	.46	.71
Gamboa.....	1.1	1.61
Empire.....	.47	.97
Cutacho.....	.72	1.98
Culebra.....	.40	1.11
Rio Grande.....	.54	1.39
<i>Pacific Division—</i>		
Pedro Miguel.....	1.25	2.59
La Boca.....	.71	1.27
Ancon.....	.53	1.15
<i>Atlantic Coast—</i>		
*Porto Bello.....	1.35	2.06
<i>Upper Chagres.</i>		
El Vigia.....	.29	.51
Alhajuela.....	.60	.90

*From 1st to 4th included (only).

FOUND—A bunch of keys on Panama railroad train Friday evening, November 27, between Pedro Miguel and Culebra. Owner can have same by calling at house 135, room 16, between 5 and 6 o'clock any evening, or addressing Sevier S. Baumer, care of Electrical Department, Culebra, C. Z.

LOST—On November 28, on passenger train No. 4, a snake cane with the words "Of Mexico" at the top. Valuable as a keepsake. Finder please notify, Jos. D. Lucey, Las Cascadas, C. Z.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Colon.....P. R. R. Tuesday	Dec. 8
Atrato.....R.-M. Saturday	Dec. 12
Panama.....P. R. R. Monday	Dec. 14
Prinz Joachim.....H.-A. Saturday	Dec. 19
Advance.....P. R. R. Thursday	Dec. 24
Trent.....R.-M. Saturday	Dec. 26
Allianca.....P. R. R. Tuesday	Dec. 29
Colon.....P. R. R. Monday	Jan. 4
Panama.....P. R. R. Saturday	Jan. 9
Advance.....P. R. R. Tuesday	Jan. 19
Allianca.....P. R. R. Monday	Jan. 25
Colon.....P. R. R. Saturday	Jan. 30

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Advance.....P. R. R. Friday	Dec. 11
Trent.....R.-M. Tuesday	Dec. 15
Allianca.....P. R. R. Wednesday	Dec. 16
Colon.....P. R. R. Monday	Dec. 21
Prinz Aug. Wilhelm.....H.-A. Tuesday	Dec. 22
Panama.....P. R. R. Sunday	Dec. 27
Tagus.....R.-M. Tuesday	Dec. 29
Prinz Joachim.....H.-A. Tuesday	Jan. 5
Advance.....P. R. R. Wednesday	Jan. 6
Allianca.....P. R. R. Monday	Jan. 11
Colon.....P. R. R. Sunday	Jan. 17
Panama.....P. R. R. Friday	Jan. 22
Advance.....P. R. R. Monday	Feb. 1
Allianca.....P. R. R. Sunday	Feb. 7
Colon.....P. R. R. Friday	Feb. 12

NEW ORLEANS TO COLON.

Parismina.....U. F. C. Saturday	Dec. 12
Heredia.....U. F. C. Saturday	Dec. 19
Ellis.....U. F. C. Saturday	Dec. 26
Parismina.....U. F. C. Saturday	Jan. 2
Heredia.....U. F. C. Saturday	Jan. 9
Ellis.....U. F. C. Saturday	Jan. 16
Parismina.....U. F. C. Saturday	Jan. 23

COLON TO NEW ORLEANS.

Preston.....U. F. C. Tuesday	Dec. 15
Parismina.....U. F. C. Tuesday	Dec. 22
Heredia.....U. F. C. Tuesday	Dec. 29
Ellis.....U. F. C. Tuesday	Jan. 5
Parismina.....U. F. C. Tuesday	Jan. 12
Heredia.....U. F. C. Tuesday	Jan. 19
Ellis.....U. F. C. Tuesday	Jan. 26
Parismina.....U. F. C. Tuesday	Feb. 2

COLON TO BARBADOS, CALLING AT TRINIDAD.

Atrato.....R.-M. Tuesday	Dec. 22
Trent.....R.-M. Tuesday	Jan. 5

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m. via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line for New Orleans via Kingston, Ja., will be the steamship *William Cliff* on or about the 22d inst.

The steamship *Mapocho* from Valparaiso, arrived at La Boca on December 2. Recent departures from La Boca have been as follows: December 1—*Quita* for Buenaventura; *Limari* for Valparaiso; *San Jose* for Sao Francisco.

Misdirected Letters.

Division of Posts, Customs and Revenues,

Ancon, C. Z., December 10, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be obtained on request of addressee:

Bianchi, Lome	McDevitt, Martin
Border, Charles	Norton, Miss Helen
Breneman, W. O.	Norton, Miss Florence G.
Gilkey, Lloyd G.	Rosegrant, J. H.
Goodrich, Elder C. H.	Rozo, Dr. Santiago
Hahn, Charles F.	Scott, W. A.
Henkle, Mrs. Bertha E.	Swain, J. M.
Knight, Mrs. Herma	



The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Longevity Pay and Canal Medals.

Under the rules adopted by the Commission only citizens of the United States are entitled to receive either longevity pay or the Canal Medal. An employe of foreign birth who claims either longevity pay or the Canal Medal will be required to prove citizenship by submitting the original or a certified copy of his final certificate of naturalization, or else similar evidence of the naturalization of his father during his own minority. American employes of foreign birth, who expect to earn longevity pay or the Canal Medal, may avoid delay by submitting this evidence of naturalization in advance to the Assistant to the Chairman, who will enter the facts in the official record, and return to the employe the evidence submitted. Employes who have not their naturalization papers with them on the Isthmus, should procure them without delay, in order that their citizenship may be recorded.

This record of citizenship may also be of benefit to an employe in the event of his separation from the service and subsequent application for reinstatement.

November Money Order Business.

The report of the Chief of the Division of Posts, Customs, and Revenues for the month of November shows that 14,623 money orders, amounting to \$418,543.77, were issued, a decrease of \$23,239.53 over the amount reported for October. Of the \$418,543.77 in November, \$307,216.25 was in orders drawn payable in the United States and elsewhere, and \$111,327.52 in orders drawn payable in the Canal Zone. The fees collected amounted to \$1,759.99, and the amount paid and repaid, \$106,476.19.

The largest number of orders, 2,721, was issued at Cristobal, and amounted to \$73,031.82. Empire was second with 1,909 orders, aggregating \$55,016.30. Ancon was third in number of orders issued, 1,437, but

was fourth in amount, \$31,903.33. Gorgona was fourth in the number of orders issued, 1,430, but third in amount, \$48,921.57. Culebra was fifth, with 1,294 orders, amounting to \$31,214.28. Of the amount payable in the United States, Cristobal was first with \$63,245.73; Empire was second with \$40,814.37, and Gorgona third, with \$36,548.65. In orders payable in the Canal Zone, Empire was first, with \$14,201.93; Gorgona second, with \$12,372.92; and Pedro Miguel was third, with \$11,301.80. In the amount paid and repaid Empire was first, with \$14,173.14; Cristobal second, with \$13,563.42, and Gorgona third, with \$12,604.65.

The average of all the orders issued was \$28.62, the highest being at Pedro Miguel, where 797 orders, aggregating \$28,619.35 were issued, an average of \$35.91, and the lowest was at Ancon, where the orders issued averaged \$22.20.

Filtered Water at Colon.

The filtration plant at Mount Hope is now in operation and filtered water has been supplied to Colon, Cristobal and Mount Hope since December 1. A hoiler and air pump have been installed at the Brazos Brook reservoir from which an air pipe runs to the bottom of the gate house and discharges air into the water through a perforated grid, so that all the water supply from Brazos Brook reservoir is aerated in the gate house. This improvement has removed the disagreeable taste and odor which have been noticeable in the water from the reservoir at certain times of the year. The same system was installed at the Rio Grande reservoir in October, 1907, and has given excellent results.

Comparison of Cost.

The Mechanical Division of the Isthmian Canal Commission has recently manufactured a number of side doors for 12-yard steel dump cars, and has thus been enabled to compare the cost of manufacture on the Isthmus with the cost of purchase in the United States, for the same article.

The material and labor on six of these car doors, including all overhead and indirect charges of manufacture on the Isthmus, show a maximum cost of \$36.91 each. The cost of fifty of the same doors, purchased in the United States and delivered on the Isthmus, was \$65 each, or nearly double the cost of those manufactured on the Isthmus.

Improvements at Colon Hospital.

Improvements at Colon Hospital grounds are nearing completion. The macadam road and five-foot concrete walk through the grounds are completed, as is a ten-foot concrete sidewalk on the east side of Coconut alley, from the entrance of the hospital grounds to Second street, Colon. All the low places in the grounds are being filled to an average height of about four feet above

high water throughout the greater part of the premises. About 1,200 cubic yards of material, from Mindi, will be used in this work. The lawn in front of the married quarters is being graded and young coconut palms set out along the roads and sidewalks.

Ships for Isthmian Service.

A cablegram from Washington states that the steamships *Shawmut* and *Tremont* will be purchased for \$1,157,000, delivered at Seattle about January 1, 1909. If delivery is desired at New York \$56,000 must be added to the purchase price. These ships will be placed in the Panama Railroad Company's steamship service between Cristobal and New York. They are owned by the Boston Steamship Company and have recently been laid up after several years of service in the trade between Puget Sound, and Japan and China.

The Sundry Civil Appropriation Act of May 27, 1908, makes an appropriation:

***** To enable the Secretary of War to purchase for the Panama Railroad Company two steamships of American register each to be of not less than nine thousand gross registered tonnage and at a cost of not to exceed one million five hundred and fifty thousand dollars, said ships to be controlled and operated by said Panama Railroad Company in like manner as other ships of said Company, including the transportation of supplies, equipment and material for use in the construction of the Panama Canal and the transportation of officers and employes of the Panama Canal Commission: Provided, That when said ships are no longer required for use as aforesaid in the transportation of supplies, equipment and material for construction of the Panama Canal the same shall be transferred to the Secretary of the Navy for use as colliers or other auxiliary vessels belonging to the Navy.

The vessels were inspected by a board of naval officers and found to come up to the requirements as to tonnage, and adaptability to the service of the Panama Railroad Steamship Line and as colliers or auxiliary naval vessels. Two inspectors from the Panama Railroad Steamship Company also examined the boats with regard to their cargo space and availability for the Colon-New York service. It is probable some repairs and changes will be made before they are put in service.

The *Tremont* is a steel twin-screw steamship of 9,606 gross and 6,195 net tons, and was built by the Maryland Steel Company at Sparrows Point, Md., in 1902. It is 489.5 feet long, 58 feet in breadth, and 28.9 feet deep; is fitted with Maryland Steel Company boilers and engines, with six triple expansion cylinders, 23½ inch, 39¼ inch, and 63 inch, with a 45 inch stroke. It has an indicated horsepower of 4,000 and carries a crew of 64 men. The home port is Boston, Mass. The *Shawmut* is a twin ship with the *Tremont* except that it carries a crew of 74 men and has an indicated horsepower of 5,424.

If the ships are purchased at Seattle they will probably carry lumber from Puget

NOTES OF PROGRESS.

(Continued).

Sound to La Boca, and then proceed around South America by way of the Straits of Magellan.

Finance May Not Be Saved.

Recent advices from the States are to the effect that it may not prove profitable to raise the *Finance*, the Panama Railroad Company's ship which went down in the entrance to New York harbor on November 26. The ship sank and now lies on the north side of the main ship channel, about one mile N. 1/2 E. from Sandy Hook beacon very close to red buoy No. 4, and just south of where the swash channel enters the main ship channel.

The loss of the *Finance* made a gap in the schedule of the Panama line, which it was believed could be filled by chartering another steamer. Efforts to do this or to procure an Army or Navy transport have failed, and the schedule of the Panama line will therefore be maintained by the four ships in service. By hurrying the loading and unloading of these ships in New York and Cristobal, the time they spend in port will be shortened. The *Advance* will sail from New York December 21, instead of on December 24; the *Alliance* on December 26, instead of December 29; and the *Colon* on January 2 instead of January 4. Changes to agree with these will also be made in the sailings from Cristobal. Little difficulty is anticipated in keeping up the cold storage service for the Subsistence Department as extra space has been procured on the Royal Mail Steam Packet line.

Visit of the Pacific Fleet.

The First Squadron of the Pacific Fleet, United States Navy, in command of Rear Admiral William T. Swinburne, arrived in Panama Bay at noon on Sunday, December 13. The Gunboat *Yorktown* arrived on the afternoon of December 11 and H. M. S. *Shearwater*, Commander C. W. G. Crawford, arrived on the afternoon of December 13, making ten war vessels, nine American and one English, at anchor in the harbor.

A committee of citizens of Panama has raised a fund to entertain the men of the fleet while they are ashore. The Old Administration building in Panama has been turned over to the Committee by the Isthmian Canal Commission and the welfare of the men is in charge of the Y. M. C. A., a secretary being on duty in the building at all times.

About three hundred cots have been placed in the upper floor of the building and a reading room has been fitted up on the same floor. In the second story, directly at the head of the stairs is the office of the secretary in charge, and a substation of the Ancon post-office is across the hall. On this floor are also a kitchen and mess room where coffee, sandwiches, pie and other light refreshments may be had at cost. It is anticipated that, beginning December 15, about 800 sailors will be ashore every day. The Panama Railroad Company has extended the courtesy of free transportation on any of its passenger trains to any man in the uniform of the Navy, and an observation car will be provided on the rear of each passenger train for the exclusive use of the men of the fleet.

The officers of the Pacific Fleet will be entertained at a subscription dance given by the Americans of the Isthmus at the Hotel Tivoli on the night of December 18, and at a reception in their honor at the University Club in Panama the night of December 19.

Excursions to and from the Pacific Fleet will be run from the La Boca wharf every day during the stay of the fleet, beginning December 15, by the tugs *Bolivar* and *Birdena*, leaving the wharf at 9 a. m. and 2 p. m. each day and returning at 11.30 a. m. and 4.30 p. m. respectively. These excursions, up to the carrying limit of the boats, are free to all gold employes and families of the Isthmian Canal Commission and Panama Railroad Company on presentation of proper pass, which may be secured upon application, *properly approved by immediate superior*, of Mr. W. G. Comber, Resident Engineer, Pacific Division, at La Boca. These passes will also entitle holders to admission to La Boca wharf. Saturday, December 19, will be reserved for white school children of the Zone and guardians.

The squadron is made up of the following armored cruisers:

First Division—*West Virginia* (flagship of Rear Admiral Swinburne), Capt. Alexander McCrackin; *Colorado*, Capt. Edmund B. Underwood; *Maryland*, Capt. Moses L. Wood; *Pennsylvania*, Capt. Frank A. Wilner.

Second Division—Rear Admiral Uriel Sebree, commanding; *Tennessee* (flagship of Rear Admiral Sebree), Capt. Bradley A. Fiske; *California*, Capt. Vincendon L. Cottman; *South Dakota*, Capt. James T. Smith; *Washington*, Capt. Austin M. Knight. The gunboat *Yorktown*, Commander James H. Glennon, accompanies the squadron.

The fleet will be in Panama Bay until December 22, when it will sail for Talcahuano, Chile.

The Panama Railroad Company will furnish the vessels of the Pacific Fleet with 5,000 tons of coal, of which about 2,500 tons were afloat on lighters when the fleet arrived and the balance was in cars ready to be loaded into lighters.

HEALTH REPORT FOR NOVEMBER.

Conditions Continue Excellent.

ANCON, C. Z., December 9, 1903.

To the Chairman Isthmian Canal Commission, Central C. Z.

Sir—I have the honor to forward herewith the report of the Department of Sanitation for the month of November, 1903:

The health conditions of the Zone remain excellent, the sick rate for the month of November being 27.16 per thousand.

The death rate for employes shows a decrease of 1.43 per thousand over October of this year, and comparing with November of last year, a decrease of 9.16 per thousand. The total number of deaths among employes during the month was 40, thirty-one of which were from natural causes and nine from violence. Dividing the whites and blacks, the death rates of the two races are as follows:

Color.	Disease.	Violence.	Total.
White	8.51	2.34	11.35
Black	9.09	2.48	11.57
Total	8.92	2.58	11.50

The death rate for the total population shows a decided improvement over October, it being 4.02 per thousand less during November than in October of this year. Comparing November of this year with November of 1902, the annual death rates for the total population are 23.71 and 23.85, respectively, which show a decided improvement in the health conditions of the Isthmus as a whole.

The total number of malarial cases admitted to hospitals during November shows a decided drop over the number of cases admitted during October. This reduction has occurred during November in each of the preceding years, and has averaged 25 per cent.

There has been no case of yellow fever since May, 1905, nor has there been a case of bubonic plague since August, 1905, though yellow fever and bubonic plague exist on both the Atlantic and Pacific coasts, within three days' sail of the ports of Panama and Colou.

Respectfully,
R. E. NOBLE,
Acting Chief Sanitary Officer.

LABOR FORCE FOR NOVEMBER.

The report of the Chief Quartermaster for the month of November shows that 23,964 persons were actually employed on Canal work on November 30. Of this number 4,161 were "gold" employes and 19,803 were "silver." The additions to the "gold" force during the month were 202, and the separations 314, making a reduction of 112. Of the additions to the "gold" roll, 38 people were employed in the United States, 156 employed or reemployed on the Isthmus, and 8 were transferred from the Panama Railroad Company. Of the 314 separations 81 people voluntarily left the service, 145 were discharged, 43 resigned, 1 died, 34 were changed to a silver basis, 3 were transferred

to departments in Washington, and 7 were transferred to the Panama Railroad Company. The surplus of labor on the Isthmus continues, and no laborers were imported during the month.

A statement of the occupants of Isthmian Canal Commission quarters during the month of November, 1903, shows that among "gold" employes and their families there were 4,735 men, 1,437 women, and 1,280 children occupying quarters. Among the European laborers there were 5,502 men, 314 women, and 361 children occupying quarters, and of the West Indians there were 6,224 men, 1,046 women, and 1,125 children in quarters. A statement of the force actually at work on November 30, 1903, is as follows:

DEPARTMENT.	Gold Men	SILVER MEN.							Total Gold and Silver Men.	
		Monthly.	Artisans.		European Laborers.		West Ind'n Laborers.			Total Silver.
			32c. & over.	26c.	40c.	32c.	26c.	20c.		
Construction and Engineering	2,962	1,749	3,701	1,062	4,056	360	1,358	2,880	15,166	18,128
Department of Civil Administration	330	171	23	.....	.....	.....	.....	.....	194	524
Department of Sanitation	494	671	83	.....	.....	.....	.....	203	967	1,361
Quartermaster's Department	258	1,068	295	.....	362	8	229	771	2,733	3,001
Subsistence Department	71	725	2	.....	.....	.....	.....	.....	727	798
Disbursements	27	10	.....	.....	.....	.....	.....	.....	10	37
Examiner of Accounts	109	6	.....	.....	.....	.....	.....	.....	6	115
Totals	4,161	4,400	4,104	1,052	4,422	368	1,593	3,854	19,803	23,964

Panama railroad force, 5,091; Panama railroad commissary force, 772.

CANAL ZONE SCHOOLS.

Reorganization of the High Schools—Physical Development of the Pupils.

In his report for November, the Superintendent of Public Schools discusses, in addition to other school matters, the reorganization of the high schools, the grading of the pupils, and the physical condition of the children in the Canal Zone schools.

A medical inspection of the schools has been provided for, and after January 1, 1909, the local district physician in each village will inspect the pupils, and advise the teachers as to what physical exercises should be given in order to correct conditions that can be remedied in that way. It has been noticed that the children in the Canal Zone have more eye trouble than in similar schools in the States, and that the percentage of curvature of the spine is greater. The tendency for pupils to become stoop shouldered is also very marked. These observations have determined the school authorities to take measurements, of which a permanent record will be kept, with a view to working out physical culture exercises calculated to correct these particular tendencies. In this work the first efforts will be made at Cristobal, where one of the teachers is a graduate of a normal school of gymnastics, and last year had charge of the physical culture work for the first and second grades of the schools in Indianapolis, Ind. The physical director of the Y. M. C. A. in Cristobal has also offered to help in devising exercises that will be suitable for children in this climate.

There are two high schools in the Canal Zone, one at Culebra and one at Cristobal, and both of them were reorganized in November, when two new teachers arrived on the Isthmus. One of these teachers, who comes from the high school at Sandusky, Ohio, has been given charge of the greater part of the high school work at Culebra, while a teacher from the Las Cascadas school has been transferred to Cristobal as an assistant in both grade and high school work at that place. The present arrangement at the high schools provides for an increase in the length of the recitation periods, and for an addition of subjects which could not be given before. With an additional teacher at Culebra it has been possible to hold the high school in the afternoon as well as in the morning, thus giving the pupils the advantage of an additional study period in school under direction of the teachers. The subjects as offered in the two high schools at present are as follows:

Culebra—First year subjects offered: Algebra, botany, English, German, Latin and Spanish; second year subjects offered, Algebra, English, German, geometry, general history and Latin; third year subjects offered, Latin and French.

Cristobal—First year subjects offered: Algebra, English, history, Latin and Spanish; second year subjects offered, Algebra, English, German and Latin.

The normal number of subjects to be carried by each high school pupil is four, but in case of first and second year pupils who have received excellent marks in their studies during the previous two months permission may be given to carry an additional subject. All the first year pupils take English, algebra and botany, and for their fourth subject they have chosen among Latin, German and Spanish. Many desire to continue in the

high school the Spanish they have commenced in the grades, and some prefer to take Latin because the schools they are preparing to enter require that language. At the beginning of the year there were no Latin books on the Isthmus, but there were some German books, and a few of the pupils took up German in preference to Latin because they could do so without delay. These conditions account for the seemingly large prominence of the languages in the first grade.

The present curriculum for the primary and grammar schools follows: Arithmetic, calisthenics, drawing, English composition, grammar, geography, history, music, physiology, reading, Spanish, spelling, and writing.

Additions were made to the libraries of three schools on the Isthmus during November. When the schools closed last year entertainments were given by the teachers and pupils at Ancon and Empire from which each school realized approximately \$100 dollars to be invested in books. These books reached the Isthmus during the month and are now in use in the respective schools. A large addition was made to the library in the Culebra school for white children by a gift from Mrs. May M. Childs, of Washington, D. C., who recently visited the Isthmus and became interested in the Culebra school.

During the month additions were authorized to the colored school at Cristobal and to the white school at Gorgona. Work was begun on the school building at Corozal. Petitions were received for the establishment of a school for colored children at Frijoles and for a school for white children at Tabernailla. The total enrollment in November was 1,877, of whom 654 were white children and 1,223 colored children. The average daily attend-

ance was 534 white children and 733 colored children. In October the total enrollment was 1,695, of whom 622 were white children.

Murder Near Culebra.

Manuel Lopez, a Spanish laborer, was found dead at Rio Grande, a laborers' encampment near Culebra, on the morning of December 13. He had been stabbed in the heart. Dienicio Nunez was arrested on the morning of December 14 at Mount Hope, and is now in jail awaiting trial for the murder.

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., December 16, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- | | |
|-------------------------|--------------------------|
| Alexander, J. | Hoziea, Charles P. |
| Allison, Charlie | Jones, M. K. |
| Bamfield, Frank Drayton | Kittel, Charles |
| Bates, A. R. | Knight, E. L. |
| Benson, Aaron | Lake, Caddy |
| Blackburn, H. | Lindsay, R. E. |
| Bradberry, Mrs. Randall | Luna, Jacinto |
| Broadhurst, Phillip A. | Marine, Thomas J. |
| Brown, Mrs. H. T. | Mayner, R. M. |
| Cameron, Charles C. | McLeod, John |
| Campion, John | Morgan, Mr. & Mrs. R. P. |
| Carr, Frank L. | Needham, Henry |
| Coleman, Robert—2 | O'Brien, Mike |
| Cooper, Victor | Owen, Mrs. T. R. |
| Cunningham, Bell | Payne, John W. |
| Daughtrey, Mr. and Mrs. | Pearkins, A. L., Jr. |
| T. Harvey | Pensing, H. |
| De Caen, R. | Richards, G. F. |
| Deer, E. H. | Scheets, L. G.—2 |
| Diehl, Wm. Charles | Smith, Pot. Clarence—2 |
| Dinkuh, Emil | Stone, A. C. |
| Drake, Mrs. Melvin | Tafel, Mrs. A. |
| Garcia, Manuel L. | Tandy, Thomas |
| Gillmore, John | Teague, R. C. |
| Gillmore, Gene | Villegas, Sabas |
| Greenman, Mrs. N. E. | Westerland, Edw. |
| Hallewell, Mrs. Leillie | Westerman, Gustav |
| Hanna, John S. | Wilkins, Jno. |
| Harewood, Clement | Wilson, R. E. |
| Henry, Mack B. | Wilson, Jonas—(pkg.) |
| Henshaw, W. P. | |

A telegraph station has been opened at Cucaracha, in order to facilitate the handling of trains in Culebra Cut.

BASEBALL SEASON TICKETS AND OFFICIAL SCHEDULE, 1908 AND 1909.

The baseball associations which control the three parks at which the thirty games of the Isthmian Baseball League will be played during the coming season have provided for an advance sale of season tickets, the prices of which will be as follows: Boxes (four seats), \$40; single seats, \$10; grand stand, single seats, \$7.50; bleacher, single seats, \$4.

The holder of an entire box has the privilege of having two additional chairs placed in the box, making six in all, for the accom-

modation of friends who may be admitted on payment of the price of a grand stand seat. This advance sale of season tickets is to provide a fund which will guarantee to each club a certain amount of money for each game played, no matter how small the attendance. The amount guaranteed depends entirely upon the number of season tickets sold, and every one interested is requested to purchase season tickets before the opening of the season on December 20.

The official schedule of games to be played is as follows:

DATE.	Ancon Park.	Empire Park.	Gorgona Park.
December 20.....	Ancon-Empire.....		Gorgona-M. P. & M.
December 25.....		Empire-M. P. & M.....	Gorgona-Ancon.
December 27.....	Ancon-M. P. & M.....	Empire-Gorgona.....	
January 1.....	Ancon-M. P. & M.....		Gorgona-Empire.
January 3.....		Empire-Ancon.....	Gorgona-M. P. & M.
January 10.....	Ancon-Gorgona.....	Empire-M. P. & M.....	
January 17.....	Ancon-Empire.....		Gorgona-M. P. & M.
January 24.....		Empire-M. P. & M.....	Gorgona-Ancon.
January 31.....	Ancon-M. P. & M.....	Empire-Gorgona.....	
February 7.....	Ancon-M. P. & M.....		Gorgona-Empire.
February 11.....		Empire-Ancon.....	Gorgona-M. P. & M.
February 14.....	Ancon-Gorgona.....	Empire-M. P. & M.....	
February 21.....	Ancon-Empire.....		Gorgona-M. P. & M.
February 28.....		Empire-M. P. & M.....	Gorgona-Ancon.
March 7.....	Ancon-M. P. & M.....	Empire-Gorgona.....	
March 14.....	Ancon-M. P. & M.....		Gorgona-Empire.
March 21.....		Empire-Ancon.....	Gorgona-M. P. & M.
March 28.....	Ancon-Gorgona.....	Empire-M. P. & M.....	
April 4.....	Ancon-Empire.....		Gorgona-M. P. & M.
April 11.....		Empire-M. P. & M.....	Gorgona-Ancon.
April 18.....	Ancon-M. P. & M.....	Empire-Gorgona.....	
April 25.....	Ancon-M. P. & M.....		Gorgona-Empire.
May 2.....		Empire-Ancon.....	Gorgona-M. P. & M.
May 9.....	Ancon-Gorgona.....	Empire-M. P. & M.....	
May 16.....	Ancon-Empire.....		Gorgona-M. P. & M.
May 23.....		Empire-M. P. & M.....	Gorgona-Ancon.
May 30.....	Ancon-M. P. & M.....	Empire-Gorgona.....	
May 31.....	Ancon-M. P. & M.....		Gorgona-Empire.
June 6.....		Empire-Ancon.....	Gorgona-M. P. & M.
June 13.....	Ancon-Gorgona.....	Empire-M. P. & M.....	

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Empire Woman's Club held its meeting on December 10, the president in the chair. There was a good attendance. The important feature of the afternoon was the presentation and adoption of a program for the meetings up to June, 1909. The schedule provides for eleven meetings which will be held on the first and third Thursday of each month, at 2.30 p. m. The first meeting in each month will be devoted to business and study, the club having decided to take up the study of Panama, its history and people, art, and other topics of general interest. In connection with this some excursions will probably be made to points of historic interest. The second meeting in each month will be social in character and a program will be provided for each meeting. Arrangements for three special programs were made: On February 18 there will be patriotic papers in honor of Washington's birthday; on March 17 a program consisting of Irish songs and legends will be given, and on April 1 the regular business meeting will be suspended in favor of a social afternoon, when a short paper on the origin of April Fools' Day and some of the customs will be given. Several outside papers of special interest will be arranged for. A committee to arrange the study course with Mrs. H. C. Ball chairman was appointed. The classes will begin at the first meeting in January, which will be on the 7th.

The Woman's Club will unite with the Christian League, the Sunday school and the Young Men's Christian Association for the Christmas celebration. The next meeting of the club will be held December 22 in place of the regular date which falls on Christmas Eve.

Four large Christmas trees have been ordered for the Zone clubhouses, and the celebrations, for which elaborate preparations are being made, will take place on Christmas Eve. The Ancon Sunday school which has had a considerable increase in membership during the past few months, will have its celebration in the chapel in the bachelors' quarters, Ancon hospital, on the afternoon of Monday, December 28.

The executive board of the Ancon Woman's Club met at the residence of the president on Wednesday afternoon, December 9. There was a full attendance. The proceeds of the Christmas sale held on December 4 and 5, amounted to nearly three hundred dollars. The next meeting of the club, December 16, is in charge of the art department, Mrs. R. W. Fenn, acting chairman. A paper on Panamanian dress and needlework will be given. The chairman of the department, Madame Le Prince is expected to arrive on the Isthmus before the end of the month. The literary and educational departments have suspended meetings for the remainder of the month. The next meeting will be at the residence of Mrs. George L. Campen, on January 13, when the study course of Italy and Greece will be resumed.

The Paraiso Woman's Club met on Thursday, December 10, the president, Mrs. E. B. Healy, in the chair. Several new members were admitted and the charter closed with fourteen members. The constitution was read by the president and adopted. It was decided that the meetings shall consist of a

short business session, and that the balance of the afternoons shall be devoted to such social diversions as the members desire, music, cards or a light program. This arrangement will be observed for the present. There is much enthusiasm among the members, and the club exhibits a live spirit.

The philanthropy department of the Canal Zone Federation of Women's Clubs has raised a fund, through its representatives in the local Woman's Clubs, for a Christmas box to be presented to the patients of the leper colony at Palo Seco. The response from the organizations has been unanimous and generous. It is arranged that individual gifts shall be sent to each one of the patients.

The Las Cascadas Woman's Club enjoyed a social meeting in the new hall on Thursday, December 10. The meeting scheduled for December 24 will be suspended.

The Gatun Woman's Club had a specially interesting meeting at the home of the treasurer, Mrs. A. L. Clark, when the hostess read a paper on "The Philippine Islands," which gave a historic survey of the islands and a glimpse of life in Manila. The speaker wore the native dress of the Filipino woman used on state occasions, and a club member wore the every-day dress of the native woman. The native dress of the men was also exhibited, and samples of needlework and cloth of the fiber of pineapple woven by the women on rough looms were shown.

There was a good attendance at the called meeting of the Culebra Woman's Club on Saturday afternoon, December 12. The object of the meeting was to take action on the resignation of the president. The resignation was accepted and Mrs. W. P. Wheeler was elected to fill the office by unanimous vote.

It was also voted to dispense with the office of treasurer, and Mrs. W. H. Butler will combine the duties of that office with those of the secretary, as the club is small and the meetings are mainly devoted to study. It was decided that meetings should be held, for the present, at the homes of the members and an invitation was accepted to meet with the president, Mrs. Wheeler, House 160, Culebra, on Thursday, December 17. The club voted a sum of money from the treasury toward the Christmas celebration and another sum for specific philanthropic purposes. The meeting adjourned and refreshments were served by the hostess.

The Pedro Miguel Woman's Club held a business meeting on Wednesday, December 9. The social meeting under the direction of the home department was held December 16. The president gave a reception in honor of Mrs. Frank W. Roberts on Thursday afternoon, December 10, and Mrs. Roberts gave a farewell entertainment to her friends on Tuesday, December 8. On both occasions guests from Paraiso, Culebra and other points on the Line were present.

Christmas Gifts for Palo Seco.

THE CANAL RECORD:

Christmas is almost here and I take the liberty to presume that there are, among the readers of THE CANAL RECORD, numbers of people who will be glad to contribute toward the enjoyment of the patients at the Palo Seco Leper Asylum at this season.

Among the patients are two boys of 15, one of 9, and two girls about 13. Of 16 other patients, five are women.

Packages may be addressed to "Superintendent, Palo Seco Leper Asylum, Palo Seco, C. Z., care Director of Hospitals, Ancon."

H. V. GARLAND,
Superintendent.

Empire Christian League.

At the business meeting of the Empire Christian League held December 3, 1908, the following officers were elected for the ensuing six months: J. C. Forman, president; R. R. Rainwater, first vice-president; W. O. Johnson, second vice-president; W. N. Windes, corresponding and recording secretary; E. P. Beck, financial secretary and treasurer.

The League was organized January, 1903, and since that time its membership list has increased more than two-fold. The interest manifested by each member has likewise increased.

The following services are provided for by the League each week. Sunday services: Sunday school, 10.00 a. m.; preaching by various chaplains, 11.00 a. m.; young people's union meeting, 7.00 p. m.; preaching by various chaplains, 7.45 p. m.; Wednesday evening; prayer and song service, 7.45 p. m.

On the third Thursday evening of each month a business meeting and social is held. A cordial invitation is extended to everyone to attend the services.

Notice to Shovel Men.

All members of the I. B. of S. S. D. M. are requested to attend a special meeting in I. C. C. Lodge Hall, Empire, Sunday, December 20, at 2.30 p. m.

S. I. LYONS, *Secretary.*

Brotherhood of Locomotive Engineers.

The regular meeting of Division 756, Brotherhood of Locomotive Engineers will be held at Las Cascadas, Sunday, December 20, at 1 p. m. Important business

W. H. BUCKIUS, *F. A. E. Div. 756.*

Pacific Masonic Club.

The Pacific Masonic Club conferred the Degree of the Ancient Order of Humility on several candidates Saturday, December 12.

On Saturday, December 19, they will have about ten candidates, that number being all that can be initiated in one evening.

Master Masons sojourning on the Isthmus are invited to meet with the Club.

R. S. STILES,
Secretary.

Obituary.

J. Inguard Miller of Fort Dodge, Iowa, died at Colon Hospital on December 11. He was 21 years of age and had been on the Isthmus four months. His father, John Miller lives at Gatun, C. Z.

Missing Man.

Information is wanted in regard to Walter Steinert, a German-American, who was last heard from (apparently from one to two years ago) at Las Cascadas, Canal Zone. Anyone having knowledge concerning him is requested to communicate with M. B. DePutron, Assistant to the Chairman, Culebra, C. Z.

The lessees of Panama railroad property in Colon are signing their leases as rapidly as they can put their buildings in the condition required by the Department of Sanitation.

PREMATURE EXPLOSION.

Nineteen Dead and Many Injured in Cut at Bas Obispo.

Nineteen men are dead, about forty are more or less injured, and a few are missing as a result of the premature explosion of dynamite in the Cut at Bas Obispo on the morning of December 12.

Up to noon December 15 the dead were: *Americans—3:*

J. J. Korp, steam shovel engineer, check 58490.

J. J. Reidy, powderman, check 76738.

J. L. Hummer, steam shovel craneman, check 22475.

Spaniards—3:

Eliodoro Sanchez, laborer, check 10567.

Manuel Masquera, laborer, check 7937.

One unknown, probably a Costa Rican.

Negroes—13:

At Bas Obispo—

John Brown (Barbadian), check number unknown.

Wilfred Harrison (Jamaican), check number unknown.

Emmanuel Pinnock, check 69510.

Benjamin Lee, check 67419.

At Ancon—

Charles Sylvester, native of Trinidad, check 51702.

Simeon Christopher.

Thomas Adams, Antigua.

Joshua Steele, Barbadian, check 23646.

Five unidentified.

The two following are reported missing and the Police Department is counting them as among the unidentified bodies:

Reginald Norris, check 69539.

James F. Harding, check 58142.

Following is a list of patients received at Ancon Hospital by special train:

Arthur Bassett, American, foreman; lacerated wound of scalp, burn right hand; condition not serious.

S. C. Cole, American, foreman; compound fracture right ankle, fracture left thigh, lacerated wound of left forearm; injuries serious.

Benj. Diaz, check 59335; dislocation left hip, lacerated wounds of scalp and chin, multiple contusions, fracture fifth, sixth and seventh ribs left side, Pott's fracture right ankle; condition critical.

Antonio Montero, check 8506, multiple lacerated wounds of chest, face and extremities, lacerated wound left knee joint, broken nose.

Henry Allen, multiple contusions, slight. Simeon Osborn, fracture of spine, fracture left thigh.

Henry Joseph (Joseph Ellis), compound fracture right thigh, head injuries.

James Greenidge, lacerations of face and right ankle.

Gamaliel Paine, multiple contusions.

Joseph Edmond, compound fracture left thigh.

Joseph Eidol, lacerated scalp wound, multiple contusions.

Howard Douglas, lacerated head and chin.

Joseph Bashall, lacerations of scalp and left forearm.

Joseph Holder, lacerations of scalp and lower jaw.

Alton Combs, dislocation right knee, lacerated scalp, punctured wound right thumb, left thigh, lacerated right orbit, fractured

right thigh, and compound fracture right orbit.

William Richards, simple fracture right femur.

John Patrick, multiple scalp wounds.

William Ephriam, head injury, semi-comatose.

Theophilus Simeon, slight contusions.

George Cole, dislocated right knee, lacerated left eye.

Enri Vidal, contusion right foot.

Jacob Roly, burns both arms and hands.

Nathaniel Perryman, contusions scalp and face.

James Thomas, strained right wrist and forearm, contused right biceps.

There were a number of others marked for hospital at Bas Obispo, probably 15 or 16, who did not go to hospital, but returned to the Dispensary for treatment.

There were held at Bas Obispo in sick camp two Americans, five Spaniards, and three negroes as follows:

C. W. Hayden, steam shovel engineer, check 22414.

W. G. Bell, powder foreman, check 55485.

Bonifacio Torracillo, Spanish laborer, check 8741.

Juan Piscal, Spanish laborer, check 8132.

Antonia Predia, Spanish laborer, check 7925.

Juan Vegas, Spanish laborer, check lost.

Jose Gomes, Spanish laborer, check lost.

Thomas Ilow, colored laborer, check 55491.

Samuel Johnson, colored laborer, check 77135.

Gillow Gill, colored laborer, check 11454.

Hayden was afterwards sent to Ancon Hospital and his condition is not considered serious.

A late report from Ancon Hospital gives the following patients at that institution as in critical condition:

George Cole, black.

C. S. Cole, American.

Benj. Diaz, Spaniard.

Alton Combs, black.

Simeon Osborn, black.

Henry Joseph, black.

Joseph Eidol, black.

It will be extremely difficult if not impossible to determine exactly the names of all the laborers who were killed, as some of them are so disfigured that identification is impossible.

The accident occurred at 11.10 o'clock when the men were leaving for their noon-day meal. Fifty-two holes had been loaded. The cause of the explosion can only be conjectured. It was intended to set off a blast of 53 holes containing 44,000 pounds of 45 per cent. dynamite shortly after 5 o'clock on the afternoon of the 12th. The last of the holes sprung had been cooling for at least two days before the dynamite was placed in them. The charges had been tamped in and fuzes set in all but one of the holes. One gang was tamping the last hole, and the powder foreman, Benjamin H. Cole, was personally supervising the work. A negro who was sitting on the ground beside the hole directing the movement of the wooden tamping stick, was almost buried by the explosion, but was uninjured. Mr. Cole was seriously injured, but was able to make a statement immediately after the accident.

He said that the explosion did not begin in the hole where the tamping was being done; that none of the holes had been wired, and that he could give no reason for the premature blast.

The charges were to have been set off by electric current, supplied from the Empire power plant. The wires had not been strung, no two of the holes had been joined, as the firing is now done in parallel and not in series, and furthermore the dynamos at Empire were out of service at the time the accident occurred. It was a clear day and there was no lightning to which the explosion could be ascribed.

Men who were in the Cut at the time, and who were uninjured, one of whom was the Assistant Superintendent of Construction in the Bas Obispo District, say that there were two distinct explosions, one at the north end of the section that had been loaded, and another at the south end. So distinct were these explosions that the Assistant Superintendent of Construction had time to run from a point several yards away to shovel 261, and take refuge in the dipper. Heavy rock fell all around the steam shovel, wrecking the shovel and killing the crew.

The part of the Cut that had been loaded for the blast was the west bank, and the holes extended a distance of about two hundred yards along the Cut going down 50 feet through solid rock. Below the level of the rock it was proposed to displace, four steam shovel cuts had been made at varying depths, one of them being almost at grade. The explosion threw a mass of rock, which is estimated at 55,000 to 60,000 cubic yards, onto these lower levels, completely filling the lowest three cuts, and piling the rock from 20 to 30 feet high over the lowest channel. It is believed that several laborers were walking through the lower levels when the explosion occurred, and, if this is so, bodies of men now missing may be found somewhere under the pile of rock. Steam shovels are working day and night to remove this mass of rock, but it is certain that no one who was caught beneath it will be found alive.

Within ten minutes after the explosion, physicians from Bas Obispo were on the scene and within half an hour all the injured were being cared for in the field hospital at that place. A special train brought them to Ancon hospital two hours later, where necessary operations were performed. The hospital corps of marines at Camp Elliott was on the scene of the accident within five minutes after the explosion.

From the beginning of the work care has been enjoined on powder men and all employes who work with or near powder. This injunction has been emphasized in a circular issued by the Commission and posted in conspicuous places, at meetings of men who work in the Cut, and by constant reminders by superintendents of construction, engineers, and a representative of the Du Pont Powder Company detailed by the powder contractor for that purpose.

Since an explosion at Empire recently, work has been in progress installing a wire along the Cut through which a current of large amperage is sent to be used in exploding the fuzes. The method of exploding in series has been abandoned whenever more than 12 holes are fired, and a greater num-

ber of holes are now exploded in parallel, thus making it improbable that unexploded charges will be left after blasts to menace the lives of the men who excavate in the wake of the powder men. Each powder gang is composed of several laborers under the direction of an American foreman who has had long experience in the handling of powder, and who has no other duty than to see that the work is done carefully and properly.

In the year drawing to a close there have been six accidental explosions of dynamite on the Canal work which have proved fatal to one or more people. In the same time one million charges have been exploded, one-third of which were in holes and the remainder dobe shots.

As soon as the extent of the accident had been ascertained the Washington office was directed to notify the relatives of the Americans who were killed and injured. The following telegrams were then exchanged:

WASHINGTON, D. C., Dec. 12-13, 1908.

Geo. W. Goethals, Chairman, Panama Canal Commission, Culebra.

Deeply concerned to hear of accident. The Red Cross Society expresses much sympathy and is prepared to furnish financial assistance for relief if you deem it necessary. Answer. TAFT.

CULEBRA, C. Z., December 14, 1908.

Boogs, Washington:

(The following is for W. H. Taft:)

We greatly appreciate your kind message, and the offer of the Red Cross Society. No financial assistance necessary, and Commission hospitals fully equipped to care for injured. GOETHALS.

Pacific Division Steam Shovels.

The steam shovels of the Pacific Division excavated 115,553 cubic yards from the Canal prism in November. The best records for the month follow:

PEDRO MIGUEL LOCKS.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
222	5,328	21,312	26,640	23

MIRAFLORES LOCKS.

153	12,175	5,217	17,392	23
114	12,032	5,170	17,202	23
50	8,740	3,745	12,485	23

CARDENAS HILL.

157	12,240		12,240	23
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The best daily records were as follows:

Shovel No.	Location.	Date.	Character material excavated.	Cubic yds. excavated.
222	P. Miguel Locks.	Nov. 18	Rock and earth	2,079
153	Miraflores Locks.	Nov. 28	Earth	1,670
115	Miraflores Locks.	Nov. 17	Earth	1,610
137	Cardenas Hill	Nov. 7	Earth	860

Gun Club.

A number of old trap shooters on the Isthmus desire to form a gun club. All persons interested are asked to communicate with D. H. McCullough, care of Examiner of Accounts. If the number is sufficient to warrant it a set of traps and supply of pigeons will be purchased.

DEFICIENCY ESTIMATES.

A Total of \$5,458,000 Requested—Approved by the Secretary of War.

The following is the full text of the Chairman's letter to the Secretary of War, estimating the amount of money necessary to supply urgent deficiencies in the appropriation for Canal construction for the fiscal year ending June 30, 1909. These estimates have been approved by the Secretary of War:

CULEBRA, C. Z., November 30, 1908.

The Honorable the Secretary of War, Washington, D. C.

Sir—I have the honor to request that the enclosed estimates be transmitted to Congress with a view to including them in the Act making appropriations to supply urgent deficiencies in the appropriations for the construction of the Isthmian Canal, for the fiscal year ending June 30, 1909. The estimates comprise the following:

DEPARTMENT OF CONSTRUCTION AND ENGINEERING.	
Pay of officers and employes on the Isthmus, other than skilled and unskilled labor.....	\$500,000
Skilled and unskilled labor.....	2,458,000
For purchase and delivery of material, supplies and equipment.....	2,400,000
Total.....	\$5,458,000

By divisions these deficiency estimates are as follows:

Central Division.....	\$1,150,000
Pacific Division.....	802,000
Atlantic Division.....	3,451,000
Office, Chief Engineer.....	55,000
Total.....	\$5,458,000

The above funds are necessary in order to carry on the work at the present rate for the balance of this fiscal year and the excess over current appropriations has arisen from the following causes:

First—Additional expenditures due to increased output over that which was estimated in November, 1907, and changes in work, resulting from changes in plans. This applies particularly to the deficiency estimates of the Central and Pacific Divisions.

Second—Work now considered necessary, which was not included in last year's estimates. This applies particularly to the item for general surveys in the office of the Chief Engineer, and also to the Atlantic Division.

Third—Estimates for the Atlantic Division, supplementary to those which were submitted to Congress at its last session and which are now found to be inadequate. This is explained in detail hereinafter.

So far as relative importance of work covered by the above deficiencies is concerned: if these estimates should not be acted on favorably the result would be, except in regard to the Atlantic Division, to retard the progress of the work to a greater or less degree. In regard to the Atlantic Division, however, if the funds requested should not become available this fiscal year, the work of the Division in connection with the construction of Gatun Locks and Dam, will be very seriously and injuriously hampered. Moreover, the estimates which have been submitted for the fiscal year 1909-10 do not include the items for which the deficiencies are now requested and, therefore, the deficiencies this year can not be paid from next year's appropriations without lessening next year's work.

Deficiency estimates for last fiscal year were submitted to Congress in December, 1907, amounting to \$11,000,000, as follows:

Skilled and unskilled labor.....	\$4,900,000
Material and supplies.....	5,100,000
Relocation of Panama railroad.....	1,000,000
Total.....	\$11,000,000

The estimated output for the last eight months of last fiscal year—November 1, 1907, to June 30, 1908, on which these estimates were based—was as follows:

Cubic yards.	
Culebra and Chagres Divisions.....	8,490,000
Colon dredging.....	4,325,000
La Boca dredging.....	4,000,000
Total.....	16,725,000

In line with these estimates, Congress made deficiency appropriation for the Department of Construction and Engineering for the year 1907-08, under Act approved February 15, 1908, as follows:

Officers and employes.....	\$210,700
Skilled and unskilled labor.....	5,536,300
Material, supplies and equipment.....	6,085,700
Miscellaneous.....	157,700
Total.....	\$11,990,400

This was \$536,300 additional for labor and \$985,700 additional for supplies and equipment, as compared with the estimates submitted.

The actual output of the Department of Excavation

and Dredging for the eight months ended June 30, 1908, was as follows:

	Cubic yards.
Culebra and Chagres Divisions.....	8,920,000
Colon dredging.....	4,415,000
La Boca Dredging.....	4,541,000
Total.....	17,876,000

This is 1,151,000 cubic yards more than was estimated. During the same period the excavation performed by the Department of Lock and Dam Construction was 2,622,000 cubic yards, of which 2,233,000 cubic yards were taken from Gatun Locks and spillway and the balance from the Pacific Locks.

CENTRAL DIVISION

As submitted to you, last year, the original estimate of the Central Division (which includes the old Culebra and Chagres Divisions) for salaries and wages of officers and employes and skilled and unskilled labor, for the present fiscal year, was about \$6,465,000. This was based upon an annual output of 12,000,000 cubic yards of material excavated. The appropriation for the Central Division was \$5,371,000. A reduction of seven million dollars was made by Congress in the general item for skilled and unskilled labor. At the present rate the output will be about 50 per cent. greater than was estimated, or 18,000,000 cubic yards for this fiscal year. In order to carry on the work a deficiency appropriation of \$1,150,000 will be required, of which \$194,000 will be for officers and employes, and \$956,000 for skilled and unskilled labor. This deficiency, added to the present appropriation, exceeds the original estimate for a 12,000,000 cubic yard annual output by scarcely \$56,000.

PACIFIC DIVISION

Since the estimates for the present fiscal year, covering work in the present Pacific Division, were submitted, the La Boca locks have been moved to Miraflores, which has enabled work to be started in the channel between La Boca and Miraflores, which work was not contemplated at the time the estimate was made, and to put into operation, as well as making necessary, additional plant covered by the estimate given herewith:

Item.	Officers and employes.	Skilled and unskilled labor.	Material, supplies and equipment.
<i>First District: Pedro Miguel Lock and dam, Miraflores Locks and dams and quarries:</i>			
100 dump cars.....			\$120,000
2 dump scows.....		\$16,000	42,500
<i>Second District: Dredging, Marine shops and sand:</i>			
Operation 1 additional ladder dredge.....	\$10,000	40,000	25,000
Operation 1 additional tug.....	3,200	7,500	2,500
Operation 1 additional clapet.....	6,500	11,500	4,000
Operation rock breaker 6 months.....		4,000	3,500
Clearing Canal axis and borings.....	2,000	31,000	32,000
Removing wrecks from channel.....	8,000	72,000	20,000
Enlarging shipways.....		7,000	10,800
Purchase and repairs steamer <i>Riversdale</i>		3,000	16,500
Construction new wharf.....	1,800	16,000	42,000
Drill barge.....		10,000	50,000
Pile driver.....		3,000	8,200
Rock breaker.....		5,000	37,000
Repairs, 1 additional dredge.....		20,000	20,000
Repairs, 1 additional clapet.....		8,000	7,000
Two dump scows.....		10,000	42,500
Gridiron at shipways.....			5,000
Six new boilers for clapet and dredges.....			18,000
Totals.....	\$31,500	\$264,000	\$506,500

Total deficiency for Pacific Division..... \$302,000

ATLANTIC DIVISION.

Estimates originally submitted to you, in August, 1907, for Canal construction work proper, now included in the Atlantic Division, for the fiscal year 1907-08 were approximately as follows:

Colon dredging.....	\$ 934,550
Gatun Locks.....	2,227,503.44
Gatun Dam.....	965,277
Total.....	\$4,081,677

The appropriation bill, as passed, carried funds which were allotted to the Atlantic Division as follows:

Colon dredging.....	\$ 859,027.82
Gatun Locks.....	2,227,503.44
Gatun Dam.....	982,523.30
Total.....	\$4,019,054.56

The appropriation practically equaled the estimate. These estimates were made nearly a year and a half ago. In the interval, the work has developed and conditions have changed, and the Division Engineer

of the Atlantic Division now reports that these estimates are insufficient; that they were based on incorrect ideas as to the plant that would have to be paid from appropriations for the fiscal year 1907-08; and, also, that additional work is now under way which was not contemplated when the estimates were originally submitted.

A comparison in detail between the funds appropriated for the Atlantic Division, for the present fiscal year, and the present requirements of the Atlantic Division is given as follows:

ATLANTIC DIVISION.

Funds appropriated for 1908-09, (appropriation practically equal to the estimates which were prepared in July, 1907).

Items.	Officers and employees	Skilled and unskilled labor.	Material and supplies.	Total.
Dredging.....	\$84,736	\$395,249	\$379,043	\$859,028
Gatun Locks..	162,950	395,977	1,668,576	2,227,503
Gatun Dam...	89,295	363,515	479,713	932,523
Total.....	336,981	1,154,741	2,527,332	4,019,054

(Note—There was no separate estimate for Porto Bello work.)

ESTIMATED REQUIREMENTS FOR 1908-09. ESTIMATED NOVEMBER, 1908.

Dredging....	\$239,376	\$902,204	\$879,377	\$2,020,957
Gatun Locks..	131,000	452,000	1,805,620	2,388,620
Porto Bello..	114,382	369,537	1,065,534	1,549,452
Gatun Dam...	214,000	652,000	645,160	1,511,160
Total.....	698,758	2,375,741	4,395,690	7,470,189

Deficiencies.. \$361,777 \$1,221,000 \$1,868,358 \$3,451,135

For officers and employees and skilled and unskilled labor, the estimated deficiency is \$3,582,777. The operation of an additional pipe-line dredge for eight months and the operation of three steam shovels at Mindi for twelve months, instead of two shovels for eight months, as planned, will require, for salaries and labor, about \$250,000. In addition, the appropriation for skilled and unskilled labor was about \$250,000 less than the estimate for the present fiscal year. The balance of the deficiency under these two heads, amounting to approximately one million dollars, is required to cover a larger force than was estimated for, especially at Porto Bello and Nombre de Dios, where operations connected with getting out broken stone and sand for concrete, will soon be under way on a large scale.

With reference to the deficiency for material, supplies and equipment:

The original estimates for the year 1907-08, for the Atlantic Division were \$2,356,950. The present estimates are as follows:

Plant for securing delivery of sand, stone and cement at Gatun.....	\$530,244
Nombre de Dios.....	52,720
Porto Bello.....	263,529
Gatun Locks' plant, including power house.....	1,220,120
Plant for Gatun Dam.....	240,810
Plant for dredging, Colon Division.....	184,707
Total.....	\$2,491,940

The estimate submitted in August, 1907, for plant was as follows:

Gatun Locks.....	\$702,010
Gatun Dam.....	64,500
Colon dredging.....	
Total.....	\$766,510

Deficiency for plant Atlantic Division.....\$1,725,420

The same appropriation includes material and supplies necessary for the Atlantic Division, including the maintenance and repair of new and existing plant. As estimated in November, 1908, the requirements for the present fiscal year for material and supplies are as follows:

Colon dredging.....	\$651,000
Gatun Dam.....	404,350
Gatun Locks.....	585,500
Porto Bello and Nombre de Dios.....	262,810
Total.....	\$1,903,760

The estimates submitted for material in August, 1907, were as follows:

Colon dredging.....	\$354,700
Gatun Dam.....	383,200
Gatun Locks, (including Porto Bello).....	852,540
Total.....	\$1,590,440

Excess of estimate of November, 1908, for material and supplies over estimate of August, 1907.....\$313,320

Excess requirements for plant over previous estimate.....1,725,420

Total estimated deficiency for material, supplies and equipment for Atlantic Division for present fiscal year.....2,038,740

The appropriation for the present fiscal year for the Atlantic Division was approximately \$175,000 above the original estimates. The net deficiency, therefore, under material, supplies and plant, for the Atlantic Division is about \$1,863,740. The total deficiency for the Atlantic Division is \$3,451,000.

In order to obtain a clearer understanding as to how the present situation as regards deficiency in the Atlantic Division arose, reference should be made to the estimates for the year 1907-08, prepared in September, 1906, and contained in the minutes of the Isthmian Canal Commission, pages 1492, and following.

Prior to April 1, 1907, little or no construction work had been done in what is now the Atlantic Division, and, except for dredging, little or no plant for its work had been purchased or appropriated.

An examination of the estimates for the fiscal year 1907-08 will show that practically nothing was included therein, in the way of plant necessary for lock and dam construction, except four suction pipe-line dredges and a few dump barges.

In addition, at the close of the fiscal year ended June 30, 1907, a deficiency in skilled and unskilled labor and material and supplies, in the department of construction and engineering, was only averted by drawing on the appropriation for the next fiscal year, i. e., 1907-08.

When the regular estimates for the fiscal year 1908-09 were submitted and gone over at the hearings held at Culebra in November, 1907, inquiry was made of the Head of Department of Lock and Dam Construction whether the erecting plant for the Gatun Locks and Dams, vessels required for transporting material for the locks, and the rock crushing plant at Porto Bello had already been appropriated for. Through a misunderstanding as to what the previous appropriations had included, the Congressional Committee was assured that this plant had been appropriated for and that it would not be necessary to defray the cost of some out of the appropriations for 1908-09. As stated above, reference to the appropriations previously made fails to show that this provision had been made.

The result, therefore, is that the regular appropriation for this year did not include estimates for plant for the Atlantic Division, except the few items specified, amounting to about \$766,000, whereas the present estimated cost of plant required runs up to nearly \$2,500,000.

The deficiency appropriation, approved February 15, 1908, for the year 1907-08, was based on the requirements as submitted by the different departments and divisions in November, 1907, and the deficiency estimate submitted by the department of lock and dam construction made no provision for this plant, for the same reason, viz., it was then understood that the appropriation available at that time were sufficient for the purpose.

This omission in the regular estimates, and appropriation for this fiscal year for material, supplies and plant, must, therefore, be corrected at once by a deficiency appropriation.

OFFICE OF CHIEF ENGINEER—GENERAL SURVEYS AND EXPERIMENTAL WORK.

Under the reorganization effected in September, 1908, work in connection with general surveys, not closely allied with construction work in any one division, as well as experimental work and special technical investigations, was placed in the office of the Chief Engineer, under an assistant engineer, who also had transferred to him the work of the old division of meteorology and river hydraulics, which division was abolished. To carry on this new division of work a deficiency appropriation will be required for such work as is not at present covered by existing appropriations. For all meteorology and river hydraulic work, the appropriation available at the present time is sufficient.

The deficiency thus submitted for general surveys is as follows:

Officers and employees.....	\$15,000
Skilled and unskilled labor.....	17,000
Material and supplies.....	25,000
Total.....	\$57,000

At the time the estimates were submitted in August, 1907, it was assumed that data was available from existing surveys that would enable the drainage area of Gatun Lake and the rivers flowing into it to be closely ascertained. After these surveys had been mapped and compared it was found that valuable and essential data in connection with the hydraulics of Gatun Lake and its tributaries were missing and should be supplied as quickly as possible. A careful search should also be undertaken along the borders of Gatun Lake to discover if any low saddles exist which would effect the seepage from the Lake.

The above estimate covers the cost of field parties and office force to undertake this work.

A summary of the foregoing deficiency estimate for the fiscal year, 1908-09, is as follows:

Division.	Officers and employees	Skilled and unskilled labor.	Material and supplies.	Total
Central.....	\$194,000	\$956,000		\$1,150,000
Pacific.....	31,500	264,000	506,500	801,000
Atlantic.....	361,500	1,221,000	1,863,500	3,451,000
Office, Chief Engineer.....	13,000	17,000	25,000	55,000
Total.....	600,000	2,458,000	2,401,000	5,459,000

A comparison of estimates submitted to Congress for the present fiscal year, in December, 1907, with the appropriations made by Act approved May 27, 1908, for the department of construction and engineering is as follows. It will be noted that there has been deducted from the appropriation for material, supplies and equipment \$1,550,000, for two steamships, which item was not in the estimates.

DEPARTMENT OF CONSTRUCTION AND ENGINEERING FOR FISCAL YEAR 1908-09.

Item.	Estimate submitted December, 1907.	Appropriation May 27, 1908.
Officers and employees, on the Isthmus.....	\$3,541,959	\$3,400,000
Skilled and unskilled labor.....	12,688,436	8,400,000
Material, supplies and equipment.....	10,310,780	11,250,000
Miscellaneous Expenditures.....	476,000	400,000
Total.....	\$27,017,175	\$23,450,000

The appropriations for the present fiscal year for the above work are, therefore, \$3,567,175 less than the estimates. It is, therefore, seen that Congress appropriated about \$4,500,000 less than was estimated for skilled and unskilled labor, whereas only about \$2,500,000 additional is now being requested, and under material, supplies and equipment, Congress appropriated about one million dollars more than was estimated for the same items and in addition thereto \$2,400,000 is now necessary. It might also be noted that the total deficiency, now requested, added to the appropriations made last May, exceeds the estimates submitted last December, for the same items, by \$1,890,825.

The present situation is that work is being performed and expenditures made from appropriations at a rate which will require all of the foregoing deficiency appropriation, during the present fiscal year, unless the present rate at which work is being done shall be reduced. If it is to be reduced to keep within the present appropriations, it is important that I should have information of this decision as quickly as possible. In anticipation, however, of your approval of the deficiency estimates submitted herewith, I would strongly recommend against any let-up, or lessening of speed, and respectfully request your approval of continuing work at the present rate, while the deficiency estimates are being considered by Congress.

Very respectfully,
GEO. W. GOETHALS,
Chairman and Chief Engineer.

Concert by the I. C. C. Band.

LAS CASCADAS, C. Z.,
Sunday, December 20, 1908, at 2.30 p. m.
PROGRAM.

- 1 March—Boys of the Militia.....Boehnlein
 - 2 Selection—Mill's Merry Melodies.....Mills
 - 3 Waltz—Alicia.....Bennett
 - 4 a Intermezzo—Jvanhoe.....Van Alstyne
b Schottische—When a Boy Says "Will You?".....Allen
 - 5 Selection—The Red Mill.....Herbert
 - 6 Moreau—Dawn of Love.....Bendix
 - 7 Caprice—The Whistler and His Dog.....Pryor
- By request.
- 8 Overture—Beautiful Galatea.....Luders
 - 9 Descriptive—The Cavalry Charge.....Luders
 - 10 March—I'm Afraid to Come Home in the Dark.....Van Alstyne
- CHAS. E. JENNINGS, Musical Director.

The next concert will be given at Culebra, Sunday, December 27.

Lost—On Tuesday evening, December 8, between police station, Ancon, and house 87, (rear of Hotel Tivoli) pair of cuffs with plain gold sleeve-links. Liberal reward if returned to office of District Sanitary Inspector, Ancon.

OFFICIAL CIRCULAR.

Typewriter Repairs.

CULIERRA, C. Z., December 9, 1908.

TO HEADS OF DEPARTMENTS AND DIVISIONS:

On December 7, the typewriter repair work was transferred to Gorgona shops and will be handled hereafter under the jurisdiction of the Master Mechanic at that point in connection with the other instrument repair shop work.

All requests for typewriter repairs should be handled in the same manner as the repairs to instruments and the charges for same will be handled on the monthly blanket orders of those having such orders with us, but when typewriters are sent to the shops for repairs by any division or department that has no monthly orders with us, same should be covered by request on Form C. E. 159, requesting the necessary repairs.

The typewriter repair man will continue to make trips around to the different offices along the line and his time while on this work will be divided among the offices he visits on the basis of the amount of time he spends at each, which will be shown by his work reports that will be signed by each office.

All typewriters sent to the shops for repairs should be sent to Mr. E. C. Cummings, Master Mechanic, Gorgona, C. Z., but the request C. E. 159 covering the repairs should come to this office, as is done in requesting other work.

GEO. D. BROOKE,
Supt. M. P. and M.

Approved:
GEO. W. GOETHALS,
Chairman and Chief Engineer.

LEGAL NOTICES.

ANCON, CANAL ZONE, November 28, 1908.

Estate of Fletcher E. Joyner, Administration.

Any and all persons owing the estate of Fletcher E. Joyner, deceased, who died at Ancon, Canal Zone, on the 21st day of October, 1908, are hereby requested to communicate with the administrator of said estate in order that a settlement may be effected. And all persons having any claim or claims against said estate must present the same, duly verified, to the administrator within six months, otherwise said claims will be forever barred according to law.

All communications with reference to the estate should be addressed to Empire, Canal Zone.

F. H. SHEBLEY,
Administrator.

United States of America } In the First Judicial
Canal Zone. } Circuit.

Raimundo Sanderel, a Colombian, who resided in the Canal Zone, died intestate on or about the 10th day of October, 1905, leaving an estate at Ancon consisting of \$7.20 Panamanian currency and personal belongings of little value.

Castis Lephakes, a Greek, who resided in the Canal Zone, died intestate on or about the 16th day of May, 1907, leaving an estate at Ancon, consisting of 50 francs, French gold.

Pedro Juan, presumably a Greek, who resided at La Boca, Canal Zone, died intestate on or about the 3d day of October, 1907, leaving an estate at La Boca consisting of \$70 U. S. Currency and \$10 Panamanian currency.

Kurilla Stevan, nationality unknown, who resided in the Canal Zone, died intestate on or about the 4th day of April, 1908, leaving an estate at Ancon consisting of \$1.60 Panamanian currency, 10 cents U. S. Currency, and one Chilean coin of small denomination.

Lucas Alvarez, Chilean, died intestate in the Canal Zone on or about the 20th day of June, 1908, leaving an estate at Ancon consisting of personal belongings of little value and \$18.50 U. S. Currency.

The Collector of Customs has filed a petition for escheat in each of the above mentioned estates under Section 779 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the courthouse in Ancon, C. Z., on February 1, 1909, at 9 o'clock a. m., to establish their claims to the estates, or to show cause why the same should not escheat to the Canal Zone.

F. H. SHEBLEY,
Circuit Court Clerk Pro Tempore,
Ancon, Canal Zone.

United States of America, } In the First Judicial
Canal Zone. } Circuit.

Frank Roch, American, died intestate on or about May 26, 1908, leaving an estate located at Ancon, Canal Zone, consisting of various personal belongings of little value, Isthmian Canal Commission pay certificates for \$250, and cash amounting to \$260.

James Tray, American, who resided at Ancon in the Canal Zone, died intestate on or about January 22, 1906, leaving an estate at Ancon, consisting of Isthmian Canal Commission pay certificate for \$110 Panamanian currency.

Louis M. Gilbert, alias Charles Gibson, American, who resided at Pedro Miguel, C. Z., died intestate on or about May 4, 1907, leaving an estate at Pedro Miguel, consisting of Isthmian Canal Commission pay certificate of the value of \$27.75 net, and \$1.50 cash.

Bartolo Salcedo, a native of the Dutch West Indies,

who resided at Ancon, C. Z., died intestate on or about June 29, 1907, leaving an estate at Ancon, consisting of Isthmian Canal Commission pay certificate for \$1.60 Panamanian currency.

Charles White, American (colored), who resided at Pedro Miguel, Canal Zone, died intestate on or about April 3, 1908, leaving an estate at Ancon, Canal Zone, consisting of \$5 U. S. Currency.

The Collector of Revenues has filed a petition for escheat in each of the above mentioned estates under section 779 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the courthouse in Ancon, Canal Zone, on January 13, 1909, at 9 o'clock a. m., to establish their claims to the said estates, or to show cause why the same should not escheat to the Canal Zone.

F. H. SHEBLEY,
Circuit Court Clerk Pro Tempore,
Ancon, Canal Zone.

PROPOSALS FOR FOOD SUPPLIES.

PANAMA RAILROAD COMPANY,
COMMISSARY DEPARTMENT,
COLON, R. P., December 5, 1908.

Sealed proposals will be received by the Manager of the Commissary Department of the Panama railroad, at Cristobal, C. Z., until 12 o'clock noon, December 20, 1908, for furnishing 400 cases of tomatoes, six 1-gallon tins to the case. Deliveries to be made in equal installments at equidistant periods of two weeks each, the first delivery to be made on or about January 1, 1909, with the right reserved on the part of the Panama railroad to increase or decrease the quantity 50 per cent for any fortnightly delivery.

The successful bidder will be required to furnish ample bond that he will make deliveries within the time and in quantities required in the contract.

The Panama railroad reserves the right to accept or reject any and all bids.

EUGENE T. WILSON,
Subsistence Officer.

PANAMA RAILROAD COMPANY,
COMMISSARY DEPARTMENT,
COLON, R. P., December 5, 1908.

Sealed proposals will be received by the Manager of the Commissary Department of the Panama railroad, at Cristobal, C. Z., until 12 o'clock noon, December 20, 1908, for furnishing 75 barrels red kidney beans, each barrel to contain about 230 pounds, beans to be choice, strictly hand picked, of the latest crop.

Deliveries to be made in equal installments at equidistant periods of two weeks each, the first delivery to be made on or about January 1, 1909, with the right reserved on the part of the Panama railroad to increase or decrease the quantity 50 per cent for any fortnightly delivery.

The successful bidder will be required to furnish ample bond that he will make deliveries within the time and in quantities required in the contract.

The Panama railroad reserves the right to accept or reject any and all bids.

EUGENE T. WILSON,
Subsistence Officer.

PANAMA RAILROAD COMPANY,
COMMISSARY DEPARTMENT,
COLON, R. P., December 5, 1908.

Sealed proposals will be received by the Manager of the Commissary Department of the Panama railroad, at Cristobal, C. Z., until 12 o'clock noon, December 20, 1908, for furnishing 4,050 barrels of flour, each barrel to contain 196 pounds net.

Deliveries to be made in equal installments at equidistant periods of two weeks each, the first delivery to be made on or about January 1, 1909, with the right reserved on the part of the Panama railroad to increase or decrease the quantity 50 per cent for any fortnightly delivery.

The successful bidder will be required to furnish ample bond that he will make deliveries within the time and in quantities required in the contract.

The Panama railroad reserves the right to accept or reject any and all bids.

EUGENE T. WILSON,
Subsistence Officer.

PANAMA RAILROAD COMPANY,
COMMISSARY DEPARTMENT,
COLON, R. P., December 5, 1908.

Sealed proposals will be received by the Manager of the Commissary Department of the Panama railroad, at Cristobal, C. Z., until 12 o'clock noon, December 20, 1908, for furnishing 100 cases of vermicelli in cases of 25 one-pound cartons.

Deliveries to be made in equal installments at equidistant periods of two weeks each, the first delivery to be made on or about January 1, 1909, with the right reserved on the part of the Panama railroad to increase or decrease the quantity 50 per cent for any fortnightly delivery.

The successful bidder will be required to furnish ample bond that he will make deliveries within the time and in quantities required in the contract.

The Panama railroad reserves the right to accept or reject any and all bids.

EUGENE T. WILSON,
Subsistence Officer.

FOUND—At old Porto Bello, Sunday, December 13, a kodak case. Write secretary Y. M. C. A., Cristobal.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Panama	P. R. R. Monday	Dec. 14
Prinz Joachim	H. A. Saturday	Dec. 19
Advance	P. R. R. Monday	Dec. 21
Trent	R. M. Saturday	Dec. 26
Allianca	P. R. R. Saturday	Dec. 26
Colon	P. R. R. Saturday	Jan. 2
Panama	P. R. R. Saturday	Jan. 9
Advance	P. R. R. Tuesday	Jan. 19
Allianca	P. R. R. Monday	Jan. 25
Colon	P. R. R. Saturday	Jan. 30

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca	P. R. R. Wednesday	Dec. 16
Colon	P. R. R. Monday	Dec. 21
Prinz Aug. Wilhelm	H. A. Tuesday	Dec. 22
Panama	P. R. R. Sunday	Dec. 27
Tagus	R. M. Tuesday	Dec. 29
Prinz Joachim	H. A. Tuesday	Jan. 5
Advance	P. R. R. Wednesday	Jan. 6
Allianca	P. R. R. Monday	Jan. 11
Colon	P. R. R. Sunday	Jan. 17
Panama	P. R. R. Friday	Jan. 22
Advance	P. R. R. Monday	Feb. 1
Allianca	P. R. R. Sunday	Feb. 7
Colon	P. R. R. Friday	Feb. 12

NEW ORLEANS TO COLON.

Heredia	U. F. C. Saturday	Dec. 19
Ellis	U. F. C. Saturday	Dec. 26
Parismina	U. F. C. Saturday	Jan. 2
Heredia	U. F. C. Saturday	Jan. 9
Ellis	U. F. C. Saturday	Jan. 16
Parismina	U. F. C. Saturday	Jan. 23

COLON TO NEW ORLEANS.

Parismina	U. F. C. Tuesday	Dec. 22
Heredia	U. F. C. Tuesday	Dec. 29
Ellis	U. F. C. Tuesday	Jan. 5

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, December 12, 1908:

STATIONS.

	Vigia.	Alhajuela.	Gamboa.	Bohio.	Galun (Canal).	Ge-tun (W. Diver'n)
Height of low water above mean sea level, feet.	129	92	46	1	0	0
Maximum height above low water, feet:						
Sunday, Dec. 6	2.0	2.5	4.0	6.3	3.4	2.8
Monday, Dec. 7	2.6	2.8	4.4	6.3	3.3	2.8
Tuesday, Dec. 8	2.0	2.4	4.0	6.4	3.3	2.6
Wednesday, Dec. 9	3.1	3.2	4.9	6.6	3.3	2.6
Thursday, Dec. 10	1.8	2.3	4.0	6.6	3.3	2.6
Friday, Dec. 11	1.4	1.9	3.4	5.2	2.7	2.2
Saturday, Dec. 12	1.2	1.6	3.7	4.7	2.3	1.8

Rainfall, December 1 to 12, 1908, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total.
<i>Atlantic Division—</i>		
Cristobal	.48	1.57
Brazos Brook	.52	1.86
Galun	.58	1.68
Bohio	.33	1.23
<i>Central Division—</i>		
Vabernilla	.31	.61
San Pablo	.74	1.00
Bas Obispo	.46	.93
Gamboa	1.21	1.78
Empire	.47	1.36
Camacho	.72	2.45
Culebra	.40	1.21
Rio Grande	.54	1.99
<i>Pacific Division—</i>		
Pedro Miguel	1.25	3.34
La Boca	.71	1.92
Ancon	.53	1.67
<i>Atlantic Coast—</i>		
*Porto Bello	1.35	3.35
<i>Upper Chagres.</i>		
El Vigia	.29	.61
Alhajuela	.60	1.15

*From 1st to 10th only, included.



The Canal Record

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Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

President on the Canal.

In his annual message to Congress President Roosevelt says:

"The work on the Panama Canal is being done with a speed, efficiency and entire devotion to duty, which make it a model for all work of the kind. No task of such magnitude has ever before been undertaken by any nation; and no task of the kind has ever been better performed. The men on the Isthmus, from Col. Goethals and his fellow Commissioners through the entire list of employes who are faithfully doing their duty, have won their right to the ungrudging respect and gratitude of the American people."

Prosaic Facts.

The industrious sensation-mongers of the daily press have been busy the past week with the Gatun Dam. One headline reads: "Chagres River is Plunging Through 60-foot Gap in Isthmian Wall. Engineers Face Problem."

In contrast with this lurid picture we venture to present the prosaic facts. These are in substance that the Gatun Dam itself is not yet built. As the photograph in this issue shows, preliminary excavation for the spillway is well advanced. Besides this, the rock excavated from the Gatun Lock site has been dumped in a long pile along the south or landward side of the dam site. This rock pile will serve as a protection to the dam itself from floods in the Chagres during construction and will help to shield it from wave action and to support the slope on the lake side after completion. These rocks have been simply dumped in a pile at random and left to settle through the mud to a solid bearing. The recent heavy rainfall on the Isthmus—28 inches in a single month—with resulting high water in the Chagres has softened the mud under this rock pile and consequently the settlement during re-

cent weeks has been considerable. The more it settles, the more rock from the Gatun Lock pits can be disposed of on this pile.

The American public has vastly more need to worry over the slough of sensational yellow journalism into which its daily newspapers are sinking than over any sinking of the much maligned Gatun Dam.—*Engineering News, December 3.*

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for November is published in other columns of this issue of THE CANAL RECORD. The grand total of excavation for the month was 2,987,230 cubic yards, of which 1,645,113 cubic yards were removed by steam shovels, 1,334,577 cubic yards by dredges, and 7,540 cubic yards by hand excavation. This includes 46,416 cubic yards excavated by dredge No. 82 in the channel to the docks of the handling plant at Gatun, which is outside of the excavation for actual Canal construction.

In the Atlantic Division 113,747 cubic yards of rock were dumped on the toes of Gatun Dam, 81,356 on the south toe and 32,391 cubic yards on the north toe.

The excavation in the Central Division, which includes Culebra Cut, amounted to 1,360,586 cubic yards, of which 1,321,692 cubic yards were taken from the Canal prism. The average number of steam shovels at work in this division was 50.91 as compared with 44.83 in November of last year. The output per shovel per day was 1,157 cubic yards, as compared with 773 cubic yards a year ago, an increase of 49 per cent.

In the Pacific Division the clearing of the site of the proposed temporary diversion of the Cocoli River was begun, as was also the excavation for the power house. The steam shovel work at Cardenas Hill was completed and the steam shovel removed.

The average daily number of laborers actually employed in Canal work was 13,705. There were 238.47 tons of explosives used and 355,176.9 feet of rock drilling was accomplished.

On the relocation of the Panama railroad, 51,800 cubic yards were excavated and 222,600 cubic yards were placed in embankment, making up to the present time a total of 559,829 cubic yards of excavation, and 2,834,970 cubic yards of embankment. Six thousand and fifty-nine feet of permanent track were laid, making a total of 53,466 feet. The force of laborers employed on this work during the month averaged 985 men daily.

The surplus of labor on the Isthmus continues. No laborers were recruited during the month, November being the third consecutive month in which there was no necessity for the recruiting of labor. Conditions continue to be such that more laborers than are necessary for the work can be obtained on the Isthmus. There has been a

noticeable tendency on the part of West Indian laborers to leave Commission quarters for quarters in the native villages and in the jungle. Three thousand three hundred and twenty-one more West Indians were living in the "bush" on November 1, 1908, than on November 1, 1907. Of the 24,169 West Indians in the employ of the Commission on November 1, 1908, 7,569 were living in quarters furnished by the Commission or Panama Railroad Company and 16,600 were not in quarters. This condition has certain objectionable features, but it is without doubt a fact that the settling of West Indians in private quarters where they are under less restraint and can live in their accustomed manner, makes for stability in the force.

During the month the operations of the Subsistence Department show a small profit, while the loss on the Hotel Tivoli has fallen to \$118.23.

The general revenues of the Canal Zone collected during November amounted to \$10,244.15, as compared with \$9,702.37 collected in October.

Health conditions were reported as excellent during November.

A Correction.

In the letter of the Chairman of the Isthmian Canal Commission to the Secretary of War concerning the deficiency appropriation, which was published in THE CANAL RECORD of last week, there was a misleading typographical error. In the second column of the letter as published, under the caption "Central Division," the sentence "A reduction of seven million dollars was made by Congress in the general item for skilled and unskilled labor," should read, "A reduction of several millions," etc.

The Bas Obispo Explosion.

The number of persons known to have been killed in the explosion of December 12 in the Cut at Bas Obispo is twenty-two. On December 17 the body of Domingo Perez, a Spanish foreman, was taken from the mass of rock which was thrown into the Cut by the premature blast, and on December 18, the body of a negro water boy, Benjamin Nourse, was removed. On December 21, the body of Stanley Howell, a negro laborer was taken out. Steam shovels are still at work, and it is believed that more bodies will be found. Of the seven men reported in a critical condition on December 15, Simon C. Cole, the American foreman, is doing well, but is not out of danger. In the first reports of the explosion the name of the American foreman who was so seriously injured, was given as Benjamin H. Cole, but it later was found that the foreman injured was Simon C. Cole. George Cole, a negro laborer, is very much better. Benjamin Diaz, a Spanish laborer, is convalescent. Alton Combs, a negro laborer, is out of dan-

NOTES OF PROGRESS.

(Continued).

ger. Simeon Osborn and Henry Joseph, negro laborers, are still very ill, but will probably recover. Joseph Eidol, a negro laborer, is convalescent.

Nothing has developed to determine the cause of the explosion. On the other hand nothing has been discovered that would shake the opinion that it was entirely accidental, and was in no way due to negligence. In the excavation in the Cut it has been necessary at various times in the past to blow off the whole side of a hill. This has been done in several places between Paraiso and Bas Obispo, and the explosion of December 12 was the last of these large blasts that it will be necessary to make.

Bachelors Cost Less.

Bachelor labor on the Isthmus costs less than that of married people, according to data compiled by the Quartermaster's Department. This cost takes into consideration the quarters assigned to employes, and allowances for fuel, light, water, care of grounds, and janitor service. There are 1,402 American families, and 3,394 single Americans; 1,013 West Indian families and 5,546 single West Indians; 235 European families, and 5,015 single Europeans in Commission quarters. Approximately 23,000 West Indians, working for the Commission, furnish their own quarters in native towns or "in the bush," preferring the consequent independence to free quarters furnished by the Commission. On the basis of an American family living in a type 14 house, which is the type of married quarters in most general use, and of a single employe living in a type 18 house, which is the type of bachelor quarters in most general use, a comparison is made as follows:

PLANT.	Married.		Single.
	Married.	Single.	
Quarters.....	\$1,800	\$500	
Furniture.....	140	25	
Total.....	1,940	525	
MONTHLY COST OF ALLOWANCES.			
	Married.		Single.
	Married.	Single.	
Fuel (coal \$2.80, delivery 70 cents, kindling 80 cents).....	\$4.30		
Light.....	4.20	\$0.30	
Water.....	1.80	.45	
Distilled water.....	.50	.10	
Care of grounds, removal of garbage.....	1.20	.15	
Janitor service.....		1.25	
Total.....	12.00	2.25	

Assuming a six years' service, a married employe may be said to represent an expenditure of \$3,000, and a single employe \$750. There is a surplus of bachelor quarters on the Isthmus, due to marriage and to the migratory nature of the bachelor population. The demand for married quarters is so great that bachelor quarters are being converted into homes for families.

Highest Daily Excavation.

The best daily record of excavation by steam shovels since American occupation was made on Friday, December 18, when fifty shovels in the Central Division excavated 70,087 cubic yards, an average of 1,402 cubic yards per shovel, and of 175 cubic yards per hour. These shovels are under steam for eight hours per day, but are not actually at work during this entire period, time being

lost by the necessity of moving the shovel forward, blasting stone too big for the shovel to handle, keeping the shovel supplied with cars, etc. For time actually at work an average of 259 cubic yards per shovel per hour was made.

This amount of material, 70,087 cubic yards, made a total of 4,804 carloads, divided among 2,064 Lidgerwood flat cars, 201 large Western dump cars, and 2,539 small Western and Oliver dump cars. One hundred and seventy locomotives were used on the Central Division in handling these cars, divided as follows: Serving shovels, 119, handling spreaders, 11; handling unloaders, 11; handling track shifters, 6; switching, 10; labor trains, 2; miscellaneous, 11.

Mr. Taft to Visit the Isthmus.

Mr. Taft, the President-elect, is contemplating a visit to the Isthmus about February 1. The time has not been fixed definitely, but it is thought that he will sail on the cruiser *Charleston* some time toward the end of January. He will come for no especial purpose, but in accordance with his avowed intention of inspecting the Canal once a year while he is in public office.

Visit of Congressmen.

The House Committee on Interstate and Foreign Commerce may decide to visit the Isthmus and inspect the work of the Canal during the holiday recess of Congress. They may leave the States about December 26, and remain five days upon the Isthmus. Following are the members of the Committee:

- WILLIAM H. HEPBURN, of Iowa.
- JAMES S. SHERMAN, of New York.
- IRVING P. WANGER, of Pennsylvania.
- JAMES R. MANN, of Illinois.
- WILLIAM C. LOVERING, of Massachusetts.
- FREDERICK C. STEVENS, of Minnesota.
- JOHN J. ESCH, of Wisconsin.
- FRANCIS W. CUSHMAN, of Washington.
- CHARLES E. TOWNSEND, of Michigan.
- JAMES KENNEDY, of Ohio.
- JOSEPH R. KNOWLAND, of California.
- WILLIAM P. HUBBARD, of West Virginia.
- ROBERT C. DAVEY, of Louisiana.
- WILLIAM C. ADAMSON, of Georgia.
- WILLIAM H. RYAN, of New York.
- WILLIAM RICHARDSON, of Alabama.
- CHARLES L. BARTLETT, of Georgia.
- GORDON RUSSELL, of Texas.

Distribution of Seed.

In the issue of THE CANAL RECORD for November 4, 1908, it was stated that a supply of flower and vegetable seeds would be sent to the Quartermaster's Department of the Isthmian Canal Commission by the United States Department of Agriculture for free distribution on the Isthmus.

Many applications for seeds have been received at the office of the Chief Quartermaster, but the supply has not yet arrived on the Isthmus. All applications are placed on file for attention at the proper time. In the meanwhile, it is not practicable to acknowledge receipt of each application.

Injured Canal Employees.

Mr. Munn, of Illinois, introduced in the House of Representatives, on December 7, the following bill, which was referred to the Committee on Interstate and Foreign Commerce, and ordered to be printed:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress Assembled, That nothing contained in the Act of May 30, 1908, en-

titled "An Act granting to certain employes of the United States the right to receive from it compensation for injuries sustained in the course of their employment," shall prevent the Isthmian Canal Commission, under rules to be fixed by the Commission, from granting to its injured employes, whether engaged in hazardous employment or otherwise, leave of absence with pay for time necessarily lost as a result of injuries received in the course of employment, not exceeding in the aggregate thirty days per annum: Provided, however, That compensation paid to such injured employes under such regulations shall be deducted from any compensation which such employes may be entitled to receive under the terms of the said Act.

Quartermaster's Allotments.

The following statement shows the amounts expended in November by the various districts, storehouses, etc., of the Quartermaster's Department, the amounts allotted, and the saving or excess with reference to the allotments:

Districts, etc.	Allotment.	Expenditure.	Saving.
Porto Bello.....	\$2,069.30	\$1,360.74	\$708.56
Cristobal.....	10,808.89	9,014.00	1,794.89
Gatun.....	7,460.46	7,091.11	369.35
Tabernilla.....	2,501.34	2,168.05	333.29
San Pablo.....	2,037.20	1,696.06	341.14
Gorgona.....	5,666.72	7,848.94	\$1,772.22
Bas Obispo.....	4,196.52	3,419.02	777.50
Las Cascadas.....	4,961.22	4,530.37	430.85
Empire.....	9,935.49	8,033.19	1,902.30
Culebra.....	11,184.08	9,142.09	2,041.99
Paraiso.....	4,335.10	3,653.57	681.53
Pedro Miguel.....	4,618.38	4,073.58	544.80
Corozal.....	4,634.10	1,980.98	*3,653.12
Ancon.....	12,275.28	12,051.88	223.40
La Boca.....	4,106.44	3,581.80	524.64
Gardening operations.....	2,000.00	1,934.89	65.11
Mount Hope Depot.....	16,140.00	17,648.37	*1,508.37
Gorgona store.....	4,428.11	4,596.74	*168.63
Empire store.....	4,655.30	4,308.95	346.35
Culebra office.....		8,673.33	
Lirio Mill.....		3,250.17	
Printing plant.....		3,611.66	
Total pay roll.....		126,639.49	
Net saving.....			9,909.60

*In excess of allotment.

Commission Dentistry.

The following fees will be charged by the dentists in the employ of the Commission, at Empire and Gorgona, who will be ready to do business as soon as their offices are completed:

Professional visits.....	\$2.00
Divitalizing nerve and removing same.....	2.00
Treatment of alveolar abscess, sterilizing roots and filling roots, each treatment.....	50
Fillings of porcelain.....	55.00 to 15.00
Fillings of gold.....	2.00 to 8.00
Fillings of amalgam.....	1.00 to 3.00
Fillings of cement.....	1.00
Fillings of gutta percha.....	1.00
Cleaning teeth, removal of calculus, treatment of pyorrhoeas and diseases of the oral cavity generally, each setting.....	50 cents to 2.00
Extraction of tooth.....	50
Anesthetics (local).....	(extra) 50
Gas.....	(extra) 3.00
Full artificial dentures (or plate) vulcanite (each).....	\$10.00 to 20.00
Full artificial dentures (or plate) gold (each).....	75.00
Lower dentures, cast metal base.....	10.00
Partial dentures at comparative rates; base plate and one tooth.....	5.00
Crown work (each crown) incisors and bicuspid.....	7.50
Crown work (each crown) molars.....	10.00
Bridge work (bridge attachments are considered as teeth) per tooth, incisors and bicuspid.....	7.50
Bridge work (bridge attachments are considered as teeth) per tooth, molars.....	10.00

The Navy transport *Solace* arrived in the harbor of Panama on December 16, on her way to the Atlantic coast via the Strait of Magellan.

HANDLING OF EXPLOSIVES.

Demonstrations to Powder Men—Appointment of Supervisor—Revised Rules.

The principles of exploding dynamite by means of electricity were explained to the powdermen of the Central Division at the office of the Division Engineer at Empire on Sunday morning, December 20. Immediately after the explosion in the Cut near Empire on October 8, due, it was believed, to a steam shovel having run into an unexploded charge, it was decided to adopt the method of exploding charges of more than a dozen holes by means of a high amperage current supplied from the Empire electric plant. A number of experiments showed that the method formerly in use, that of detonating the fuses by a low amperage current sent from a small battery through a number of holes wired in series, is not sure, and that the method of detonating by a high amperage current, the holes being wired in parallel, is sure to explode every hole in a charge. Since then the use of the latter method has been extended throughout the Cut. The Electrical Engineer of the Mechanical Division, who had charge of the experiments, explained the working of both systems to the powdermen, illustrating his explanation with diagrams and by actual tests with fuses, using both the small field battery and the high amperage current. The Division Engineer and Assistant Division Engineer followed the Electrical Engineer, and urged caution on the part of the powdermen.

It was announced that Mr. E. D. Knobel had been appointed Inspector of Blasting for the Central Division. His duty will be simply to inspect the powder work from Pedro Miguel to San Pablo, and wherever negligence is detected to report it.

GENERAL SUPERVISION OF EXPLOSIVES.

Thomas C. Atterbury, formerly general foreman in charge of explosives in the Central Division, has been appointed supervisor of explosives and transferred to the Quartermaster's Department. His duties will extend to all departments on the Isthmus in which explosives are handled or used. He will have charge of the unloading of explosives from the ships at Cristobal, and the loading on the special powder trains, which he will accompany to the storage magazines where he will direct the storing. When not occupied in the loading, transportation, or issuing of explosives, he will inspect the storage magazines and service magazines; will see to it that the precautions for storage are observed, and will keep a check on the quantity of explosives on hand. The detail of a man to have general supervision over the handling of explosives from the time they leave the ships until they are issued for service is in accordance with a recommendation made on November 7.

The amount of dynamite contracted for delivery during the present fiscal year is 11,283,400 pounds, and deliveries are being made at the rate of about 1,000,000 pounds a month. In addition to this, nearly 600,000 feet of electric fuses, 1,542,800 feet of triple tape fuse, and 634,100 blasting caps have been contracted for and will be delivered in connection with the dynamite. The storage magazine in the hills near the Chagres River opposite Cruces is practically finished. It has a capacity of 600,000 pounds of dynamite, as has the storage magazine recently completed near Mindi.

Service magazines are maintained by the Division Engineers at various points along the work. The value of blasting material purchased between May 4, 1904, and November 12, 1908, is as follows:

1904.....	\$92,627.71
1905.....	67,577.38
1906.....	171,301.06
1907.....	385,065.22
1908.....	1,008,137.02
Total.....	\$1,724,808.39

RULES OF HANDLING.

Precautions to be observed in the storage, transportation, handling, and use of explosives on all work under the control of the Isthmian Canal Commission were reiterated under date of December 15, 1908, as follows:

STORAGE OF EXPLOSIVES.

- Explosives will be stored in dry, well ventilated magazines, known respectively as storage magazines and service magazines, those of the former class being controlled and operated by the Quartermaster's Department, and of the latter class by the Division Engineers in the Department of Construction and Engineering. Storage magazines contain the reserve supply which is issued from time to time to the service magazines. From the latter is drawn the supply for daily use in the mining operations.
- Under no circumstances must blasting caps or electric fuses be stored in the same building with other explosives, nor during transportation must they be carried together.
- The grounds in the vicinity of all magazines will be kept free of weeds and grass, and in such condition as to avoid all danger of fire from sparks which may fall in the vicinity.
- In both storage and service magazines the boxes containing explosives shall be turned once every two weeks, care being taken to so arrange the boxes that the lettering on all boxes shall be erect at one turning and inverted on the next turning. A record shall be kept in each magazine showing the dates on which the boxes were turned.
- There shall be kept in each magazine a thermometer of standard rating, which will be so located as to show about the average temperature of the magazine at any one time, and which shall be read during the hottest part of the day at least two days in every week, and a record of the dates and readings shall be kept permanently posted in each magazine, and a copy of same furnished monthly by each Division Engineer, to the Chairman and Chief Engineer, Isthmian Canal Commission.
- The firing of any pistol, rifle or shotgun in the general vicinity of magazines is strictly prohibited, and watchmen will report to the Division Engineer all persons guilty of violation of this rule.
- All employees engaged in working in storage, service or exploder magazines must, while so engaged, wear shoes or slippers with hemp, felt or straw soles, which will be provided for this purpose by the various Division Engineers, and habitually kept, when not in use, in the magazine.
- Smoking and the carrying or use of matches within or in the near vicinity of all magazines is strictly forbidden, and the same prohibition will be rigidly enforced in the case of all persons engaged in transporting, handling, or using explosives or detonators.

TRANSPORTING EXPLOSIVES.

- In the distribution of explosives from the storage magazines to the service magazines it is desirable, whenever practicable, to use the same crews in order that the personnel can be properly instructed in their duties.
- In transporting explosives from the storage magazines to the service magazines covered cars will always be used, and every precaution taken to reduce the risk of explosion from sparks or cinders.

HANDLING AND USE OF EXPLOSIVES.

- Every precaution must be taken during loading operations to avoid accidental explosions, due to falling sparks and cinders from locomotives and steam shovels, and under no circumstances must explosives or detonators be allowed to lie uncovered and exposed to this danger.
- Explosives and detonators must not be carried, or placed together, before being used.
- Dynamite issued from the service magazines, and not needed for immediate use, will be kept in locked wooden boxes which shall be painted red, and shall be placed in such positions as to minimize the risk from train wrecks and falling debris.
- Primers after being made up should be kept in a portable metal box with a hinged cover, painted red, and should not be stored close to the dynamite even while loading holes.

5. In preparing primers care should be observed not to apply violence to the filling where the wires enter the cap, or in forcibly separating the two wires, since the waterproof qualities of the exploder depend in a great measure on keeping this portion intact.

6. Under no circumstances shall dynamite cartridges be kept in tool boxes nor must dynamite be left over night or holidays, except under lock and key.

7. Employees are prohibited from attempting to remove blasting caps from boxes by inserting wire nails or any sharp instruments; from carrying detonators in their pockets; from tapping or otherwise investigating a detonator; from withdrawing a wire from an electric fuse, or from attempting to tighten a cap around fuse by biting it with the teeth.

8. Holes must not be loaded immediately after springing, and in cases where there is any doubt as to the temperature of the holes, some metal object like a chain, rod or pipe should be allowed to remain in the hole for twelve to fifteen minutes. Upon withdrawing this metal object from the hole and carefully feeling it throughout its entire length, it can readily be determined whether or not the temperature at any point is unduly high.

9. Maximum thermometers may also be used, but they possess the disadvantage of showing the temperature only in the particular place to which they are lowered.

10. Tamping must never be done with iron or steel bars or tools or tripod rammers. Use should be made only of pine or fir rods and under no circumstance must a primer be forced into a hole.

11. The explosive must not be rammed forcibly, but must be pressed gently and firmly into place.

12. Holes must not be fired without ample warning, and until every one is beyond the danger zone, or protected from falling debris. Any supply of explosives in the vicinity must also be protected from danger from this source.

13. Employees engaged in making up primers must be located at a safe distance from working parties and from equipment.

14. Powder foremen must exercise every care to see that every piece of paper or other inflammable material is removed from the vicinity of the locality where dynamite is placed during loading operations.

15. Undue haste must not be used in seeking the cause of a misfire, and ample time must be allowed before the misfire is approached. When a shot has missed fire, no attempt must be made to drill, bore, or pick out the shot, but the situation must be met by drilling and charging another hole not less than three feet from the missed hole.

16. Blasting machines should be inspected periodically by a competent electrical engineer for the purpose of ascertaining their ability to fire an exploder through a given resistance.

17. Not more than twelve holes must be fired by a blasting machine at one time, and these holes must always be wired in series.

18. Before being placed in the primers, each electric fuse must be tested by the small detector galvanometer.

19. At places where a live wire adjacent to the cut is available, and where more than twelve holes are to be fired at a time, the live wire must always be used.

20. Not more than fifty holes must be fired at one time by use of the live wire, and these holes must always be wired in parallel under the supervision of a competent blasting wireman.

21. Every powderman will be provided with a small detector galvanometer with which he shall see that every fuse, which is to be placed in a loaded hole, is tested before the primer is made up. Each hole after being loaded, will also be tested with this galvanometer, and the entire series of holes to be fired at one shot will be tested in like manner, after the wiring is completed and just before the holes are fired, care being taken when the galvanometer test is made to see that no working parties or unauthorized persons are within the danger limit.

22. Every Superintendent and Assistant Superintendent of Construction, every general foreman and every powderman will be furnished with a copy of these instructions of suitable size to be carried in the pocket, and must familiarize himself perfectly with the precautions to be observed in reference to the transportation, handling and use of explosives on his work.

23. Any disregard or infractions of these rules will result in the immediate dismissal of the responsible party.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Lost—On passenger train leaving Colon at 7 p. m., Sunday, December 13, a package containing a pair of khaki trousers with a commissary and hotel coupon book in the pockets. The finder is requested to communicate with A. E. Lawson, check No. 68,536, Las Cascadas, C. Z.

CANAL WORK FOR NOVEMBER.

Monthly Report of the Chairman to the Secretary of War.

CULEBRA, C. Z., Dec. 15, 1908.

The Honorable the Secretary of War, Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of November, 1908:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
Steam Shovel Excavation—					
In prism.....	Cubic yards.....	130,710	1,316,992	115,553	1,561,255
Auxiliary.....	Cubic yards.....	39,983	38,054	5,821	83,858
Total.....	Cubic yards.....	170,693	1,353,046	121,374	1,645,113
Dredge Excavation—					
In prism.....	Cubic yards.....	570,832		609,089	1,179,921
Auxiliary.....	Cubic yards.....	52,266		102,390	154,656
Total.....	Cubic yards.....	623,098		711,479	1,334,577
Hand Excavation—					
In prism.....	Cubic yards.....		5,920		5,920
Auxiliary.....	Cubic yards.....		1,620		1,620
Total.....	Cubic yards.....		7,540		7,540
Total excavation.....	Cubic yards.....	793,791	1,360,586	832,853	2,987,270
Explosives used.....	Tons (2240 lbs)	46.05	177.47	14.95	238.47
Drilling.....	Feet.....	58,245	271,236	25,695.9	355,176.9
New track laid.....	Miles.....	1.3	10.6	3.7	15.06
Track removed.....	Miles.....	8.6			8.6
Material placed in dams.....	Cubic yards.....	113,747		10,270	124,017
Rock crushed.....	Cubic yards.....		5,080	3,236	8,316
Cement used.....	Barrels.....	490		168.5	658.5
Concrete placed.....	Cubic yards.....	340		47	387
New roads laid.....	Miles.....	0.18	22.	0.6	28.78
Water mains laid.....	Feet.....	933		801	1,734
Sewers laid.....	Feet.....	3,700	894	750	5,344
Open drains and ditches dug.....	Feet.....	950	34,212	142,638	177,800
Daily average number of laborers.....		2,817	7,603	3,280	13,705
Rainfall.....	Inches.....	21.37	4.46	8.65	

Atlantic Division.
GATUN LOCKS.

Unloading Cableway Dock—The pile driving for this dock is 28 per cent completed, and the decking 5 per cent completed.

Dredge No. 82 excavated 46,416 cubic yards of clay from the slip leading to the docks of the rock handling plant.

Cement Shed Dock—The pile driving for the foundation of this dock is approximately 19 per cent completed.

Unloading Head Tower Tracks—The pile foundations for the forward tracks of these towers were completed; 175 piles were driven and 75 bents capped. This work is 95 per cent completed.

Storage Pile Tunnels—Excavation on the open cuts for these tunnels was commenced November 9, and 2,825 cubic yards of earth and 25 cubic yards of rock have been removed. This excavation is 40 per cent completed.

Power House—The excavation for the Gatun power house has been completed so far as the steam shovel work is concerned. A temporary storehouse for cement and machinery has been erected at the power house site, and a track laid leading thereto.

Towboat—The stern wheel towboat is practically completed, and will undertake her trial trip in the near future.

GATUN DAM.

During the month 61 piles, or 195 linear feet of trestle, were driven on the south toe of the dam. On the south toe of the dam

81,356 cubic yards of material were dumped, and 32,391 cubic yards on the north toe.

SPILLWAY.

A total of 34,751 cubic yards was excavated from the spillway site, and 149 piles were driven on the spillway dock site.

HARBOR AND CHANNEL SECTION.

The total amount of material removed from the Canal prism was 618,015 cubic yards, of which 47,183 cubic yards were excavated by steam shovels and 570,832 cubic yards by dredges.

At the close of the month, 40 feet of water could be carried from 0 to Mile 2, plus 4,380 feet; 30 feet to Mile 3, plus 300 feet; 20 feet to Mile 3, plus 4,235 feet; and 14 feet to Mile 4, plus 4,380 feet, the end of the cut.

were removed by steam shovels, 780 cubic yards by crane with a crab dipper, 5,920 cubic yards by hand at the Bas Obispo quarry, 933 cubic yards by hand at the new powder house site up the Chagres River, and 687 cubic yards by hand for tracks at Tabernilla.

The quantity of material removed from the Canal prism was 1,321,692 cubic yards, while 37,274 cubic yards were removed from the Obispo Diversion, 687 cubic yards for Tabernilla tracks, and 933 cubic yards at the new powder house site.

The daily average number of steam shovels at work during the month was 50.91, as compared with 49.55 for the month of October.

For comparison with the work done during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels	Classification of material.		Av. No. of steam shovels working during month	W'kg days in m' th	Av. amount excavated per shovel per 8-hour day.
		Rock	Earth			
1907.	cu. yds. 832,136	cu. yds. 567,754	cu. yds. 264,382	44.83	24	cu yds 773
Nov.....						
1908.	1,352,266	927,994	424,272	50.91	23	1,157
Nov.....						

Rainfall during the month: 1907, 10.40 inches; 1908, 4.46 inches.

The above table shows that the average output per shovel per day was over 49 per cent greater in November, 1908, than in the corresponding month of the previous year.

In building construction work, two new type 17 buildings were completed by this Division, and one type lodge hall by contract, and turned over to the Quartermaster's Department. Work was in progress upon seventeen new buildings, which were not completed during the month. Twenty-two buildings were completely rescreened and thirteen partly rescreened. Eleven repair jobs, other than rescreening, were completed, and twenty repair jobs to buildings were partly completed.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

At Pedro Miguel the track vest of the lock site was raised, providing a toe for the west dam. A portion of the site of the west dam was cleared, and a large percentage of the lumber required for trestles delivered and unloaded at the site.

At Miraflores, in addition to continuing the excavation, clearing the site of the proposed temporary diversion of the Cocoli river was begun, as was also the excavation for the power house. The dredge Sandpiper continued the work of cutting the channel from the Rio Grande to the lock site. The steam shovel work at Cardenas Hill was completed and the steam shovel removed.

DISTRICT NO. 2—DREDGING, AND LA BOCA SHIPWAY.

Five dredges were in operation during the month, as follows:

Dredge	Type.	Cubic yards.		Remarks.
		In pr'm	Auxil'y	
Culebra	Suction	341,469		Scow measurement
Gopher	Ladder	87,342		Place measurement
Mole..	Ladder	31,595	86,655	Place measurement
No. 14..	Ladder	67,192		Place measurement
Dipper.	Dipper.	26,368	15,735	Place measurement
Total.....		553,966	102,390	

Central Division.

During the month of November, the total amount of material excavated in the Central Division was 1,360,586 cubic yards, of which 426,165 cubic yards were classified as earth and 934,421 cubic yards as rock.

Of this quantity, 1,352,266 cubic yards

The usual work of maintenance and repairs was accomplished at the shipway.

Borings to ascertain the nature of the material in the channel between La Boca and Miraflores Lock site are nearing completion.

In addition, borings were made along the shipyard frontage, with a view to establishing a new wharf.

Two gangs have been engaged during the month in clearing the Canal prism over which the dredges will have to operate.

DISTRICT NO. 3.

A large number of items of building and material construction and maintenance were accomplished during the month, including the operation of the filtration plant, La Boca quarry, Rio Grande quarry, the construction of the reservoir on Ancon Hill, bridge and road work, sanitary ditching and construction of drains, and other minor items.

Mechanical Division.

The usual work of this Division was performed.

Relocation of Panama Railroad.

During the month 51,800 cubic yards of excavation was accomplished on the relocated line, and 222,600 cubic yards of embankment. This makes a total of 559,829 cubic yards of excavation completed to the present time, and 2,834,970 cubic yards of embankment.

The work of constructing trestles for filling bridges and culverts was continued.

Work on the Miraflores tunnel has not been resumed owing to the wet weather, but it will be resumed as soon as the rainy season is over.

During the month 6 059 feet of permanent track was laid, making a total to date of 53,466 feet.

The force of laborers during the month averaged 985 men daily.

Quartermaster's Department.

The total additions to the gold force were 202, and the total separations 314, making the net separations 112. Of the additions, only 38 were of men employed in the United States.

No laborers were recruited during the month, November being the third consecutive month in which there was no necessity for the recruiting of labor. Conditions continued to be such that more laborers than are necessary for the work can be obtained on the Isthmus.

There has been a noticeable tendency on the part of West Indian laborers to leave Commission quarters and house themselves in private quarters in the native villages and in the jungle, as shown by the following table of comparison:

	No. of West Indians actually at work.	No. of same employed by the Commission.	No. in Com'n. and P. R. R. quarters.	No. not in Com'n. or P. R. R. quarters.
1907—				
November 1.....	20,655	25,199	11,920	13,279
1908—				
November 1.....	19,811	24,169	7,569	16,601
October 1.....	19,932	24,317	7,889	16,423
September 1.....	21,122	25,768	9,434	16,334

From the above it will be seen that 3,321 more West Indians were living "in the bush" on November 1, 1908, than on November 1, the year previous.

This movement of West Indian laborers to independent quarters continues, 345 having

left Commission quarters in November. This condition has certain objectionable features, the principal one appearing to be that laborers in independent quarters are more exposed to malarial infection, but it is without doubt a fact that the settling of West Indians in private quarters, where they are under less restraint and can live in their accustomed manner, makes for stability in the force.

Subsistence Department.

During the month the operations of the Subsistence Department show a small profit, while the loss on the Tivoli Hotel has fallen to \$118 23. It is expected that the Tivoli Hotel during December will show a good profit.

Department of Civil Administration.

COURTS.

The Supreme Court was not in session during the month.

In the circuit courts 11 civil cases and 25 criminal cases were settled, and in the district courts 63 civil and 472 criminal cases were disposed of.

DIVISION OF REVENUES.

The general revenues of the Canal Zone, collected by this Division in November, amounted to \$10,244.15, as compared with \$9,702.37 collected in October.

Fifteen vessels entered at and thirteen cleared from the port of Ancon, and fifteen vessels entered at and fourteen cleared from the port of Cristobal during the month.

DIVISION OF POLICE AND PRISONS.

The number of arrests during November was 477, as compared with 489 for October.

As Coroner of the Canal Zone, the Chief of Police investigated 11 deaths, 2 of which were due to railroad accidents and 6 to accidental drowning.

Habert Stout, a Barbadian negro, who was convicted on May 6, 1903, of a murder at Gorgona on March 7, 1903, was hanged at the Canal Zone penitentiary at Culebra on November 20. This was the first legal execution in the Canal Zone since the American occupation.

DIVISION OF PUBLIC WORKS.

The usual business of this Division, including the installation of new connections, the issuance of permits for the installation of plumbing, the inspection of plumbing and sewers, the collection of water rents, and the operation of public slaughter houses and markets, was continued during the month.

In the city of Panama 28,919,000 gallons of water were used, and in the city of Colon 12,480,730 gallons were used.

DIVISION OF FIRE PROTECTION.

No serious fires occurred during the month, the total estimated damage being only \$10.

DIVISION OF SCHOOLS.

The total enrollment in the white schools was 654, and the average daily attendance was 534. In the colored schools the total enrollment was 1,223, and the average daily attendance 733.

Department of Sanitation.

[The substance of the report of this department was published in THE CANAL RECORD last week.]

GEO. W. GOETHALS,
Chairman and Chief Engineer.

The following steamers have recently arrived at La Boca: December 13, First Squadron United States Pacific Fleet, (eight armored cruisers) from northern ports; December 15, *Hornet*, from Seattle, Wash.; December 16, *Ecuador*, from Buenaventura, and United States Navy transport *Solace*, from Northern ports; December 18, *Indiana*, from San Francisco.

OFFICIAL CIRCULARS

Limits of Atlantic and Central Divisions.

CULEBRA, C. Z., December 12, 1908.

CIRCULAR NO. 183L.

Effective this date: The limits of the Atlantic Division and Central Division as prescribed in Circulars Nos. 153 and 183A, are changed as follows:

The Atlantic Division will embrace all territory north of the south end of Gatun Dam, in which work of the Department of Construction and Engineering is being performed.

The Central Division will embrace all territory between Pedro Miguel and the south end of Gatun Dam, in which work of the Department of Construction and Engineering is being performed.

The Division Engineer of the Atlantic Division will transfer to the Division Engineer of the Central Division the field maps and technical data relating to the work contemplated in the territory placed under the Central Division in accordance herewith. The Division Engineers will also arrange such transfer of force as may be necessary.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Holiday on Christmas and New Year

CULEBRA, C. Z., December 22, 1908.

CIRCULAR NO. 226.

Christmas Day, Friday, December 25, 1908, and New Year's Day, January 1, 1909, will be observed as holidays in the Canal Zone, and as far as possible all public business will be suspended on those days.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Bills for Services and Material.

CULEBRA, C. Z., December 11, 1908.

TO HEADS OF ALL DEPARTMENTS:

Please send all bills for services performed for, or material delivered to, any of the Divisions of the Department of Civil Administration or the Government of the Canal Zone, to the Head of the Department of Civil Administration at Ancon for accomplishment. These papers should not be forwarded to division heads.

Respectfully,
GEO. W. GOETHALS,
Chairman.

Concert by the I. C. C. Band.

CULEBRA, C. Z.,

Sunday, December 27, 1908, at 6.00 p. m.:

PROGRAM.

- 1 March—*K of P*.....Williams
 - 2 Waltz—*Love's Loyalty*.....Tanner
 - 3 Idyl—*The Glow Worm*.....Lincke
 - 4 Intermezzo—*Rainbow*.....Wenrich
 - 5 Solo for Trombone—*Rocked in the Cradle of the Deep*.....Knight
(Five trombones in unison)
 - 6 Medley Selections—*Hits of the Day*.....Remick
 - 7 Patrol—*American*.....Mecham
 - 8 Overture—*Beautiful Galatea*.....Suppe
 - 9 Humoresque on *The Merry Widow* W. A. z. Beliedt
- Introducing this popular melody from the opera "The Merry Widow," burlesqued in the following manner: 1. A little German band; 2. A flute solo with organ effect; 3. An amateur trombonist, who is willing to show what he can do if only requested to; 4. A street piano; 5. A la raggtime as played on a banjo; and finally—the result, the popularity of this melody has produced—a brainstorm.
- 10 Galop—*Telenachus*.....Bennett

CHAS. E. JENNINGS, Musical Director.

The next concert will be given at Hotel Tivoli, Sunday, January 3, 1909.

Misdirected Letters.

Division of Posts, Customs and Revenues,
Ancon, C. Z., December 23, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- | | |
|--------------------------|----------------------|
| Bergendich, Alex & Bros. | Lunsbury, L. L. |
| Borg, H. J. | Miller, Mrs. I. B. |
| Burge, Leroy E. | Muirhead, J. H. H.—2 |
| Conner, F. W. | Mullen, H. E. |
| Cummings, L. B. | Murphy, M., Jr. |
| Dickerson, Mrs. L. E. | Palmer, Mrs. A. M. |
| Diebert, Geo. S. | Perry, A. H. |
| Eason, J. D. | Pixley, Enwin C. |
| Eden, Herbert L. | Ricules, S. |
| Erdman, Roger | Robles, T. D. |
| Hanson, Mrs. H. C. | Ruch, O. J. |
| Hoffman, V. P. | Scott, Edgar |
| Holmes, E. S., Jr.—2 | Stradish, Frank C. |
| Hoobler, Allison C. | Wales, Claude |
| Kiplinger, John B. | White, Walter J. |
| Lewis, Mrs. Annie | |

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Ancon Woman's Club met on December 16, at the Hotel Tivoli, the president in the chair. During the short business session the club voted as Christmas donations the sum of \$10 to the Home for the Aged, Panama, and \$5 to the library fund in connection with the Wesleyan Methodist church in Panama, Rev. M. Britton King, pastor. Mr. King is establishing this library for the benefit of the West Indian members of his congregation.

The program for the afternoon consisted of an address on Panamanian dress and needlework, given by Mrs. R. W. Fenn. Specimens of needlework done by native women were shown. Mrs. Reed, Mrs. Orenstein, and Mrs. Green were the members of the social committee for the afternoon. The philanthropy department visited the Home for the Aged on Friday afternoon, December 18.

The Pedro Miguel Woman's Club had a good attendance at the meeting on Wednesday, December 16, when a program in charge of the home department was given. Recitations, quotations and short papers formed the entertainment. The club will hold its social meetings at the residences of the members on alternate Wednesdays. These meetings will be devoted to cards and other amusements. An entertainment to raise funds for the benefit of the club will be given early in the year. The Christmas celebration will be unusually elaborate this year. The tree and program, concluding with the presentation of gifts to the children, will be held early in the evening, after which there will be a banquet for the older people, followed by a dance.

Christmas services will be held as usual in the Culebra penitentiary when the Rev. J. W. Holland will deliver an address. Arrangements have been made for services also in the prison hospital. Ice cream and cakes will be served to the inmates of both institutions on Christmas Day.

The Cristobal Union Church and Sunday school will hold special services on Sunday, December 27, when Mr. Holland will preach a sermon on the "Three Christmas S's." Following this service there will be a meeting of all those interested in the Union Church to decide upon the preparation for the coming of the pastor.

The Gorgona Dramatic Club presented the farce comedy, "The Doctor," to a large audience at the Commission clubhouse on Saturday evening, December 19. In response to a request from the residents of Gatun, the club will repeat the performance on Thursday evening, January 7. Arrangements will be made for a special train from Gatun to Gorgona and return.

The Cristobal Woman's Club held a short business meeting on December 16, the first vice-president, Mrs. E. Lewis Baker, in the chair. Announcements of the coming meetings were made. The home department will hold its meeting in January at the residence of Mrs. Charles Carter, Colon Beach. The club will hold a Christmas reception, December 23, in the clubhouse concert hall. The program will be in charge of Miss Mary Slifer and Miss Ellis. After the business meeting Miss J. Macklin Beattie gave an informal address on "Christmas Customs in Germany."

The art and literature department met for the regular Shakespeare study at the residence of Mrs. Frederic Mears, Colon Beach, on Monday, December 21, when papers were given by Mrs. Mears, Mrs. Herman, Mrs. Ponton and Mrs. Colip. Rehearsals for the annual concert of the club which is to be given in January are in progress.

On Saturday afternoon, December 19, there was a meeting of the board of directors of the Canal Zone Federation of Women's Clubs. Beside the presiding officer, Mrs. E. Lewis Baker, there were present, the recording secretary, Mrs. F. Miracle; the corresponding secretary, Mrs. Frederic Mears; the Federation secretary, Mrs. Thomas E. Brown, Jr.; the auditor, Mrs. J. C. Barnett, and the chairman of the advisory committee, Miss J. Macklin Beattie, and the president of the Ancon Woman's Club, Mrs. C. C. McCulloch, who was invited to be present at the meeting. At the close of a short business meeting, the board adjourned for an informal discussion in regard to the convention of the Federation which is to be held in Ancon the last week in January. Owing to the absence of the president of the Federation the date has not yet been fixed, but will be published in THE CANAL RECORD when decided upon. There will be two sessions of the convention, a business meeting at 9.30 in the morning and a social meeting at 2.30 in the afternoon when addresses and a musical program will be given.

The following announcement is made to the Zone clubs in regard to the Federation pins: Members who wish to order the pin, which is a Tiffany design in dull gold with palm leaves of green enamel, will kindly notify the chairman of the committee, Mrs. Thomas E. Brown, Jr., Cristobal, through their club secretary, as it is desired to send in the order for the pins with as little delay as possible.

Episcopal Church Services.

The following announcement for Episcopal church services is made:

St. Luke's Church, Ancon Hospital Chapel: Christmas Day, 10 a. m., divine service, followed by holy communion. On Monday, December 26, in the old chapel, house 51, at 3 p. m. the Sunday school children will have their Christmas tree and distribution of presents. The parents and friends of the children are cordially invited to be present.

Beginning with Christmas Day, services will be held in the new chapel just inside Ancon Hospital gate. On Sunday, January 3, at 10 a. m., the dedication of the new chapel will take place. The public is invited.

Services on Christmas Day: St. Mark's, Culebra, celebration of the holy communion, 7.30 a. m. St. Mary's, Empire, morning prayer with sermon, 11.30. Services at the colored chapel, Empire, at 9.00 a. m., Rev. W. H. Decker, chaplain.

Singing Club.

It is desired to organize a singing club in Ancon, and an invitation is extended to residents of Ancon and La Boca who have taken part in any amateur production, either singing or speaking, to send their names to the undersigned. The club will be regularly organized and be governed by a set of rules which it is believed will conduce to united and satisfactory work.

W. F. BENNVHOFF, Ancon.

PERSONAL.

Mr. H. A. A. Smith, Treasurer of the Canal Zone, accompanied by his family, and Dr. J. D. Brooks, of Ancon hospital, were passengers on the *Allianca*, which sailed from Cristobal on December 16.

Mr. A. S. Zinn, Resident Engineer at Empire, returned to the Isthmus on the *Parismina*, on December 18.

Dr. J. C. Perry, Chief Quarantine Officer, sailed on the *Parismina*, on December 22, for a six weeks' leave of absence in the States.

Mr. and Mrs. P. S. McCormick, of Colon, returned to the Isthmus on the *Parismina*, after a visit to their home in New Orleans.

Obituary.

G. H. Harper died at Ancon Hospital on December 18. He was 28 years of age and lived at Gorgona.

Patrick J. Curtin died at Gorgona on December 19. He was born in Roanoke, Va., was 48 years of age, had been on the Isthmus 21 months, and lived at Santa Cruz. Mr. Curtin was a widower and his nearest relative is his daughter, Mary Z. Curtin, who lives at Nazareth, Ky.

Methodist Episcopal Church.

The services at the Methodist Episcopal Church in Panama are being well attended by residents of Ancon and La Boca. The pastor, Rev. Mr. Gray, and wife have displayed a most kindly interest and cordiality and the people attending the services have received much benefit therefrom. It is hoped that the people will more largely attend the service Sunday morning at 10 o'clock, Panama railroad time, and particularly are the people from the Line who are in Panama on Sunday invited. Immediately after the church service on December 13, a Sunday school was organized.

Independent Order of Odd Fellows.

Cristobal Lodge, No. 2, will hold its next regular meeting, in the I. C. C. Lodge Hall at Cristobal, on Monday, December 28, at 7.30 p. m., when the election of officers for the next term will take place. All third degree members are earnestly requested to be present.

FRANK J. JURY,

Secretary.

Notice to Kangaroos.

All Kangaroos at Cristobal, Colon, and Porto Bello, who have signed application for, and are interested in forming a Court at Cristobal, please meet at Lodge Hall, Cristobal, on Sunday, December 27, at 2 p. m., for the purpose of perfecting an organization.

J. K. GIBSON,
Chairman of Committee.

Tivoli Club Dance.

The Tivoli Club will give its next dance at the Hotel Tivoli on Thursday evening, December 31, New Year's Eve, instead of on Saturday, December 26.

Three hundred box cars ordered by the Panama Railroad Company have arrived on the Isthmus in two shipments. Each car is 48 feet long, of 60,000 pounds capacity, and is equipped with Westinghouse air brakes, and climax couplers. The cars came to the Isthmus knocked down and will be erected at the Panama railroad shops in Cristobal.

RESOLUTIONS OF SYMPATHY.

Jas. L. Hummer.

At a meeting of the Empire Court of Panamanian Kangaroos, held at Empire, December 12, 1908, the following resolutions of sympathy were adopted, and in honor of the memory of the departed brother the court adjourned:

WHEREAS, Our late brother, Jas. L. Hummer, of Brooklyn, N. Y., lost his life in the recent dreadful disaster at Bas Obispo; be it resolved,

First—That in the death of Brother Hummer, the Independent Order of Panamanian Kangaroos has lost a most worthy member; one who, because of his rectitude of life, his sterling integrity and his general comradeship, had won the confidence and respect of a host of friends both in and out of the order.

Second—That we recognize the truth that he gave his life not in vain. It needs be that every great enterprise must have its tribute of human life, and Brother Hummer's life was given as part of the price his country must pay for the greatest achievement of the century. Peace hath her victims, as well as her victories, no less than war.

Third—That the members of this Independent Order of Panamanian Kangaroos extend their heartfelt condolence to the relatives of our deceased brother, with assurance that we truly sympathize with them in their great loss.

Fourth—That a copy hereof be transmitted to the mother, to whose heart bereaved of a beloved son we understand how feeble are words to carry consolation or to silence her grief; also to the brother, a member of this order, loved by one and all.

Fifth—That THE CANAL RECORD, Star and Herald, and New Orleans Picayune be furnished a copy of these resolutions for publication.

R. M. DAVIES, E. W. STOLBERG, H. E. PICKEN, Committee.

Panama Local, No. 19, I. B. S. S. and D. M., has adopted the following resolutions:

WHEREAS, It has pleased Almighty God to remove from our midst our beloved brother, J. L. Hummer, who departed this life December 12, 1908:

WHEREAS, By this act we have lost a true, devoted and fellow brother, refined in the highest traits of character, whom to know was to love; therefore be it

Resolved, That we, his brothers of Panama Local, No. 19, of the International Brotherhood of Steam Shovel and Dredge Men, desire to express our sense of bereavement at his untimely death and our sincere sympathy to his family in this their dark hour of sorrow; be it further

Resolved, That a copy of these resolutions be spread upon the minutes of Local No. 19, and a copy be furnished his family, and that a copy be also furnished THE CANAL RECORD and Steam Shovel and Dredge for publication.

S. I. LYONS, H. E. WHYDE, J. I. MAJOR, Committee.

Empire, C. Z., December 21, 1908

John J. Korp.

A memorial service in honor of John J. Korp, the steam shovel man killed in the Bas Obispo explosion, was held in the Catholic Church at Empire, Sunday afternoon, December 20, under the auspices of the Knights of Columbus. Rev. Father Collins, Commission Chaplain at Culebra conducted the service. The following resolutions were adopted:

WHEREAS, Our Divine Lord, in His infinite wisdom, has seen fit to call from our midst our beloved Brother John J. Korp; be it

Resolved, That the Panama council of the Knights of Columbus has been deprived of a loyal and faithful member, whose qualities of heart and of mind may ever be an inspiration to his brothers; be it further

Resolved, That the church has lost a staunch and earnest worker. Heaven, indeed, has been made richer, and the earth poorer by our bereavement; and be it further

Resolved, That a copy of these resolutions be entered on the records of Panama council and a copy sent to the bereaved family of our departed Brother.

LOUIS K. ROUBKE, DAVID F. RABBITT, JOHN A. DALEY, Committee.

All the ships of the Pacific Squadron except the Colorado sailed on December 22 for Talcahuano, Chile.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

REPORT FOR NOVEMBER, 1908

Total membership	1,359
Total number of bowling games	4,029
Number local bowling contests	32
Number match bowling contests	8
Total number pool and billiard games	12,908
Number contestants in pool tournament	.....
Total income from soda fountain	\$1,646.33
Number different men using gymnasium	135
Number men enrolled in systematic gymnasium class work	85
Total attendance of men using gymnasium	568
Number basket and indoor baseball games	4
Number enrolled in chess and checker clubs	35
Number chess contests	3
Number enrolled in glee clubs	65
Number enrolled in dramatic and minstrel clubs	10
Number enrolled in orchestras	8
Number enrolled in educational classes	44
Number of members of library	512
Total number of books withdrawn	1,217
Number of imported entertainments	10
Attendance	2,276
Number of local entertainments	12
Attendance	6,350
Number of functions outside association management	12
Attendance	1,445
Number of afternoons for women	33
Attendance	314
Number evenings to which women were invited	29
Attendance of women	1,115
Number of committees	20
Number of men on committees	126
Number of men called on in hospital	117
Number of letters written at public tables	5,400
Total attendance at building	37,070
Average attendance per day	1,569

BOYS DEPARTMENT (AGES 10-16)

Number of members	57
Number of afternoons open to boys	50
Total attendance	2,200
Attendance at gymnasium exercises	386
Outings and special features	5

EMPIRE.

There was received recently at the Empire Y. M. C. A. a silver loving cup presented by The Brunswick Bulke-Collider Co. of New York to the Empire bowling team which won the championship in the Thanksgiving tournament, winning 13 out of 18 possible points.

A farewell reception was given to Mr. and Mrs. McTyler at the clubhouse on Friday evening, December 18, at which a set of Satsuma ware and Canton linen doilies were presented to them. Vocal and instrumental music was rendered by Mrs. Faure and Mrs. Shivers and addresses were made by Mr. Perry Brown, C. M. Gifford, assistant secretary, W. O. Johnson, chairman of the council, W. W. Warwick, Rev. J. A. Sobey, and Rev. W. H. Decker.

Empire defeated Cristobal three games in the pool tournament on Saturday night, which gives Empire the championship.

A bowling team made up of married men went to Cristobal on Saturday night and won two out of three games. It was the first of a series games.

New suits have arrived for the basket ball and baseball teams.

A wrestling mat, 20 by 20, has arrived, and a class will be formed as there is a demand for this sport.

CULEBRA.

A Christmas tree for all the children of Culebra will be given at the Commission clubhouse on Christmas Eve by the Culebra Sunday school, assisted by the Woman's club and the Y. M. C. A. Santa Claus will be present and will give each child a present. The program will be rendered by the children. The public is cordially invited.

Sale of Unclaimed Packages.

In order to recover its freight and storage charges, the Panama railroad will dispose of the accumulation of "over" and "unclaimed" shipments now in its possession by public auction, Monday, December 28, 1908, at 9 a. m. Sale to be held at Dock No. 11, Cristobal, Canal Zone.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery, and merchandise general, all of which has been held six months and over in an effort to locate owner.

LEGAL NOTICES.

ANCON, CANAL ZONE, November 28, 1908.

Estate of Fletcher E. Joyner Administration.

Any and all persons owing the estate of Fletcher E. Joyner, deceased, who died at Ancon, Canal Zone, on the 21st day of October, 1908, are hereby requested to communicate with the administrator of said estate in order that a settlement may be effected. And all persons having any claim or claims against said estate must present the same, duly verified, to the administrator within six months, otherwise said claims will be forever barred according to law.

All communications with reference to the estate should be addressed to Empire, Canal Zone.

F. H. SHEBLEY, Administrator.

United States of America, First Judicial Circuit, Canal Zone.

Notice is given to all concerned to appear at the court house in Ancon, Canal Zone, on or before February 18, 1909, at 9 o'clock, a. m., to claim the following named estates, which the Collector of Revenues seeks to have escheated to the Government of the Canal Zone:

Oscar Olson, a Swede, resident of La Boca, died May 21, 1907, leaving \$1.10 silver.

Peter Gross, resident of Panama, died July 9, 1905, leaving \$6.35 silver.

WALTER EMERY, Circuit Court Clerk.

United States of America, In the First Judicial Circuit, Canal Zone.

Raimundo Sanderil, a Colombian, who resided in the Canal Zone, died intestate on or about the 10th day of October, 1905, leaving an estate at Ancon consisting of \$7.20 Panamanian currency and personal belongings of little value.

Castis Lephdaikes, a Greek, who resided in the Canal Zone, died intestate on or about the 16th day of May, 1907, leaving an estate at Ancon, consisting of 50 francs, French gold.

Pedro Juan, presumably a Greek, who resided at La Boca, Canal Zone, died intestate on or about the 3d day of October, 1907, leaving an estate at La Boca consisting of \$70 U. S. Currency and \$10 Panamanian currency.

Kurilla Stevan, nationality unknown, who resided in the Canal Zone, died intestate on or about the 4th day of April, 1908, leaving an estate at Ancon consisting of \$1.60 Panamanian currency, 10 cents U. S. Currency, and one Chilean coin of small denomination.

Lucas Alvarez, Chilean, died intestate in the Canal Zone on or about the 20th day of June, 1908, leaving an estate at Ancon consisting of personal belongings of little value and \$8.50 U. S. Currency.

The Collector of Customs has filed a petition for escheat in each of the above mentioned estates under Section 779 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the courthouse in Ancon, C. Z., on February 1, 1909, at 9 o'clock a. m., to establish their claims to the estates, or to show cause why the same should not escheat to the Canal Zone.

F. H. SHEBLEY, Circuit Court Clerk Pro Tempore, Ancon, Canal Zone.

Tug Service Porto Bello and Nombre de Dios.

Effective, August 6, 1908: The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Cristobal 6.30 p. m. for Porto Bello only; returning same day.

Monday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Tuesday: Leave Cristobal after Train 2 without tow, for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.

Wednesday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Friday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Saturday: Leave Cristobal after Train 2 for Porto Bello only; returning, leave Porto Bello 5.30 p. m.

Between July 1 and December 1 of the present year, \$3,779,779.64 worth of supplies was ordered from the United States or purchased on the Isthmus for the Department of Construction and Engineering. Of this amount \$481,488.66 worth was purchased on the Isthmus.

A motor-driven churn has been installed at the cold storage plant of the Commissary Department at Cristobal. It will be used in making butter from milk that turns sour in transit from New York. The butter made will be used in the bakery and the bitter-milk will be sold.

COMMISSARY DEPARTMENT

THE CHRISTMAS DINNER.

The steamship *Panama*, which arrived at Cristobal, on December 19, brought 1,000 dressed chickens, 200 of which are broilers, 900 dressed turkeys, and 200 dressed ducks for the commissary.

In response to a demand from the Americans resident in the Canal Zone for such Christmas gifts for children as cannot be obtained on the Isthmus, the Panama railroad commissary has procured a limited supply of toys from the States, and they are on sale at the Cristobal commissary.

The steamship *Atrato* of the Royal Mail Steam Packet Company, which arrived at Colon on December 19, brought 1,000 quarters of beef and 20 tons of frozen fresh pork for the Subsistence Department. Four hundred quarters of the beef and 19 tons of the pork were delivered to the Pacific Fleet at anchor in Panama Bay.

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.
All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning December 22:

FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	6
Shoulder and neck (not under 6 pounds).....per lb	7
Entire forequarter (not under 10 pounds).....per lb	9
Leg (8 to 10 pounds).....per lb	16
Short-cut chops.....per lb	22
Lamb—Stewing.....per lb	6
Entire forequarter.....per lb	8
Leg (6 to 8 pounds).....per lb	27
Chops.....per lb	29
Veal—Stewing.....per lb	10
Entire forequarter (15 to 20 lbs).....per lb	11
Loin for roasting.....per lb	21
Chops.....per lb	22
Cutlets.....per lb	26
Pork—Cuts.....per lb	20
Beef—Suet.....per lb	4
Soup.....per lb	8
Stew.....per lb	12
Corned.....per lb	12, 14, 16
Pot roast (from sirloin butt).....per lb	17
Rib-roast, second cut (not under 3 pounds).....per lb	19
Rib-roast, short cut (not under 3 1/2 pounds).....per lb	23
Sirloin roast.....per lb	29
Rump roast.....per lb	29
Porterhouse roast.....per lb	29
Steak, round.....per lb	23
Rib.....per lb	24
Sirloin.....per lb	29
Porterhouse.....per lb	29
Rump.....per lb	29
Tenderloin.....per lb	30

MISCELLANEOUS.

Livers—Beef.....per lb	11 1/2
Calf.....each	65
Sausage—Pork.....per lb	18
Bologna.....per lb	17
Frankfurter.....per lb	17
Sweet bread—Veal.....per lb	1.20
Sweet bread—Beef.....per lb	30
Ox tongues.....each	1.00
Pigs' feet.....per lb	14
tongues.....per lb	16
Eggs, fresh.....dozen	50
Oysters.....keg	1.00

POULTRY AND GAME.

Chickens—Fancy Roasting.....	1.20 and 1.40
Fowls, medium and large.....	each, 80c. and 1.00
Ducks, fitted.....	each 1.22
Broilers.....	each 75
Turkeys.....	per lb 28
Squabs.....	each 45
Capons.....	each 2.40

CURED AND PICKLED MEATS.

Bacon—Strips.....per lb	23
English, breakfast sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Hunter's York cut.....per lb	25
Ferris.....per lb	20
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	45
Cheese—Roquefort.....per lb	45
Neufchatel.....each	6
Young America.....per lb	27
Swiss.....per lb	31
Edam.....each	1 05
Camembert.....per lb	28
McLaren's.....per lb	15
Pinxter's.....per lb	22
Gouda.....per lb	34
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....per tin	20
Milk, Briarcliff.....per bottle	25

VEGETABLES AND FRUITS

Parsnips.....per lb	7
Lettuce.....per lb	12
White potatoes.....per lb	3 1/2
Sweet potatoes.....per lb	2 1/2
Cabbage.....per lb	5
Onions.....per lb	4
Cucumbers.....each	10
Yams.....per lb	3 1/2
Turnips.....per lb	3 1/2
Carrots.....per lb	4
Beets.....per lb	5
Parsley.....per lb	15
Lemons.....dozen	24
Oranges.....dozen	18
Apples.....per lb	6
Grapes.....per lb	20
Grapefruit.....each	4
Tangerines.....each	2
Pears.....per lb	10
Limes.....hundred	60
Cranberries.....per lb	17

§ Sold only from cold-storage and not from Commissaries.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, December 19, 1908:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Catun (Canal).	Catun (W. Diver'n)
Height of low water above mean sea level, feet.....	129	92	46	0	1	0
Maximum height above low water, feet:						
Sunday, Dec. 13.....	1.2	1.7	2.9	4.4	2.2	1.8
Monday, Dec. 14.....	1.1	1.7	3.0	4.3	2.0	1.6
Tuesday, Dec. 15.....	1.0	1.5	2.8	4.2	1.9	1.4
Wednesday, Dec. 16.....	0.8	1.5	2.7	3.9	1.6	1.4
Thursday, Dec. 17.....	0.8	1.4	2.6	3.8	1.5	1.3
Friday, Dec. 18.....	0.6	1.3	2.3	3.6	1.6	1.4
Saturday, Dec. 19.....	0.6	1.3	2.3	3.4	1.6	1.4

Rainfall, December 1 to 19, 1908, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	1.47	3.15
Pedro Brook.....	1.25	3.28
Catun.....	.81	3.02
Bobio.....	.33	1.53
<i>Central Division—</i>		
Tabernilla.....	.31	.74
San Pablo.....	.74	1.21
Bas Obispo.....	.46	1.21
Gamboa.....	1.1	2.04
Empire.....	.47	1.45
Camacho.....	.72	2.63
Culebra.....	.40	1.24
Rio Grande.....	.54	2.11
<i>Pacific Division—</i>		
Pedro Miguel.....	1.25	3.65
La Boca.....	.75	3.75
Ancon.....	.53	2.51
<i>Atlantic Coast—</i>		
*Porto Bello.....	1.35	4.21
<i>Upper Chagres.</i>		
El Vigia.....	.29	.82
Alhajuela.....	.60	1.28

*From 1st to 15th included (only).

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Advance.....	P. R. R. Monday.....	Dec. 21
Allianca.....	P. R. R. Saturday.....	Dec. 26
Trent.....	R.-M. Saturday.....	Dec. 26
Colon.....	P. R. R. Saturday.....	Jan. 2
Prinz Aug. Wilhelm.....	H.-A. Saturday.....	Jan. 2
Panama.....	P. R. R. Friday.....	Jan. 8
Tagus.....	R.-M. Saturday.....	Jan. 9
Advance.....	P. R. R. Thursday.....	Jan. 14
Prinz Joachim.....	H.-A. Saturday.....	Jan. 16
Allianca.....	P. R. R. Wednesday.....	Jan. 20
Magdalena.....	R.-M. Saturday.....	Jan. 23
Colon.....	P. R. R. Tuesday.....	Jan. 26
Prinz Aug. Wilhelm.....	H.-A. Saturday.....	Jan. 30
Panama.....	P. R. R. Monday.....	Feb. 1
Advance.....	P. R. R. Saturday.....	Feb. 6
Orinoco.....	R.-M. Saturday.....	Feb. 6
Allianca.....	P. R. R. Saturday.....	Feb. 13
Prinz Joachim.....	H.-A. Saturday.....	Feb. 13
Colon.....	P. R. R. Friday.....	Feb. 19
Atrato.....	R.-M. Saturday.....	Feb. 20
Panama.....	P. R. R. Thursday.....	Feb. 25
Prinz Aug. Wilhelm.....	H.-A. Saturday.....	Feb. 27
Trent.....	R.-M. Saturday.....	Mar. 6

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Colon.....	P. R. R. Monday.....	Dec. 21
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Dec. 22
Panama.....	P. R. R. Sunday.....	Dec. 27
Tagus.....	R.-M. Tuesday.....	Dec. 29
Advance.....	P. R. R. Saturday.....	Jan. 2
Prinz Joachim.....	H.-A. Tuesday.....	Jan. 5
Colon.....	P. R. R. Thursday.....	Jan. 14
Magdalena.....	R.-M. Tuesday.....	Jan. 12
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Jan. 19
Panama.....	P. R. R. Friday.....	Jan. 20
Advance.....	P. R. R. Tuesday.....	Jan. 26
Orinoco.....	R.-M. Tuesday.....	Jan. 26
Allianca.....	P. R. R. Monday.....	Feb. 1
Colon.....	P. R. R. Sunday.....	Feb. 7
Prinz Joachim.....	H.-A. Tuesday.....	Feb. 8
Atrato.....	R.-M. Saturday.....	Feb. 9
Panama.....	P. R. R. Saturday.....	Feb. 13
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Feb. 16
Advance.....	P. R. R. Friday.....	Feb. 19
Trent.....	R.-M. Tuesday.....	Feb. 23
Allianca.....	P. R. R. Thursday.....	Feb. 25
Prinz Joachim.....	H.-A. Tuesday.....	Mar. 2
Tagus.....	R.-M. Tuesday.....	Mar. 9
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Mar. 16

NEW ORLEANS TO COLON.

Ellis.....	U.F.C. Saturday.....	Dec. 26
Parismina.....	U.F.C. Saturday.....	Jan. 2
Heredia.....	U.F.C. Saturday.....	Jan. 9
Ellis.....	U.F.C. Saturday.....	Jan. 16
Parismina.....	U.F.C. Saturday.....	Jan. 23

COLON TO NEW ORLEANS.

Heredia.....	U.F.C. Tuesday.....	Dec. 29
Ellis.....	U.F.C. Tuesday.....	Jan. 5
Parismina.....	U.F.C. Tuesday.....	Jan. 12
Heredia.....	U.F.C. Tuesday.....	Jan. 19
Ellis.....	U.F.C. Tuesday.....	Jan. 26
Parismina.....	U.F.C. Tuesday.....	Feb. 2

COLON TO BARBADOS, CALLING AT TRINIDAD.

Trent.....	R.-M. Tuesday.....	Jan. 5
Tagus.....	R.-M. Tuesday.....	Jan. 19
Magdalena.....	R.-M. Tuesday.....	Feb. 2
Orinoco.....	R.-M. Tuesday.....	Feb. 16
Atrato.....	R.-M. Saturday.....	Mar. 2

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

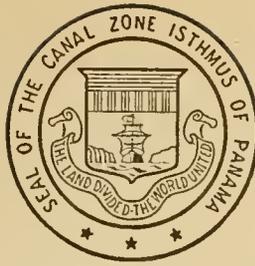
All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 31 and 20th of each month.

The next sailing of the Leyland Line for New Orleans via Kingston, Ja., will be the steamship *Mexican* on or about January 4.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, DECEMBER 30, 1908.

No. 18.

The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

The Bas Obispo Explosion.

The number of persons known to have been killed by the explosion in the Cut at Bas Obispo on December 12, is 23. Henry Joseph, a Barbadian, one of those seriously injured, died at Ancon Hospital, on December 22. All the other patients at Ancon Hospital, who were injured by the explosion, are reported as out of danger. No bodies have been found at the scene of the explosion since December 21.

Cardenas Hill Gone.

A small hill that stood in the prism of the Canal at Corozal, known as Cardenas Hill, has been excavated to the level of the low land in that vicinity. Work was begun in March, and when the last shovelful was taken out in November, 137,275 cubic yards had been excavated. This was the only hill between Miraflores and the Pacific entrance that stood in the line of the Canal, and the prism is now ready for the dredges. The steam shovel that did the work at Cardenas Hill has been taken to Miraflores Lock site, where it is being held in reserve.

Panama Railroad Relocation.

Work has been begun on a spur track, 1½ miles long, which will run from Frijoles up the valley of the Frijolita River to the relocated line of the Panama railroad. This road is being built in order that work on the relocated line between Gatun and Juan Grande may be begun at the end of the wet season in both directions from the middle as well as from both ends. As the relocated line runs across the watershed the work is a succession of cuts and fills. A Model-20 Marion steam shovel will be taken in over the spur line, and will be used with narrow gauge equipment. It will make a thorough cut at grade, and will load material directly onto the cars, without the necessity of making a pioneer cut and handling the material twice. Two gangs of 75 men are now at work clear-

ing the right of way through the jungle, making a path from 100 to 200 feet wide. With the beginning of the dry season a force of 500 men, including grading and culvert gangs, and the crews of a steam shovel and a pile driver, will be set at work, and will operate in two sections, one toward Gatun and the other toward Juan Grande. This will bring the force employed on the relocated line up to about 2,000 men. The work is being pushed in order that it may be finished before the water in Gatun Lake overflows the present line.

New Supply of Gravel.

The old gravel pit on the banks of the Chagres River at Gorgona has been abandoned, and a new pit is being opened near the baseball park. Over 200,000 cubic yards of gravel have been taken from the old pit and used as ballast or in making concrete. Good gravel is very scarce in the Canal Zone.

Commissary Sales and Purchases.

Sales at the Panama Railroad Commissary for the fiscal year 1908, amounted to \$3,793,597.99, an average of \$316,133.17 a month. The supplies were distributed all along the line of the Canal and reached the majority of the 50,000 people inhabiting the Canal Zone. The privileges of the Commissary are limited to United States and Panama Railroad employes. A classified statement of the sales follows:

I. C. C. hotels and messes.....	\$1,375,256.52
Various Depts. P. R. R. Co.....	71,739.82
P. R. R. Steamship line.....	5,410.51
I. C. C. hospitals and Sanitary Dept.....	226,185.00
Various I. C. C. Depts.....	87,034.71
Cash sales (principally to U. S. ships).....	7,854.73
Personal accounts.....	84,397.72
Coupon sales.....	1,864,457.22
Supplies used from Stock Account "Expense Accts.".....	71,231.71
Total.....	\$3,793,597.99

Average per month..... \$316,133.17

A statement of the principal articles purchased for the Commissary Department in the fiscal year, showing the amount and value, follows:

Fresh meats, 5,199,672 pounds.....	\$383,045.46
Poultry, 337,523 pounds.....	68,632.10
Vegetables, 3,068,456 pounds.....	89,954.13
Butter, 258,427 pounds.....	83,486.29
Potatoes, 4,953,282 pounds.....	94,154.77
Eggs, 373,440 dozen.....	87,959.02
Flour, 24,505 barrels.....	139,921.06
Tohacco.....	117,907.87

The Finance Abandoned.

Advices from New York are to the effect that the steamer *Finance* of the Panama Railroad Steamship Company's line, which sank in New York harbor on the morning of November 26, has been abandoned, the wrecking company not deeming it profitable to continue the work of salvage. In addition to the mail which was taken from the hold, the treasure on board and 363

packages of merchandise were saved. The ship has shifted its position, and the bow, which was formerly four feet above water, is now submerged. Arrangements are being made to have the hull destroyed as a danger to navigation.

Employment of Panamans.

Cable advice has been received at the office of the Commission at Culebra that the Executive Order of February 8, 1908, restricting the employment of skilled laborers, clerks, and other gold employes of the Commission to American citizens, except where American labor is not available, has been amended, by direction of the President, to include citizens of the Republic of Panama among those who may be employed on the gold roll. The necessary orders will be issued as soon as official advice is received by mail confirming the cablegram.

Grass for Feed.

Although the principal reason for cutting grass around the Canal Zone settlements is to prevent the breeding of mosquitoes and thus keep malaria in check, the Quartermaster's Department has begun to use this grass as feed instead of drying and burning it, as heretofore. During the month of November the use of this grass in the five districts of Ancon, La Boca, Pedro Miguel, Culebra and Empire, resulted in the saving of 20,000 pounds of hay. The plan of feeding the grass to public animals will be extended to all districts where corrals are maintained.

Horsepower of Isthmian Boilers.

An estimate has been made by the boiler inspection service of the horsepower of the stationary, locomotive, and marine boilers in use on the Canal work and Panama railroad. It is based on the assumption that 12 square feet of heating surface represent one horsepower for stationary and marine boilers, and 10 square feet for locomotive and steam shovel boilers. On this basis the total horsepower of Isthmian Canal Commission and Panama Railroad Company's boilers in use on the Isthmus is 71,739. A summary of the stationary and marine boilers in the various divisions follows:

	No. of Boilers.	H. P.
Atlantic Division.....	85	5,417
Central Division.....	92	2,155
Pacific Division.....	82	3,497
Panama Railroad.....	59	1,157
Mechanical Division.....	57	7,862
Subsistence Department.....	17	1,015
Quartermaster's Department.....	15	313
Sanitary Department.....	5	88
Civil Administration.....	3	64
Total.....	415	21,168

The boilers with a capacity of 100 horsepower or over, that have been tested by the boiler inspection service of the Isthmian Canal Commission and Panama Railroad Company, are:

Atlantic—Mount Hope pumping station,

SUBSISTENCE PROBLEMS.

Statements of the Chief Subsistence Officer in Regard to Them.

In a report to the Chairman of the Isthmian Canal Commission, under date of November 11, the Chief Subsistence Officer made the following statements in regard to the operations of the Commission hotels and messes:

Careful statistics have been compiled in this office for the last two months showing the relative values of the most important food components for hotels, messes, and kitchens. The following table shows the value, subject to discount, of the various items consumed in the Isthmian Canal Commission hotels during the month of October:

Sundries.....	\$10,877.05
Fresh vegetables.....	5,058.79
Beef.....	4,012.00
Ice.....	2,281.00
Veal.....	1,775.96
Mutton.....	780.46
Pies and cakes.....	660.03
Assorted fresh meats.....	5,685.56
Eggs.....	4,208.18
Butter.....	2,355.72
Salt meats.....	2,123.94
Bread.....	1,610.92
Ice cream.....	772.11

The item of assorted fresh meats includes fresh fish, pork, liver, poultry, and all other fresh meats not enumerated.

It will be seen that an excellent, well varied meat ration has been provided. Although the price of meat is about four times that of vegetables, the cost of vegetables on the average exceeds that of beef, and I have noted that those hotels which fed closest to the average ration, as shown in the above table, have given the best satisfaction.

It will also be noted that eggs cost as much as beef and mutton combined, and will cost more as there has been an advance in the price of eggs of 20 per cent in the last week in New York, and cable quotations on butter indicate an advance of approximately 25 per cent.

The average meat ration consumed was 1.56 pounds, vegetables 1 pound, and bread 3/8 pound. When we reflect that we fought the Civil War on one pound of meat and the Spanish War on a pound and a quarter, the fact that this is an extraordinarily high ration is very striking. Such a large consumption of meat and other nitrogenous substances cannot fail to have its effect upon the constitution of the men here in the tropics.

Since the season opened for vegetables that stand refrigeration well, they have been furnished to the hotels, messes, and kitchens at merely the cost of handling them and without any profit to the Commissary whatever. It is due to this fact and to the increased discounts that a very satisfactory ration has been provided at an exceedingly small cost.

The Spaniard consumes 1 1/2 pounds of bread a day, and demands it; the negro 1 pound, while in the hotels the consumption has been on the average of but 3/8 pound. It is seen also that the native American gets his mechanical energy out of the meats in the tropics as well as in the Temperate Zone, while the more sensible European and West Indian derives his from the carbohydrates, like the starches and sugars. Since they do not put as much work upon their digestive apparatus and kidneys, their resisting power to the climate is very much greater.

The following table shows the relative number of breakfasts, dinners, and suppers

served at the various Isthmian Canal Commission hotels during the month of October, for which coupons were received as payment. The first column gives the relative percentage of breakfasts to suppers:

	Per cent breakfasts to suppers.	Breakfast.	Dinner.	Supper.	Total.
Empire.....	71	7,331	8,340	9,916	25,617
Cristobal.....	51	4,735	8,574	9,517	22,856
Gorgona.....	76	6,767	7,703	8,835	23,365
Culebra.....	41	3,915	6,199	9,625	19,769
Gatun, No. 1.....	82	4,644	5,011	5,624	15,359
La Boca.....	74	3,100	3,800	4,138	11,098
Pedro Miguel.....	108	3,673	2,447	3,379	9,499
San Pablo.....	120	3,259	2,668	2,725	8,652
Las Cascadas.....	65	1,975	2,585	3,013	7,564
Corozal.....	80	2,023	1,890	2,552	6,445
Porto Bello.....	83	1,111	2,204	2,055	5,980
Paraiso.....	75	1,493	2,139	1,979	5,611
Bas Obispo.....	67	1,250	2,124	1,835	5,250
Tabernilla.....	60	1,143	1,987	1,755	4,915
Santa Cruz.....	74	1,080	1,976	1,453	4,519
Miraflores.....	85	422	1,448	496	2,366
Gatun, No. 2.....	90	29	76	32	137
Total.....	69	47,590	61,252	69,181	178,023
Plus meals served for cash.....					3,308
Total number meals served during October.....					181,331

Total number meals served during October, 181,331

It is a fact that very nearly all of the employees of the Canal, who patronize the hotels at all, are present at supper. This is so, largely because it is the best meal, and also because a great many go without their dinner and a few without breakfast and dinner, except some crackers or similar food eaten in their rooms.

	Number of Meals.	Cost of Supplies.	Expenses.	Supplies per Meal.	Service per Meal.	Total Cost per Meal.
March.....	208,426	\$50,045.71	\$17,079.23	24.01	7.714	31.725
April.....	203,801	47,877.89	16,342.69	23.49	8.019	31.511
May.....	205,968	51,008.33	17,247.83	24.77	8.37	33.14
June.....	199,910	45,705.04	16,676.57	22.86	8.34	31.204
July.....	194,370	46,188.00	17,074.07	23.76	8.78	32.53
August.....	188,091	42,742.94	13,731.61	22.72	7.33	30.05
September.....	181,956	39,630.57	12,074.82	21.80	6.60	28.40
October.....	181,331	37,456.05	11,901.64	20.66	6.56	27.22

On the average, 69 per cent of the men who eat supper also eat breakfast in the hotels and 31 per cent do not. The figures for Culebra are very striking. There are very few "cantinas" at Culebra convenient for employes and only 41 per cent of the patrons for supper eat breakfast, and 59 per cent apparently either get no breakfast or get it in a "cantina." I think 50 per cent would be a safe estimate of the number of men in Culebra who do not eat any breakfast at all. The relative proportion of the dinners to suppers is also lower in Culebra than at any other place along the Line; but 65 per cent of the patrons who eat supper there get their dinner at the hotel.

This hotel must maintain a service and an equipment to provide for its largest meal, supper, or for 28,875 meals per month, and it actually received revenue for but 19,769 meals, a difference of 9,106, the revenue for which, at 30 cents per meal, amounts to \$2,731.80. I think this is a fair estimate of the food value that is being transferred from the man who eats three meals a day to the irregular or casual attendant.

At the following points, in or near the Cut, the noon meal is the largest, the percentage of dinners to suppers being as follows: Paraiso, 108; Bas Obispo, 112; Tabernilla, 112; Santa Cruz, 135; Miraflores, 290.

It is seen that it is necessary to maintain at Miraflores an organization of three times the regular number of resident patrons, and at Santa Cruz about 35 per cent larger.

At Pedro Miguel, San Pablo, and Corozal hotels the noon meal is the smallest of the day, the percentage of dinners to suppers being as follows: Pedro Miguel, 72; San Pablo, 98; Corozal, 75.

On the whole, this Department is maintaining an equipment and a force to serve 210,846 meals per month without the addition of one cent of expense, and is actually receiving revenue from but 181,331 meals, a difference of 29,515 meals, for which the revenue, at 30 cents a meal, would be \$8,854.50.

The total food cost of the hotels for the month of October was \$37,456.05, and if we could derive an additional revenue of \$8,854.50, which is 23 1/2 per cent of the total food cost, a sufficient amount could be spent for high priced cooks and for a very much more extensive and varied bill of fare.

In the United States proper a hotel man who maintains a force 25 per cent in excess of his business is on the high road to bankruptcy, and this condition alone on the Isthmus shows at once why a thousand and one things cannot be done here that can be done in the United States proper. For this condition the patrons of the hotels have no one to blame but themselves, except at those points where employes must eat their dinner away from home.

The following table shows the relative monthly operations of the hotels from March, 1908, to October, inclusive:

	Number of Meals.	Cost of Supplies.	Expenses.	Supplies per Meal.	Service per Meal.	Total Cost per Meal.
March.....	208,426	\$50,045.71	\$17,079.23	24.01	7.714	31.725
April.....	203,801	47,877.89	16,342.69	23.49	8.019	31.511
May.....	205,968	51,008.33	17,247.83	24.77	8.37	33.14
June.....	199,910	45,705.04	16,676.57	22.86	8.34	31.204
July.....	194,370	46,188.00	17,074.07	23.76	8.78	32.53
August.....	188,091	42,742.94	13,731.61	22.72	7.33	30.05
September.....	181,956	39,630.57	12,074.82	21.80	6.60	28.40
October.....	181,331	37,456.05	11,901.64	20.66	6.56	27.22

It will be observed that there has been a continuous falling off in the patronage from May to September, which now seems about fixed at approximately 180,000 meals per month.

The decrease in monthly expense of October over July is \$5,172.43. The report shows that the net profit in the Line hotels during the month was \$5,041.45.

The following table shows the hotel operations, by months, for the first four months of the present fiscal year:

July, loss.....	\$4,950.84
August, loss.....	106.89
September, gain.....	\$2,881.44
October, gain.....	5,041.45
Total.....	\$5,057.73
September, gain.....	\$2,881.44
October, gain.....	5,041.45
Total.....	7,922.89

Leaving a net profit in the hotel account.... \$2,865.16

The accumulated profit in the hotel account is \$2,865.16. When we remember that the total cost of the operation of the hotels is \$1,650 per day, it will be seen that this profit account of four months will not last quite two days.

There has been a constant diminution in the number of rations served both in the Spanish messes and in the colored laborers' kitchens. The attendance in the messes has been falling off from about 4,000 per day the 1st of August to 3,400 the 1st of November. The kitchens have been falling off from 6,000 the 1st of July to 4,000 the 1st of November.

I should say there are about 7,000 colored laborers, who are not married and who are not eating in the kitchens or sleeping in the Government quarters.

SOCIAL LIFE OF THE ZONE.

Christmas Celebrations and Other Features.

Public celebrations of Christmas took place at many places in the Canal Zone on Thursday evening, December 24. It is estimated that nearly one thousand American children participated and were presented with gifts. Almost every form of organized social life in the Zone took an active part in the preparations for the entertainments. Christmas trees, which were held on Christmas Eve, were afterward donated to smaller organizations and to the West Indian Sunday schools, to be used later in the week. The public school and Sunday school children took an active part in the program, throughout the Zone.

The tree and entertainment at the Cristobal clubhouse were held on Christmas Eve at 8 o'clock. The program consisted of a Christmas cantata, "What Happened to Santa," given by about 100 school children. The distribution of nuts, candy and fruits followed, and light refreshments were served. The tree with its ornaments was presented to Christ Church Sunday school for their entertainment, which was held in the parish school room on December 28. The children of the Union Sunday school presented toys and other gifts to the West Indian children of this Sunday school for the occasion.

The staff of Colon Hospital celebrated Christmas, beginning with breakfast in the mess hall at 8 o'clock, all the members of the resident families and the doctors and nurses being present. Dinner was at 6 in the evening, and the Christmas tree with the distribution of presents followed. Invitations had been sent out for a dance which began at 9 o'clock. There was a large attendance of friends from Cristobal and from along the Line.

The Washington Reading Club, Colon, gave a dance at Lincoln House on Christmas Eve, over 100 guests being present.

Gatun held its Christmas tree and entertainment on Christmas Eve in the club room over the mess hall. A program of songs and drills by the school children was given. A fish pond containing fruits and bags of candy was a feature. About 80 children were present. The Gatun's Woman's Club contributed the candy and had charge of the refreshments. The club also made gifts of linen scrap books and toys to about 45 children in the Spanish camp. A Christmas box, containing material for dresses and other suitable gifts, including toys for the children, was sent by the club to the patients at the Leper colony at Palo Seco.

The Las Cascadas Sunshine Club (the girls' sewing club) sent a Christmas box to the headquarters of the international society, containing towels for the blind babies' branch, and gifts, which were to be forwarded by the society. The club meets every Friday afternoon after school hours, and has 15 members.

At Las Cascadas the Woman's Club and the Sunday school had charge of the entertainment. Gifts were distributed to every child in the town. The securing of funds for the entertainment was in the hands of the Woman's Club, and the response throughout the community was most generous. The Sunday school had charge of the entertain-

ment and a program of songs, recitations and drills was given by the children. Nearly every one of the 45 members of the school took part in the program. A silver star for regular attendance at Sunday school for three months was presented. Ninety children received gifts from the tree, some of these having been donated by the Sunday school.

The entertainment at Empire was held in the Commission clubhouse on Christmas Eve. There was a large tree, and gifts were distributed to about 140 children. A program, consisting of songs, recitations, and drills, was given by the public school children. The Sunday school, the Woman's Club, and the Young Men's Christian Association contributed toward the entertainment, and a generous subscription was given by the residents of the town.

The regular monthly dance of the Wizards was held at Empire on Saturday evening, December 26.

The Christmas entertainment at Bas Obispo was enjoyed by a large number of residents of the town. The hall over the mess room was decorated with bunting and palms, and the tree and fireplace on the stage were lighted with electricity. The program consisted of songs and duets by members of the marine minstrels and Mrs. Keiser, of Ancon, and concluded with the singing of "The Star Spangled Banner" by the children. Gifts were distributed to 27 children, and the bachelors were also remembered.

The attendance at the Gorgona Christmas entertainment was very large. An orange tree decorated and lighted with electric lights was the center of attraction. Gifts for the children were brought by the parents, and fruits and sweets were distributed to all present. The Woman's Club, the Sunday school and the Young Men's Christian Association had charge of the arrangements and the members of the community had been most generous in their donations for the occasion. One hundred and sixty children were present and received gifts. The program consisted of religious exercises, recitations, and songs by the school children.

On Christmas night the Odd Fellows and Rebekah lodge, at Gorgona, held their tree and entertainment for the members of the order and their families in Fraternity hall. After an interesting program the distribution of gifts to 50 children took place, and refreshments were served.

The Gorgona Dancing Club will give a farewell Leap Year dance at the Commission clubhouse on New Year's Eve.

At Paraiso about 60 children were entertained on Christmas Eve. There was a tree, distribution of gifts and sweets. The program consisted of a Mother Goose cantata given by children in costumes with a chorus of boys and one of girls. The Sunday school had charge of the arrangements and the entertainment was given in the chapel.

The nurses at Ancon Hospital gave a Christmas party and tree on Christmas Eve at their quarters, a large number of Ancon residents being present. On Christmas afternoon they entertained about 40 children at the tree. On Monday, St. Luke's Sunday school had its Christmas entertainment in the old chapel. After the service of evening prayer, there was an address by the

chaplain, Archdeacon Bryan, and distribution of gifts, 40 children being presented with some little remembrance and sweets, and prizes for catechism, recitation and for attendance were awarded by the chaplain. The tree which had been donated by the nurses of the hospital, was decorated and hung with gifts by the members of the Woman's Guild and was afterward sent to St. Paul's Church, Panama, where the Sunday school had its Christmas entertainment later in the week.

The Gorgona Woman's Club held a called meeting for the transaction of unfinished business on Tuesday, December 29. The next meeting of the club will take place on Thursday, January 7. Election of officers for the next six months will take place at the first meeting in February.

The Ancon Woman's Club will hold its regular meeting at the Hotel Tivoli on January 6, at 3 o'clock in the afternoon.

There was a large attendance of club members and guests at the Christmas reception given by the Cristobal Woman's Club on Wednesday afternoon, December 23. Mrs. Hiram J. Slifer presided, and introduced her daughter, Miss Mary Slifer, and Miss Isabella Ellis, students of the Emerson School of Oratory, Boston. The young ladies, who gave several recitations and readings, were assisted by Mrs. Otis Biddle, Mrs. Frank Wright and Mrs. Frank Ullrich. The club concert will take place in the clubhouse on the evening of January 6.

The Paraiso Woman's Club had a good attendance at the meeting on December 24, the president being in the chair. There were several new members elected. The meeting on January 7, will be of a social character, there being a program arranged. The club members are especially invited to be present.

The Culebra Woman's Club announces that the meetings of the organization will be held at the clubhouse on the afternoon of the first and third Thursday of each month at 3 o'clock. The study class is in progress, and the members are greatly interested in their work. The club will hold an election of officers at the meeting in the club rooms on January 7.

The Gatun Woman's Club held its regular meeting December 18, at the home of Mrs. McCulloch, when the first study of the geography of the Isthmus was taken up.

Pacific Masonic Club.

There will be a regular meeting of the Pacific Masonic Club on Saturday, January 2, 1909, at 8 p. m. The semiannual election of officers will take place, and all members are urgently requested to be present. The degree of ancient order of humility will be conferred on waiting candidates. All Master Masons are cordially invited.

Dedication of Ancon Protestant Chapel.

The Ancon Protestant Chapel will be dedicated next Sunday morning, January 3, at 10 o'clock. A special program of music, under direction of Mr. W. H. Dozier and Mrs. H. R. Trask, will be rendered, and addresses will be made by Judge H. A. Gudger and the chaplain, Archdeacon Bryan. The public is cordially invited to attend.

Episcopal Church Services.

Rev. Wm. H. Decker will conduct Episcopal Church services in the chapel at Culebra on Sunday, January 3, at 11 a. m. and at St. Mary's, Empire, at 7.45 p. m.

VISIT OF THE PACIFIC FLEET.

Entertainment of the Sailors.

As announced in THE CANAL RECORD of December 2 and 16, the Young Men's Christian Association of the Canal Zone conducted a headquarters for the sailors of the Pacific Fleet during their stay at Panama, from December 13 to 22. The Citizens' Committee, Alcalde Fabio Arosemena, chairman, had subscribed a fund of about \$1,700 to defray the expenses of the headquarters in the Old Administration Building, Panama.

On the arrival of the Fleet, the sailors were supplied with a pamphlet containing useful information about the city and the Canal. During the stay of the Fleet each sailor was given one shore leave, from 8 a. m. to 6 p. m. This constituted an average of about 1,200 officers and men on shore each day for seven days. The attendance at the Y. M. C. A. headquarters averaged about 1,200 per day, counting duplicate visits. About 500 men were served each day at the cafe and ice cream parlor, and about 2,800 letters and 3,500 post cards were mailed at the branch post-office during the seven days.

Office and living accommodations were afforded the chief of patrol and his staff of about 60 men. A temporary wireless station on top of the building enabled officers on shore to keep in communication with their ships. The Panama Railroad Company extended the courtesy of free transportation to all sailors, and not only attached observation cars to all regular trains for the use of officers, but ran a sailors' excursion across the Isthmus and return each day.

On the Fleet's departure a considerable quantity of ice cream was on hand, which was served at an "open house" to all orphans, bootblacks, and poor children of the city, and to the boys of the San Blas Indian School.

Before the Fleet's departure, Admiral Swinburne addressed letters of appreciation to the Chairman of the Canal Commission, the Citizens' Committee, and the Young Men's Christian Association. A copy of the letter to the Chairman is appended:

PANAMA, R. P., December 21, 1908.

Lieut.-Col. Geo. W. Goethals, Chairman and Chief Engineer, Culebra, C. Z.

My Dear Sir—I desire to extend to you, and through you to the officials and employes of the Isthmian Canal Commission, my heartiest thanks for the kind and generous welcome extended to the officers and men of the Pacific Fleet now in the harbor of Panama, and for the many favors and courtesies extended to them.

I am indeed greatly pleased with the treatment received by the enlisted men while on shore, and with the manner in which they were entertained; every provision being made, and every facility offered by the Panama Railroad Company and the officials of the Canal Commission to enable these men to see, under the most favorable conditions, this gigantic engineering problem now under construction. This has been greatly appreciated by both officers and men and will add greatly to the contentment of the personnel.

Again thanking you, and with best wishes

for your success, and with the compliments of the season, I am, sincerely yours,

W. T. SWINBURNE,

Rear Admiral, U. S. Navy, Commander-in-Chief U. S. Pacific Fleet.

PERSONAL.

Hon. Arnold Shanklin, American Consul General to Panama, has been appointed Consul General at the City of Mexico, and expects to sail for his new post early in January.

Capt. R. Murray Rumsey, R. N., arrived at Colon on the R. M. S. *Tagus*, on December 28, and will be a guest of Dr. J. F. Leys, at Colon Hospital until January 19. Capt. Rumsey was harbor-master at Hong Kong in April, 1898, when Commodore Dewey's Squadron called, coaled ship, and sailed, just previous to the battle of Manila Bay on May 1.

Mr. M. J. Stickel, secretary of the Y. M. C. A. at Cristobal, and Miss Bessie E. Russell, of Colon Hospital, were married at Cristobal on Tuesday, December 29. Mr. and Mrs. Stickel sailed on the *Heredia* on the same day, for a three weeks' vacation in Costa Rica, and on their return they will reside in Cristobal.

Obituary.

Mr. Amos B. House died at Colon Hospital December 27, 1908. He was 40 years of age and had been on the Isthmus two months, living at Gatun. He is survived by his wife, Mrs. Hulda House of St. Louis, Mo.

Missing Men.

Information is wanted in regard to the following men:

Samborn Backus, who was employed as drill runner and machinist, from December, 1905, to May, 1908, when he was discharged on account of reduction of force. Mr. Backus' relatives have had no news from him since the date of his dismissal from the service of the Commission.

Howard B. Delaigne, who was employed by the Commission in various capacities from May, 1905, until September, 1908, when he was discharged, on account of reduction of force, from the position of foreman in the Atlantic Division. His relatives in the United States have not heard from him since the date of his discharge.

Any one having knowledge concerning these men is requested to communicate with M. B. De Putron, Assistant to the Chairman, Culebra, C. Z.

Information is wanted also in regard to Joseph Keenan. Any one having knowledge concerning him is requested to communicate with John L. Gallagher, No. 62 McLain avenue, Pittsburg, Pa.

Commission Dentists.

Dr. O. M. Ruben, district dentist, has opened an office at Culebra, in building No. 114, opposite the Administration Building. The office of Dr. J. E. Grant, district dentist at Gorgona, will be ready for use in the near future. A list of the fees charged by the dentists to employes of the Commission was published in last week's issue of THE CANAL RECORD.

Tivoli Club Dance.

The Tivoli Club will give its next dance at Hotel Tivoli on Thursday evening, December 31, New Year's Eve.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The entertainment halls in the clubhouses have recently been furnished with new pianos. The old pianos have been removed to the reception lobbies for general use.

Rev. Frank M. Bristol, D. D., Bishop of the Methodist Episcopal Church, will cross the Isthmus the first week in January, en route to South America and will lecture on "Brains" at Emire on Monday, January 4, and at Cristobal on Tuesday the 5th. For the accommodation of the Culebra people who wish to hear Bishop Bristol lecture, a special train will leave Culebra for Emire at 7:45 Monday evening.

Maj. Charles Lynch, Medical Corps, United States Army, will visit the Isthmus as a representative of the American National Red Cross Society and will give "First Aid" lectures in the clubhouses as follows: Culebra, Wednesday, January 6; Cristobal, Thursday, January 7; Emire, Friday, January 8; Gorgona, Saturday, January 9. Major Lynch is the author of the Red Cross text book "First Aid and Relief of Columns," and has been engaged in lecturing and organizing first aid reliefs. Major Lynch will be accompanied by Maj. C. A. Devol, Chief Quartermaster, who will supplement Major Lynch's lectures by a statement concerning the work of the Red Cross. If the suggestion meets with ready response, an effort will be made during the visit of Major Lynch to organize a Panama branch of the American National Red Cross.

EMPIRE.

In the junior duck pin tournament the winners were as follows: Class A, James Wade, first; Victor Johnson, second; Owen Picken, third. Class B, Joseph Fein, first; Harold Van Ostrand, second; Victor Picken, third. Medals will be given them.

CRISTOBAL.

A duck pin tournament for singles and doubles, open to all of the associations on the Isthmus, is to be held on the Cristobal alleys on New Year's Day, suitable trophies will be awarded.

Misdirected Letters.

Division of Posts, Customs and Revenues,

Aucun, C. Z., December 26, 1908.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Afams, C. W.	Julian, Chas.
Bewick, Jos. L.	Kelleher Thos.
Blommer, E.	Kelly, D. E.
Brown, Mrs. H. T.	King, M. P.
Chandler, Mr.	Lawrence, W. S.
Comer, Geo. M.	Lewellyn, George
David, Joseph	Long, W. H.
de Leon, Catalina	Lowe, Wm., (pkg.)
Deyo, Daniel B.	Miter, Patrick
Dullahan, Chas.	Munsberger James
Epping, Mrs. Joe	Nimmo, Mrs. Bruno
Falkner, Geo.	Perry, Surgeon Ralph W.
Gahant, Frank D.	Pross, Louis
Gilberg, Albert	Quinlan, Miss Settie
Goodson, Miss Catherine	Rau, Charles
M.	Schrihan Michael
Goodson, Mrs. C.	Simmons, J.
Grovesnor, Mrs. Fred L.	Straw, Geo. R.
Harrison, S. H.	Strom, C. A.
Hazelwood, B.	Teague, Carson
Henneich, Charles	Teimer, Richard
Holmes, Mrs. Edwin S., Jr.	Thomas, C. E.
Holmes, Edwin S., Jr.	Viall, H. H.
Isgren, Miss	Victor, J. G.
Jaeger Carlos	Watts Geo. H.
Jennings, Edward	Wilber, D. H.
Johnson, C. W.	Williamson, Arnold
Jordan, Joseph	Wright, Lewis A.
	Wurden, m. Herman

Brotherhood of Locomotive Engineers.

The regular meeting of Division No. 756, Brotherhood of Locomotive Engineers, will be held at Cristobal on Sunday, January 3, at 1 p. m.

Order of Isthmian Conductors.

The next regular meeting of the Order of Isthmian Conductors will be held at Cristobal on January 3, at 10 a. m. Important business.

C. C. BARNETT,
Secretary and Treasurer.

The following steamers have recently arrived at La Boca: December 19, *Tucapel* from Valparaiso; December 20, *Barracouta* from Central American ports; December 22, *Peru* from Valparaiso; December 23, *City of Sydney* from San Francisco, and *Quito* from intermediate ports.

PERFORMANCE OF STEAM SHOVELS

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS

The subjoined tables show the monthly records of steam shovel work in Canal excavation since American occupation

ATLANTIC DIVISION

COLON DISTRICT						GATUN LOCKS.						GATUN SPILLWAY.						
Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	
1907—						1907—						1907—						
July	1	13	56	731	11.12	August	3.70	27	784	21 176	16.37	July	1.33	26	423	10 998	11.12	
August	2	17	243	7,624	16.37	September	4.12	24	884	21 219	8.03	August	2.00	27	498	13 433	16.37	
September	2	24	601	14,411	8.03	October	5.00	27	1,013	27 355	19.27	September	2.00	24	757	18 158	8.03	
October	2	27	761	20,539	19.27	November	5.00	24	1,014	24 327	14.27	October	2.00	27	715	20,118	19.27	
November	2	24	833	20,002	14.27	December	5.00	25	1,286	32,159	5.53	November	2.00	24	854	20,494	14.27	
December	2	25	939	23,473	5.53	1908—						December	2.00	25	1,395	31,878	5.53	
1908—						January	5.72	26	1,302	33,840	3.18	1908—						
January	2	26	1,218	31,418	3.18	February	6.01	24	1,222	29,333	1.29	January	3.00	26	1,264	32,863	3.18	
February	2	24	1,868	32,816	1.29	March	7.00	26	1,206	31,366	2.81	February	3.75	24	1,133	23,402	1.29	
March	2	26	1,574	40,925	2.81	April	7.00	25	1,285	32,210	1.17	March	4.54	26	1,311	34 119	2.81	
April	2	25	1,349	33,718	1.17	May	5.76	25	1,156	28,891	17.30	April	5.00	25	1,134	29,598	1.17	
May	2	25	1,087	27,167	17.30	June	4.88	26	1,129	29,364	13.33	May	4.12	25	908	22,701	17.30	
June	1.8	26	684	17,790	13.33	July	3.77	26	1,396	36,291	13.67	June	3.50	26	1,117	29,015	13.33	
July	1.54	26	587	15,269	13.67	August	3.50	26	1,431	37,418	15.88	July	3.00	26	981	25,514	13.67	
August	1.8	26	741	18,532	15.88	September	3.44	25	1,215	30,459	8.52	August	2.85	25	783	20,351	15.88	
September	1.50	25	713	17,840	8.52	October	3.96	27	1,026	27,694	12.22	September	2.03	25	792	19,812	8.52	
October	1.0	27	859	23,202	12.22	November	3.96	23	917	21,093	21.37	October	2.95	27	555	14,999	12.22	
November	1.87	23	1,097	25,232	21.37							November	2.74	23	488	11,203	21.37	

CENTRAL DIVISION

CULEBRA SECTION						CHAGRES SECTION							
Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cubic yards).		Rainfall (inches).		Maximum temperature in shade (degrees Fahrenheit).	Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).
			Per day.	Per month.	Empire.	Culebra.							
1906—								1907—					
January	12.83	26	363	9,430	1.28	1.19	.....	August	0.15	27	716	19,333	12.20
February	12 48	23	587	13,494	0.57	0.64	.....	September	0.92	24	976	23,420	14.71
March	12.37	27	716	19,335	0.45	1.34	.....	October	2.22	27	428	11,544	13.62
April	12.33	24	720	17,289	11.42	8.43	.....	November	3.00	24	612	14,681	9.85
May	12.41	27	581	15,684	7.54	7.25	.....	December	6.12	25	630	15,756	2.26
June	14.81	26	539	14,026	6.92	8.94	1.13	1908—					
July	16.64	25	378	9,441	14.61	20.26	1.27	January	8.11	26	797	20,720	0.20
August	16.93	27	536	14,461	11.84	12.97	1.32	February	10.33	24	798	19,144	0.11
September	21.33	24	563	13,664	7.41	6.22	1.30	March	11.47	26	1,082	28,094	0.41
October	22.67	27	532	14,373	3.97	8.46	1.28	April	11.76	28	1,111	28,018	1.81
November	20.46	24	459	10,833	21.05	19.19	1.20	May	11.68	25	808	20,197	13.18
December	22.68	25	491	12,267	8.15	9.09	1.08	June	12.23	26	1,013	26,341	6.55
1907—								*July					
January	31.04	26	702	18,248	0.08	0.00	1.04						
February	39.87	23	674	15,966	0.13	0.49	1.03						
March	43.88	25	741	18,530	0.16	0.68	1.05						
April	44.12	26	765	19,884	0.09	0.04	1.10						
May	31.70	26	833	21,674	6.22	7.45	1.18						
June	38.28	25	651	16,266	13.53	14.74	1.18						
July	43.38	26	680	17,670	9.85	9.42	1.15						
August	39.70	27	729	19,650	11.28	11.81	1.20						
September	33.50	24	511	19,465	10.86	11.38	1.23						
October	37.63	27	813	21,963	15.44	15.27	1.23						
November	41.88	24	784	18,818	10.40	6.91	1.13						
December	42.72	25	965	24,113	1.47	2.40	1.24						
1908—													
January	43.42	26	1,084	28,177	0.75	0.91	1.25						
February	43.67	24	1,185	28,475	0.00	0.01	1.24						
March	42.19	26	1,171	30,451	0.41	0.13	1.25						
April	41.28	25	1,202	30,031	1.36	1.67	1.27						
May	41.56	25	918	22,948	12.91	12.63	1.29						
June	42.92	26	1,011	26,281	8.21	8.76	1.26						
July (old Chagres Division included)	52.57	26	1,071	27,848	11.79	13.23	1.21						
August do do	52.58	26	1,122	29,184	8.11	7.74							
September do do	49.68	25	1,178	29,443	9.76	13.74							
October do do	49.55	27	1,176	31,766	8.87	9.03							
November do do	50.91	23	1,158	26,577	4.46	5.10							

*After July 1, 1908, the old Chagres and Culebra divisions were consolidated in the Central Division. No separate record for steam shovels in the old divisions has been kept since that date. Figures for months after June under "Culebra Section" include work done in the whole Central Division.

Summary for the month of November, 1908:
 Average number of shovels at work, 65.48.
 Average output per shovel per day, 1.056 cubic yards.
 Average output per shovel per month, 24,507 cu. yds.
 The working day for steam shovels is eight hours.

PACIFIC DIVISION

PEDRO MIGUEL LOCKS						MIRAFLORES LOCKS, DAMS AND SPILLWAY						LA BOCA DISTRICT						
Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period.	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	
1908—						1908—						1908—						
June	0.50	26	600	19,134	4.98	March	3.50	26	746	19,418	0.00	March	1.00	26	476	12,360	0.00	
July	1.00	26	626	16,282	9.53	April	4.50	25	820	20,502	0.76	April	1.00	25	452	11,300	0.76	
August	1.00	26	632	21,003	9.31	May	5.75	25	687	18,077	8.65	May	1.00	25	698	17,200	8.65	
September	1.84	25	608	15,204	7.56	June	3.80	26	495	12,774	4.98	June	1.00	26	562	14,630	4.97	
October	2.66	27	656	17,702	8.41	July	3.80	26	930	24,179	5.66	July	1.00	26	623	16,200	5.66	
November	3.00	23	803	18,467	8.65	August	3.70	26	947	24,612	9.31	August	0.92	26	739	19,114	10.46	
						September	3.78	25	938	23,440	7.56	September	0.97	25	750	18,743	5.93	
						October	3.11	27	848	22,894	8.41	October	1.00	27	641	17,315	7.51	
						November	3.00	23	683	15,703	8.65	November	1.00	23	532	12,280	8.65	

COMMISSARY DEPARTMENT.

The hours during which commissaries are open are as follows:
 Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.
 All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning December 29:
 FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	6
Shoulder and neck (not under 6 pounds).....per lb	7
Entire forequarter (not under 10 pounds).....per lb	9
Leg (8 to 10 pounds).....per lb	16
Short-cut chops.....per lb	22
Veal—Stewing.....per lb	10
Entire forequarter (15 to 20 lbs).....per lb	11
Loin for roasting.....per lb	21
Chops.....per lb	22
Cutlets.....per lb	26
Pork—Cuts.....per lb	20
Beef—Suet.....per lb	4
Soup.....per lb	8
Stew.....per lb	12
Corned.....per lb, 12, 14, 16	
Pot roast (from sirloin butt).....per lb	17
Rib-roast, second cut (not under 3 pounds).....per lb	19
Rib-roast, short cut (not under 3 1/2 pounds).....per lb	23
Sirloin roast.....per lb	29
Rump roast.....per lb	29
Porterhouse roast.....per lb	29
Steak, round.....per lb	29
Rib.....per lb	24
Sirloin.....per lb	29
Porterhouse.....per lb	29
Rump.....per lb	29
Tenderloin.....per lb	30

MISCELLANEOUS.

Livers—Calf.....each	65
Sausage—Pork.....per lb	18
Bologna.....per lb	17
Frankfurter.....per lb	17
Sweet bread—Veal.....each	1.20
Sweet bread—Beef.....per lb	30
Ox tongues.....each	1.00
Higs' feet.....per lb	14
tongues.....per lb	16
Eggs, fresh.....dozen	50
Oysters, 1 gallon kegs.....keg	1.00

POULTRY AND GAME.

Chickens—Fancy Roasting.....each	1.20 and 1.40
Fowls, medium and large.....each	50c. and 1.00
Ducks, fatted.....each	1.22
Broilers.....each	75
Turkeys.....per lb	28
Squabs.....each	45
Capons.....each	2.40

CURED AND PICKLED MEATS.

Bacon—Strips.....per lb	23
English, breakfast sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Hutter's York cut.....per lb	25
Ferris.....per lb	20
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	45
Cheese—Roquefort.....per lb	45
Neufchatel.....each	6
Young America.....per lb	22
Swiss.....per lb	31
Edam.....each	1.05
Camembert.....per lb	23
M'Laren's.....jar	15
Pinxter's.....tin	22
Gouda.....per lb	34
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....tin	20
Milk, Briarcliff.....bottle	25

VEGETABLES AND FRUITS.

Parsnips.....per lb	7
White potatoes.....per lb	3 1/2
Cabbage.....per lb	5
Onions.....per lb	4
Cucumbers.....each	10
Yams.....per lb	3 1/2
Turnips.....per lb	3 1/2
Carrots.....per lb	4
Beets.....per lb	5
Parsley.....per lb	13
Lemons.....dozen	24
Oranges.....dozen	16
Apples.....per lb	6

Grapes.....per lb	20
Grapefruit.....each	4
Tangerines.....each	2
Pears.....per lb	10
Limes.....hundred	60
Cranberries.....per lb	17

§ Sold only from cold-storage and not from Commissaries.

LEGAL NOTICES.

United States of America, } First Judicial Circuit,
 Canal Zone.

Notice is given to all concerned to appear at the court house in Ancon, Canal Zone, on or before February 18, 1909, at 9 o'clock, a. m., to claim the following named estates, which the Collector of Revenues seeks to have escheated to the Government of the Canal Zone:

Oscar Olson, a Swede, resident of La Boca, died May 24, 1907, leaving \$1 10 silver.
 Peter Gross, resident of Panama, died July 9, 1905, leaving \$6.35 silver.

WALTER EMERY,
 Circuit Court Clerk.

United States of America, } In the First Judicial
 Canal Zone. } Circuit.

Raimundo Saenderal, a Colombian, who resided in the Canal Zone, died intestate on or about the 10th day of October, 1905, leaving an estate at Ancon consisting of \$7.20 Panamanian currency and personal belongings of little value.

Castis Lepidakas, a Greek, who resided in the Canal Zone, died intestate on or about the 16th day of May, 1907, leaving an estate at Ancon, consisting of 50 francs, French gold.

Pedro Juan, presumably a Greek, who resided at La Boca, Canal Zone, died intestate on or about the 3d day of October, 1907, leaving an estate at La Boca consisting of \$70 U. S. Currency and \$10 Panamanian currency.

Kurilla Stevan, nationality unknown, who resided in the Canal Zone, died intestate on or about the 4th day of April, 1907, leaving an estate at Ancon consisting of \$1 60 Panamanian currency, 10 cents U. S. Currency, and one Chilean coin of small denomination.

Lucas Alvarez, Chilean, died intestate in the Canal Zone on or about the 20th day of June, 1908, leaving an estate at Ancon consisting of personal belongings of little value and \$48.50 U. S. Currency.

The Collector of Customs has filed a petition for escheat in each of the above mentioned estates under Section 779 of the Code of Civil Procedure.

Notice is hereby given to all concerned to appear at the court house in Ancon, C. Z., on February 1, 1909, at 9 o'clock a. m., to establish their claims to the estates, or to show cause why the same should not escheat to the Canal Zone.

F. H. SHEARLEY,
 Circuit Court Clerk Pro Tempore,
 Ancon, Canal Zone.

United States of America, } In the Third Judicial
 Canal Zone. } Circuit, Cristobal.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 576 hectares of the lands known as "Palo Hlorqueta and Matias" situated in the Canal Zone, near the villages or hamlets of Lion Hill and Tiger Hill, for which tract of land the Joint Commission by its findings filed August 8, 1905, made an award to the "unknown claimants" of \$5,760; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

NELSON R. JOHNSON,

Clerk of the Circuit Court, Third Judicial Circuit, Cristobal, Canal Zone.

In the Circuit Court, Second Judicial Circuit, Canal Zone, Empire, December 26, 1908.

To any and all persons interested:

You are required to enter your appearance in the clerk's office in the above named court at Empire in the said Canal Zone on the 6th day of April, 1909; and to answer the petition of Tom M. Cooke, Collector of Revenues, acting under Section 779, Code of Civil Procedure, stating that each of the deceased persons named below died intestate, leaving property in the Canal Zone, and that no heirs have appeared to claim the same; and asking that a day be fixed for inquisitions to ascertain whether said estates escheat to the Government of the Canal Zone:

(1) Joseph P. Roche, San Pablo, died on or about May 22, 1905, leaving about 50 acres of growing bananas and personal property at Frijoles and San Pablo;

(2) John J. Farrill, Empire, died on or about July 24, 1905, leaving a pay certificate for \$20 and cash 70 cents at Empire;

(3) George L. Walker, Empire, died on or about September 21, 1906, leaving Isthmian Canal Commission pay certificate for \$22.50, cash \$1.40, and personal belongings of little value;

(4) Luchin Short, Empire, died on or about March 8, 1905, leaving Isthmian Canal Commission pay certificate for \$2.25 United States currency and personal belongings of little value at Empire;

(5) Unknown man (white), killed on or about Au-

gust 4, 1905, by Panama railroad passenger train south of Matachin, leaving \$32 Panamanian currency in the hands of the Treasurer of the Canal Zone at Empire;

(6) Unknown man (white), found dead in Las Sabanas on or about January 7, 1905, leaving \$2.25 United States currency and ten cents in Panamanian currency in the hands of the Treasurer of the Canal Zone at Empire;

(7) Unknown man, skeleton found on or about July 8, 1908, in the woods near Gorgona water shed, leaving \$3.25 Panamanian currency, two keys (one French copper coin, one silver ring, and one pocket knife), in the hands of Treasurer of the Canal Zone at Empire;

(8) Unknown man (Indian), killed by a Panama railroad train near Mount Hope, leaving \$6.00 Panamanian currency, one silk handkerchief, a silver watch, and leather chain and key, in the hands of Treasurer of Canal Zone at Empire.

(9) Unknown man, killed by a passenger train near Cozcol on or about June 3, 1906, leaving \$1.70 United States currency, and \$1 Panamanian currency, in the hands of Treasurer of Canal Zone at Empire.

(10) Jean B. Stone, Empire, died on or about March 17, 1903, leaving cash \$260.35 United States currency and \$156.50 deposited with the International Banking Corporation, and varied personal effects at Empire.

(11) Joseph Albin, resident at Culebra, died on or about July 20, 1905, leaving \$22 United States currency and \$2 Panamanian currency.

By order of the Court. E. M. GOOTSLAW,
 Circuit Court Clerk.

United States of America, } In the Third Judicial
 Canal Zone. } Circuit, Cristobal.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of .48 hectares of the lands known as "Calle Bruji" situated in the Canal Zone, near the villages or hamlets of Lion Hill and Tiger Hill, for which tract of land the Joint Commission by its findings filed August 8, 1905, made an award to the "unknown claimants" of \$2,480, that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

NELSON R. JOHNSON,

Clerk of the Circuit Court, Third Judicial Circuit, Cristobal, Canal Zone.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight December 26, 1908:

	STATIONS					
	Vigia	Alhajuela	Gambou	Bolero	Gatun (Canal)	Gatun (W. Diversion)
Height of low water above mean sea level, feet.....	129	92	46	1	0	0
Maximum height above low water, feet.....						
Sunday, Dec. 20.....	7.1	5.7	5.5	5.4	2.8	1.6
Monday, Dec. 21.....	6.8	5.8	8.3	9.5	4.7	3.9
Tuesday, Dec. 22.....	1.8	2.2	4.2	7.6	3.3	2.5
Wednesday, Dec. 23.....	2.1	2.5	3.7	5.0	2.1	1.8
Thursday, Dec. 24.....	1.0	1.8	3.0	5.1	2.3	2.0
Friday, Dec. 25.....	7.4	6.1	8.7	7.9	2.0	3.3
Saturday, Dec. 26.....	5.3	4.8	8.3	10.5	5.7	4.7

Rainfall, December 1 to 26, 1908, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	2.20	7.96
Bruzos Brook.....	1.6	8.16
Gatun.....	2.9	6.97
Bohio.....	.55	2.57
<i>Central Division—</i>		
Tabernilla.....	57	2.53
San Pablo.....	1.11	3.06
Bas Obispo.....	1.10	2.95
Gambou.....	1.1	3.2
Empire.....	.79	2.1
Camacho.....	1.10	4.51
Culebra.....	.84	2.89
Rio Grande.....	.91	4.1
<i>Pacific Division—</i>		
Pedro Miguel.....	1.33	5.39
La Boca.....	.75	1.8
Ancon.....	1.11	5.8
<i>Atlantic Coast—</i>		
Porto Bello.....	5.70	1.8
<i>Upper Chagres.</i>		
El Vigia.....	1.05	2.51
Alhajuela.....	.69	2.55

*To 5.00 p. m. of 26th.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

- Lieut.-Col. Geo. W. Goethals, U. S. A.,
Culebra.
Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
Maj. D. D. Gaillard, U. S. A., Empire.
Maj. Wm. L. Sibert, U. S. A., Gatun.
Civil Engineer H. H. Rousseau, U. S. N.,
Culebra.
Mr. Jo C. S. Blackburn, Ancon.
Col. W. C. Gorgas, U. S. A., Ancon.
Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

- Headquarters, Culebra.
Lieut.-Col. Geo. W. Goethals, Chairman
and Chief Engineer.
W. H. May, Secretary to the Chairman.
M. B. DePonrou, Assistant to the Chairman.
C. A. McIlvaine, Chief Clerk.
H. S. Parish, Surveying Officer.
Caleb M. Saville, Assistant Engineer.
Lieut.-Col. H. F. Hodges, Assistant Chief
Engineer.
C. O. Carlson, Secretary.
Edward Schildhauer, Electrical and Mechanical
Engineer.
Henry Goldmark, L. D. Cornish, H. F. Tucker
and T. B. Mönische, Designing Engineers.
Civil Engineer H. H. Rousseau, Assistant
to the Chief Engineer.
J. C. Parsons, Secretary.
A. E. Nichols, Office Engineer.
P. O. Wright, Jr., Architect.

Central Division.

- Headquarters, Empire.
Maj. D. D. Gaillard, Division Engineer.
A. E. Bronk, Chief Clerk.
Louis K. Rourke, Assistant Division Engineer.
A. S. Zinn, Resident Engineer.
Mark W. Tenny, Assistant Engineer.
R. W. Hebard, Assistant Engineer.
W. L. Thompson, Assistant Engineer.
Geo. H. Rineles, Assistant Engineer.
Edgar K. Wilson, Assistant Engineer.

Atlantic Division.

- Headquarters, Gatun.
Maj. Wm. L. Sibert, Division Engineer.
R. M. Sands, Chief Clerk.
Maj. Chester Harding, U. S. A., Assistant Division
Engineer.
Maj. Edgar Judwin, U. S. A., Resident Engineer.
Maj. J. P. Jervey, U. S. A., Resident Engineer.
Capt. G. M. Hoffman, U. S. A., Assistant Engi-
neer.
Capt. Horton W. Stickle, U. S. A., Assistant Engi-
neer.
L. G. Thom, Assistant Engineer.
F. C. Stanton, Assistant Engineer.
R. B. Smith, Superintendent of Dredging.

Pacific Division.

- Headquarters, Corozal.
S. B. Williamson, Division Engineer.
E. A. LeMay, Chief Clerk.
W. G. Comber, Resident Engineer.
G. B. Strickler, Resident Engineer.
H. O. Cole, Assistant Engineer, (Office).
Wm. F. M. Acheson, Assistant Engineer.
James MacFarlane, Superintendent of Dredging.

Mechanical Division.

- Headquarters, Culebra.
Geo. D. Brooke, Superintendent of Motive
Power and Machinery.
F. W. Doty, Chief Clerk.
Earle J. Banta, Mechanical Engineer.
A. L. Robinson, Electrical Engineer.

Quartermaster's.

- Headquarters, Culebra.
Maj. C. A. Devol, U. S. A., Chief Quartermaster.
C. H. Mann, Chief Clerk.
Lieut. E. T. Wood, U. S. A., Assistant Chief
Quartermaster.
Capt. Courtland Nixon, U. S. A., Depot Quar-
termaster, Mount Hope.
C. L. Parker, C. C. McColley, Inspectors.

District Quartermasters.

- B. C. Poole, Ancon.
M. R. Currie, Bas Obispo.
R. M. Gaultle, (acting), Corozal.
Ira A. Giles, Cristobal.
J. B. Jeffries, Culebra.

- C. P. Allen, Empire.
R. R. Watson (acting), Gatun.
K. C. Shady, Gorgona.
W. H. South, La Boca.
D. J. Shannon, Las Cascadas.
Harry Dundas (acting), Paraiso.
Otto Mastrand, Pedro Miguel.
C. E. Heisey, Porto Bello.
J. H. Humphreys, San Pablo.
J. M. King, Tabernilla.

Subsistence.

- Headquarters, Cristobal.
Maj. Eugene T. Wilson, U. S. A., Subsistence
Officer.
W. F. Shipley, Chief Clerk.
Lieut. Frank O. Whitlock, U. S. A., Assistant
Subsistence Officer.

Civil Administration.

- Headquarters, Ancon.
Jo C. S. Blackburn, Head of the Department.
H. D. Reed, Executive Secretary.
G. A. Nims, Chief Clerk.
Tom M. Cooke, Chief, Division of Posts, Customs
and Revenues, Ancon.
Herman A. Gudgey, Deputy Collector, Ancon.
F. Lewis Baker, Deputy Collector, Cristobal.
George M. Shoutz, Prosecuting Attorney, Ancon.
George R. Slauton, Chief of Police, Ancon.
D. F. McDonald, Chief Clerk.
C. F. Weidman, Chief, Fire Department, Cris-
tobal.
Geo. L. Campen, Supt. of Public Works, Ancon.
C. R. Sargent, Chief Clerk.
J. J. Reidy, Asst. Supt. Public Works, Cristobal.
H. L. Smith, Superintendent of Schools, Ancon.
Edgar P. Beck, Acting Treasurer of Canal Zone,
Empire.

Canal Zone Judiciary.

- Headquarters, Ancon.
Supreme Court—Dr. F. L. Durán, Chief
Justice.
Walter Emery, Clerk, Ancon.
H. A. Gudgey, Associate Justice, Empire.
Lorin C. Collins, Associate Justice, Cristobal.
Circuit Court, First Circuit—Dr. F. Mutis
Durán, Judge, Ancon.
Walter Emery, Clerk.
Circuit Court, Second Circuit—H. A. Gudgey,
Judge, Empire.
Elbert M. Goolsby, Clerk.
Circuit Court, Third Circuit—Lorin C. Collins,
Judge, Cristobal.
Nelson R. Johnson, Clerk.
M. C. Rerdell, Senior District Judge, Cristobal.
S. F. Blackburn, District Judge, Ancon.
Edgar S. Garrison, District Judge, Empire.
J. B. March, District Judge, Gorgona.
Thomas E. Brown, Jr., District Judge, Cristobal.

Law.

- Headquarters, Washington, D. C.,
Richard Reid Rogers, General Counsel,
Washington, D. C.
George M. Shoutz, Attorney for Isthmian Canal
Commission and Panama Railroad Company,
Ancon.
George H. Bartholomew, Assistant Attorney.

Sanitation.

- Headquarters, Ancon.
Col. W. C. Gorgas, Chief Sanitary Officer.
Capt. Robert E. Noble, U. S. A., Executive Officer.
Harry E. Bovay, Chief Clerk.
H. R. Carter, Director of Hospitals, Ancon.
Surgeon J. C. Perry, P. H. and M. H. S., Chief
Quarantine Officer, Ancon.
Maj. John L. Phillips, U. S. A., Superintendent
Ancon Hospital, Ancon.
Capt. Alexander Murray, U. S. A., Assistant to
Superintendent.
Maj. C. C. McCulloch, Jr., U. S. A., General In-
spector, Ancon.
J. F. Leys, U. S. N., Superintendent Colon
Hospital, Colon.
Surgeon Claude C. Pierce, F. H. and M. H. S.,
Quarantine Officer, Colon.
Dr. Fleetwood Graver, P. H. and M. H. S., Quar-
antine Officer, Panama.
Dr. A. E. Mayner, Acting Health Officer, Pan-
ama.
Dr. M. E. Connor, Health Officer, Colon.
Joseph A. LePrince, Chief Sanitary Inspector,
Ancon.

Disbursements.

- Headquarters, Empire.
Edward J. Williams, Disbursing Officer.
Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

- Headquarters, Empire.
W. W. Warwick, Examiner of Accounts.
Thomas L. Clear, Chief Clerk.

Purchasing Department.

- Headquarters, Washington, D. C.
Capt. F. C. Boggs, U. S. A., General Pur-
chasing Officer.
C. E. Dole, Chief Clerk.

- Capt. Courtland Nixon, Purchasing Agent on
the Isthmus.
Maj. Wendell L. Simpson, U. S. A., Purchas-
ing Agent, 24 State Street, New York City.
F. C. Nordsiek, Assistant Purchasing Agent, 24
State Street, New York City.
S. E. Redfern, Assistant Purchasing Agent,
Custom House, New Orleans, La.

Panama Railroad Company.

- Headquarters, Colon.
(New York office, 24 State Street.)
H. J. Slifer, Assistant to the President, and
General Manager, Colon.
G. E. Geer, Assistant to the General Manager.
R. Budd, Chief Engineer.
J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Pan-
ama Railroad Steamship Company, of the Royal
Mail Steam Packet Company, of the Hamburg-
American Line, and of the United Fruit Company's
Line, the Panama Railroad Company's dates being
subject to change:

NEW YORK TO COLON.

Allianca	P. R. R. Saturday	Dec. 26
Trent	R. M. Saturday	Dec. 26
Colon	P. R. R. Saturday	Jan. 2
Prinz Aug. Wilhelm	H. A. Saturday	Jan. 2
Panama	P. R. R. Friday	Jan. 8
Tagus	R. M. Saturday	Jan. 9
Advance	P. R. R. Thursday	Jan. 14
Prinz Joachim	H. A. Saturday	Jan. 16
Allianca	P. R. R. Wednesday	Jan. 20
Magdalena	R. M. Saturday	Jan. 23
Colon	P. R. R. Tuesday	Jan. 26
Prinz Aug. Wilhelm	H. A. Saturday	Jan. 30
Panama	P. R. R. Monday	Feb. 1
Advance	P. R. R. Saturday	Feb. 6
Orinoco	R. M. Saturday	Feb. 6
Allianca	P. R. R. Saturday	Feb. 13
Prinz Joachi	H. A. Saturday	Feb. 13
Colon	P. R. R. Friday	Feb. 19
Atrato	R. M. Saturday	Feb. 20
Panama	P. R. R. Thursday	Feb. 25
Prinz Aug. Wilhelm	H. A. Saturday	Feb. 27
Trent	R. M. Saturday	Mar. 6

All the steamers of the Hamburg-American and
Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Panama	P. R. R. Sunday	Dec. 27
Tagus	R. M. Tuesday	Dec. 29
Advance	P. R. R. Saturday	Jan. 2
Prinz Joachim	H. A. Tuesday	Jan. 5
Allianca	P. R. R. Friday	Jan. 8
Colon	P. R. R. Thursday	Jan. 14
Magdalena	R. M. Tuesday	Jan. 12
Prinz Aug. Wilhelm	H. A. Tuesday	Jan. 19
Panama	P. R. R. Friday	Jan. 20
Advance	P. R. R. Tuesday	Jan. 26
Orinoco	R. M. Tuesday	Jan. 26
Allianca	P. R. R. Monday	Feb. 1
Colon	P. R. R. Sunday	Feb. 7
Prinz Joachim	H. A. Tuesday	Feb. 8
Atrato	R. M. Tuesday	Feb. 9
Panama	P. R. R. Saturday	Feb. 13
Prinz Aug. Wilhelm	H. A. Tuesday	Feb. 16
Advance	P. R. R. Friday	Feb. 19
Trent	R. M. Tuesday	Feb. 23
Allianca	P. R. R. Thursday	Feb. 25
Prinz Joachim	H. A. Tuesday	Mar. 2
Tagus	R. M. Tuesday	Mar. 9
Prinz Aug. Wilhelm	H. A. Tuesday	Mar. 16

NEW ORLEANS TO COLON.

Parismina	U. F. C. Saturday	Jan. 2
Heredia	U. F. C. Saturday	Jan. 9
Ellis	U. F. C. Saturday	Jan. 16
Parismina	U. F. C. Saturday	Jan. 23

COLON TO NEW ORLEANS.

Ellis	U. F. C. Tuesday	Jan. 5
Parismina	U. F. C. Tuesday	Jan. 12
Heredia	U. F. C. Tuesday	Jan. 19
Ellis	U. F. C. Tuesday	Jan. 26
Parismina	U. F. C. Tuesday	Feb. 2

COLON TO BARBADOS, CALLING AT TRINIDAD.

Trent	R. M. Tuesday	Jan. 5
Tagus	R. M. Tuesday	Jan. 19

The next sailing of the Leyland Line for New
Orleans via Kingston, Ja., will be the steamship *Mex-
ican* on or about January 4.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, JANUARY 6, 1909.

No. 19.

The Canal Record

Published weekly under the authority and supervision of the ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Canal Excavation to Date.

The grand total of excavation at all points on the Line of the Canal, from the day on which the Americans took control, May 4, 1904, down to the close of 1908, is 59,773,179 cubic yards. The yearly output has been as follows:

May 4 to December 31, 1904.....	243,472
January 1 to December 31, 1905.....	1,799,227
January 1 to December 31, 1906.....	4,948,497
January 1 to December 31, 1907.....	15,765,290
January 1 to December 31, 1908.....	37,016,693

Total under American control..... 59,773,179

It will be seen from this table that all but about 2,000,000 cubic yards of the grand total has been removed during the past three years, and that all but about 7,000,000 cubic yards has been removed during the past two years. The monthly average for 1905, the first complete calendar year of work, was 149,935 cubic yards; for 1906, it was 412,375 cubic yards; for 1907, it was 1,313,774 cubic yards; and for 1908, it was 3,084,724 cubic yards.

Appended are totals for each month during 1908:

January.....	Cu. yds. 2,709,613	August.....	Cu. yds. 3,252,506
February.....	2,927,126	September.....	3,158,886
March.....	3,487,287	October.....	3,190,147
April.....	3,296,097	November.....	2,815,047
May.....	2,702,897	December.....	3,261,673
June.....	3,059,069		
July.....	3,156,350	Total.....	37,016,693

The rainy season began in May, 1908, and continued through December, the rainfall being the heaviest in May and averaging about ten inches for May, June, July, August, September, October, November, and December. It will be seen by the monthly totals that during this period the excavation fell below 3,000,000 cubic yards in only two months, May and November. While it fell off in May below the April total a new record was established for rainy season work. The decline in November was due primarily to a reduction in the number of working days, there being only twenty-three during that

month. The average monthly output during the rainy season was substantially the same as the monthly average for the whole year, which shows that the heavy rains are no longer a serious obstacle to the progress of the work.

Unit Costs of Canal Work.

Three tables are published on page 149 of this issue of THE CANAL RECORD, which contain information not hitherto available. The first classifies by departments the expenditures made from appropriations for all Canal work, down to October 1, 1908. The second shows the expenditures made by the Department of Construction and Engineering, including "Work," "Plant," and "General Administration." The third gives the unit costs of actual Canal construction, divided into three periods. It shows that dry excavation for the first quarter of the present fiscal year cost 63 cents per cubic yard for direct charges, and 12 cents per cubic yard for general administration, making a total of 75 cents. Dredging cost 9 cents per cubic yard for direct charges, and 2 cents per cubic yard for general administration. The average cost per cubic yard for excavation was 40 cents for the direct charges, and 8 cents for general administration, making a total of 48 cents as against an average cost of 57 cents for these two items for the last fiscal year, a reduction of about 15 per cent.

December Excavation.

The grand total of excavation during the month of December was 3,261,673 cubic yards. All of this amount excepting 117,726 cubic yards was taken from the Canal prism. It is 341,179 cubic yards greater than the November output, and only 218,597 cubic yards less than the highest record, that of March, 1908. There were 26 working days in December, three more than in November, and the same number as in March. Of the grand total for December, 1,363,953 cubic yards were taken out by dredges and the remainder was dry excavation. The mean rainfall for December for the territory in which excavation was in progress was 5.93 inches, as compared with 11.66 inches in November.

In the Atlantic Division the total excavation was 858,724 cubic yards, which is 126,487 cubic yards greater than that of November. Of this amount, 170,537 cubic yards were taken out by steam shovels and 688,187 cubic yards by dredges. This is an increase over November of 9,132 cubic yards in steam shovel work, and 117,355 cubic yards by the dredges. The two steam shovels working in the cut at Mindi, at 14 feet below sea-level, took out 62,253 cubic yards of rock in December, the best monthly record yet made by two shovels.

The total excavation in the Central Division was 1,593,994 cubic yards. Of this

amount, 1,143,237 cubic yards were taken from the Culebra Cut, 383,948 from the Canal prism elsewhere than in the Culebra Cut, and 66,809 cubic yards from the Obispo Diversion which is outside of the Canal prism. The best daily record of excavation for steam shovels since American occupation was made in this division on Friday, December 18, when 50 shovels excavated 70,087 cubic yards, which is 2,957 cubic yards higher than the record made on November 30, when 53 shovels removed 67,130 cubic yards.

In the Pacific Division the total excavation was 808,955 cubic yards, which is 20,336 cubic yards short of the excavation in November. Of this amount, which was all from the Canal prism, 133,189 cubic yards were taken out by steam shovels and 675,766 by dredges. A detailed statement of excavation in the three divisions follows:

ATLANTIC DIVISION.

Locality.	From Canal Prism	Outside Canal Prism	Total excavation
	cu. yds.	cu. yds.	cu. yds.
<i>Dry excavation—</i>			
Gatun spillway.....		42,334	42,334
Gatun Locks.....	65,950		65,950
Mindi.....	62,253		62,253
Total.....	128,203	42,334	170,537
<i>Wet excavation—</i>			
Colon dredging.....	679,604	8,583	688,187
Total wet and dry excavation.....	807,807	50,917	858,724

CENTRAL DIVISION.

<i>All dry excavation—</i>			
Chagres section.....	383,948		383,948
Culebra section.....	1,143,237	66,809	1,210,046
Total.....	1,527,185	66,809	1,593,994

PACIFIC DIVISION.

<i>Dry excavation—</i>			
Miraflores Locks.....	65,416		65,416
Pedro Miguel Locks.....	65,578		65,578
Cardenas Hill.....	2,195		2,195
Total.....	133,189		133,189
<i>Wet excavation—</i>			
Pacific entrance.....	675,766		675,766
Total wet and dry excavation.....	808,955		808,955

TOTAL EXCAVATION, ENTIRE CANAL.

Dry excavation.....	1,788,577	109,143	1,897,720
Wet excavation.....	1,335,370	8,583	1,363,953
Total.....	3,143,947	117,726	3,261,673

Mean rainfall along Canal (eleven stations). 5.93 inches.

Figures of monthly excavation are based upon telephone reports from the Division Engineers, and are subject to slight alterations when the official reports are received.

Dynamite Explosions.

While exploding a charge in the toe of the slope in the Canal prism at Matachin on the morning of January 4, a single charge of dynamite set off five holes that had been

loaded about three months before and had not been exploded. Seven men were injured, but none of them seriously.

No further deaths have resulted during the past week from the explosion at Bas Obispo on December 12, nor have any more bodies been found in the Cut. The number of those known to be dead is 23.

December Rainfall for Two Years.

Stations—	1907.	1908.	Average since estab'd.	No. of rainy days.
<i>Atlantic Division—</i>				
Porto Bello.....	25.72	.....	.....	29
Cristobal.....	9.46	9.07	11.93	22
Brazos Brook.....	5.57	9.48	10.41	21
Gatun.....	5.53	7.95	11.02	24
<i>Central Division—</i>				
Rohio.....	2.88	3.40	9.87	27
Tabernilla.....	4.83	3.25	4.04	17
San Pablo.....	3.66	4.12	3.89	21
Gaúboa.....	2.96	6.92	6.89	17
Bas Obispo.....	2.26	6.63	8.80	22
Empire.....	1.47	5.09	5.55	17
Culebra.....	2.30	4.40	7.85	17
Rio Grande.....	2.51	5.53	5.17	21
<i>Pacific Division—</i>				
Pedro Miguel.....	.....	10.27	.....	21
La Boca.....	4.55	4.61	5.54	25
Ancon.....	3.46	4.16	3.21	22
<i>Upper Chagres—</i>				
Vigia.....	.....	3.69	.....	21
Alhajuela.....	1.51	4.02	5.81	22

Rainfall of December 29.

An excessive local rainfall occurred on December 29, and affected slightly the work in all three of the construction divisions.

At Pedro Miguel 3.94 inches fell in two hours, 2.09 inches in one hour, .59 inches in 10 minutes, .32 inches in 5 minutes. At Bas Obispo 2.15 inches fell in two hours, 1.77 inches in one hour, .50 inches in 10 minutes, .27 inches in 5 minutes. From 1 to 3 p. m. the following amounts registered at other stations:

Inches.	Inches.
Cristobal..... 0.01	Culebra..... 0.39
Gatun..... 0.12	Ancon..... 0.01
Tabernilla..... 0.10	Alhajuela..... 0.43
San Pablo..... 0.43	Vigia..... 0.16

The total amount for the 24 hours ending at 5 p. m. was:

Inches.	Inches.
Pedro Miguel..... 4.05	San Pablo..... 0.43
Bas Obispo..... 2.50	Culebra..... 0.54
Cristobal..... 0.05	Ancon..... 0.06
Gatun..... 0.12	Alhajuela..... 0.83
Tabernilla..... 0.20	Vigia..... 0.17

Mr. Taft's Visit.

According to the latest program for the visit of Mr. Taft, President-elect, to the Isthmus, he will sail from Charleston, S. C., on January 27. He will be accompanied by six engineers, Arthur P. Davis, chief engineer of the U. S. Reclamation Service, John R. Freeman of Providence, R. I., Allan Hazen of New York, Islam Randolph of Chicago, James Schuyler of Los Angeles, and Frederick P. Stearns of Boston. Of these gentlemen, Messrs. Randolph and Stearns were members of the International Board of Consulting Engineers and reported in favor of the lock canal now in process of construction; Messrs. Freeman and Stearns came to the Isthmus in company with Alfred Noble, chief engineer of the Pennsylvania Railroad, in April, 1907, with Secretary Taft, and inspected the sites of the dam and locks at Gatun at that time, pronouncing them satisfactory; Messrs. Davis, Hazen and Schuyler, like the others who accompany them, are high authorities on dam construction and all questions of hydraulic engineering.

The party will come on the two armored cruisers *Montana* and *North Carolina* and is expected to arrive on the Isthmus about the first of February. The length of the visit is not fixed.

PACIFIC LOCKS AND DAMS.

Status of the Work at Miraflores and at Pedro Miguel.

Ships passing through the Canal from the Atlantic to the Pacific side will be lowered from the 85-foot level of Gatun Lake and Culebra Cut to sea-level by a single flight of twin locks at Pedro Miguel and a double flight of twin locks at Miraflores. The point at which the 30-foot drop at Pedro Miguel will be made is 10.5 miles from the end of the Canal in the deep water of Panama Bay. At this point the valley of the Rio Grande is about half a mile wide and is enclosed on either side by hills. The plan involves extending the east wing wall at the north end, the beginning of the lock, to the hill on the east, and the building of a dam from the west wall of the lock to the hill on the west side, a distance of 1,400 feet. This dam is being built of earth with a clay core and rock toes. It will be 40 feet wide at the top at elevation 107, and have slopes of 4 to 1.

Excavation at Pedro Miguel is about two-thirds done. The excavation for the north approach, or fore bay, which is on the level of Culebra Cut, was carried down to grade 40 by the Culebra Division, which had removed 1,071,696 cubic yards up to June 30, 1908, completing this part of the work. In June, 1908, the Pacific Division began excavating for the lock proper. This excavation will go down to elevation 5, allowing room for the concrete floor, the surface of which will be 10 feet above sea-level.

At the end of the calendar year, 1908, 244,416 cubic yards had been taken from the lock chamber and the gate recesses, three shovels are working at grade 22, and one is working in the east gate recess at grade 40.

A large part of the material taken from the lock site is hauled over a construction track, that has been laid on the west slope of the hill through which the lock site extends, and is being dumped on the site of the west dam. A clearing has been made for the core of the dam and filling is being done on either side of this clearing. The plan of canal on which the new French Canal Company was working included two locks at Pedro Miguel, and to that end the Rio Grande was diverted from its course through the lock site, and made to run parallel to the site, behind the hill which will form the west side of the locks. This diversion channel dug by the French is now serving the purpose for which it was made, and is also taking the drainage from the south slope of Culebra Cut. The west dam will close this channel, and, therefore, the dam cannot be completed until work in the lock chamber has reached such a point that the river may be turned into the Canal prism.

The Pedro Miguel Locks will consist of two parallel chambers of concrete each 1,000 feet long, 110 feet wide, and with not less than 43½ feet of water over the sills. The gates will be of the mitre type. They will be operated by electricity from the hydraulic power plant at Miraflores. About 800,000 barrels of Portland cement will be used in the concrete work of the lock chamber and the approaches, and over 800,000 cubic yards of concrete will be laid. If the construction of the handling plant for the concrete is

completed by the time specified in the bids now under consideration, the laying of concrete will be begun in August, 1909. The plant at Pedro Miguel will consist of two cantilever cranes operating over the rock and sand storage piles thus supplying the concrete mixers with material, and four cranes—two in each chamber—for placing the concrete and handling the forms. The mixed concrete will be transported from the mixers to the chamber cranes by means of narrow gauge trains.

From the south end of the Pedro Miguel Locks to the north end of the Miraflores Locks is a distance of 1.6 miles. Excavation in this part of the channel will go down to grade 10, and as the prism lies in the Rio Grande valley it will be necessary to remove only 1,100,000 cubic yards of material. The channel will be 45 feet deep, and 500 feet wide and will run through a lake formed by the water held back by the dams at Miraflores. This lake will extend across the valley to the 55-foot contour and will be about 1.5 square miles in area.

From the Pedro Miguel-Miraflores Lake ships will be dropped from elevation 55 to sea-level by means of two flights of locks. The point where the first drop will be made is about 8½ miles from deep water in Panama Bay, and the first lock, with the sill of the approach at +13, will let ships down about midway between the 55-foot level and sea-level and the second lock will complete the drop.

The locks at Miraflores will be of the same size and construction as those at Pedro Miguel, the only difference being that there will be a double step at Miraflores, instead of but one step as at Pedro Miguel. These locks also are being built in the valley of the Rio Grande, but as the bottoms will be at 20 feet and 52 feet, respectively, below sea-level the amount of excavation for each pair of locks is considerably greater than at Pedro Miguel.

The valley at this point is wider than at Pedro Miguel and the dams that will hold back the water will therefore be longer. The east dam, which will run from the upper end of the locks to Miraflores Hill, will be 800 feet long and will be built of concrete. Nearly 200,000 cubic yards of excavation will be necessary in preparing the foundation, and it is estimated that 63,500 cubic yards of concrete will be used in the construction. The spillway for the lake will be in this dam, and the water wasting through it into the Rio Grande valley will furnish power for the electric plant.

The Cocoli River crosses the lock site and runs into the Rio Grande. Thus the Cocoli valley opens directly into the Miraflores Lock site. To keep the water of the lake from running into this valley and also to divert the Cocoli from the lock site, an earthen dam is being built on the west side of the lock site and parallel to it, closing up the mouth of the Cocoli valley. Over 600,000 cubic yards of earth will be deposited in this dam and a large amount of material will also be deposited between the dam and the locks. A channel is being dug behind the west hill at Miraflores to divert the Cocoli River into the channel of the Rio Grande. The mouth of the Cocoli valley is practically closed, and the work on the dam and back filling on the west side of the lock site is making rapid progress.

THE WORK AT GATUN.

Construction of the Dam Begun—Progress on Locks and Spillway.

The building of the Gatun Dam was begun on December 24, when the 20-inch suction dredge, No. 82, was set at work pumping sandy clay from a point 2,000 feet north of the dam site into the channel of the old French canal. The part of the dam on which the fill is in progress is that embraced between the lock site, on the east slope of the Chagres valley at Gatun, and the hill through which the spillway is being built, known as Gatun Island. From the hills on the east to those on the west the dam will be about 1½ miles long; the space between the rock toes is 1,200 feet in width; the top of the dam, according to present plans, will be at 135 feet above sea-level, and the lowest level of the water impounded in Gatun Lake will be at 85 feet.

A toe of Bas Obispo rock has been built from a point near the lock site to the spillway on the south side, and a similar toe has been built on the north side, the distance between the two toes being 1,200 feet. Suitable material pumped into the space between these two toes will form the dam. In the course of a month dredge No. 83, will be set at work and later the dredge that is working on the north lock site will be used in dam construction. Each of these dredges, pumping such material as is required for the dam, should be able to deliver 150,000 cubic yards a month, or over 5,000,000 cubic yards a year. The total fill to be made is about 21,000,000 cubic yards.

Before the dam material is pumped onto the site the surface soil is removed. In the channel of the old French canal, where the fill is being made, the surface soil was washed down until a suitable foundation for the hydraulic material was procured. A steam shovel is at work excavating the top soil in a strip 600 feet wide running across the valley, and the vegetation will be removed from all the area between the toes of the dam. Two 10-inch centrifugal pumps, driven by old French engines, are at work unwatering the old French channel while the filling is in progress.

Last week 1,300,000 b. m. feet of sheet piling arrived on the Isthmus, and part of it has been delivered at Gatun. This piling is to be driven down into impermeable material clear across the valley along the axis of the dam, thus forming a watertight core below the bottom of the hydraulic fill.

The part of the dam that will extend from the west wall of the spillway to the hill on the west side of the valley, cannot be built until the Chagres River, which now runs through a diversion channel between the spillway and the hills, has been turned through the spillway, and this will not be done until the concrete work in the spillway has been completed above the high water line. Meanwhile, a trestle is being built across the spillway from the east side in order that the north toe may be extended as far as the diversion channel. The building of the toe on either side of the diversion channel will be continued, and a gap broad enough for the river to pass through will be left, to be filled up as soon as the river is diverted into the spillway.

THE SPILLWAY.

The spillway extends through a small hill

that rises in the middle of the dam site. Excavation for the north section is practically completed, only a few more days for work remaining for the two steam shovels now operating there. The work of lining the channel with concrete will be begun in February. Only that part between the north toe and the point where the regulating works will be located, a channel 1,200 feet long and 300 feet wide, will be lined during the present dry season. The heavier masonry will begin at the regulating works and extend south, forming part of the spillway channel and the entrance to it. Concrete work in the spillway will involve the laying of over 250,000 cubic yards of concrete, and will extend over a period of three years. In the part of the channel that will be lined this season the floor will be four feet thick and the walls will extend 20 feet above the surface of the floor. The west wall will be built first, after which the floor and east wall will be constructed. Each wall will be eight feet thick at the top of the floor, and on the back will rise in four steps to a thickness of three feet at the top. The face will be on a 1 to 10 slope. Ninety thousand cubic yards are to be laid in this section, and it is expected that the work will be done at the rate of 500 cubic yards a day. The forms have already been built, and they provide for the laying of concrete in monoliths 40 feet long by 20 feet wide. The heaviest pieces of the forms for the walls weigh 4,800 pounds and will be handled by a locomotive crane operating in the spillway on tracks parallel to the sides.

The concrete handling and mixing plant for the spillway is distinct from the plant which is being built for the locks. A dock has been erected on the old French canal just south of the south toe. Cement, sand, and rock will be delivered alongside it in barges towed up from Cristobal. The first shipment of cement has arrived, and shipments of 2,000 barrels will be made from the States at intervals of five days during the progress of the work. A locomotive crane operating along the front of the dock will handle the cement from the boats to the storage sheds and, by means of a clam shell bucket, will likewise unload the sand and rock. Cars on a belt line railway running beneath the dock will be filled by gravity with sand, cement, and rock in succession, and when loaded they will be pulled by cable up an incline 24 feet high to a platform above the mixers. Two mixers with a capacity of two cubic yards each, driven by an old French engine which will develop 75 horsepower, will mix the materials. From the mixers the concrete will be dumped into two 2-yard buckets equipped with bottom dumps, and carried on flat cars built especially for that purpose. These cars will run over a railroad 4,000 feet long to the spillway, where the buckets will be lifted from the cars by a locomotive crane, and the material will be placed. There will be two tracks between the mixing plant and the spillway, one on which the loaded cars will run to the forms and the other for taking back the "empties." Five hundred cubic yards of concrete will be handled each day.

GATUN LOCKS.

At the end of the year 1908 the amount of material that had been excavated from the site of the locks at Gatun was 2,789,734 cubic yards, and the excavation is more than half

done. The work was begun in October, 1906, and for the three months of that year it amounted to 26,628 cubic yards. In 1907 the excavation was 1,107,559 cubic yards, and in 1908 it amounted to 1,655,547 cubic yards. Up to the present time all the work has been done by steam shovels. Dredge No. 85, one of the 20-inch suction dredges, is now cutting its way into the site of the north or lowest locks, and it will take about 400,000 cubic yards from this chamber. Excavation in the south or upper chamber is practically completed.

Work on the plant for handling materials, mixing and placing concrete is making rapid progress. At the powerhouse site the excavation for the intake tunnel is finished, and the work of laying concrete will begin next week. The steel work for the floor of the turbine room has been delivered, and part of the electrical machinery is on the ground.

About 2,250,000 barrels of cement will be used in the concrete work for the locks, and about 2,000,000 cubic yards of concrete will be laid. Stone for the concrete will be quarried and crushed at Forto Bello, a harbor on the Caribbean about fifteen miles east of Colon, and will be towed in barges to Cristobal, thence up the old French canal to the docks now in process of construction at Gatun. Sand will be carried from a village a few miles east of Porto Bello and delivered in the same manner at Gatun. Cement will be delivered at New York harbor by the contractor and brought to the Isthmus in ships owned by the Panama Railroad Company. It will be carried in lighters to the Gatun docks.

The materials will be handled from the barges at the docks and delivered at storage bins by cableways. From the bins the sand, rock, and cement will be run by gravity into electric cars which will convey them to the mixers. The concrete will be dropped from the mixers into cars in which it will be delivered at various points along the lock site. Cableways stretching across the lock chambers will then lift the concrete from the cars and deliver it at the points desired. It is believed that the handling plant will be ready for work by July 1 of the present year. The plant at Porto Bello will be ready to supply crushed stone in a few weeks, the sand service can be begun at any time, and the cement deliveries will be begun at any time after May 1 that the Commission may desire.

Cable Across the Isthmus.

The South American Cable Company is laying a submarine cable 15-16 inches in diameter from Colon to Panama. The cable will run parallel to the old line of the Panama railroad from Colon to Barbacoas and will then parallel the relocated line to the point where it runs onto the present line, between Miraflores and Corozal. From Gatun to Barbacoas the cable will run through Gatun Lake. From Barbacoas to Panama it will run overland and will be buried alongside the railroad tracks. The first section was laid on January 3, and is 22 miles long. All the work will be done on Sundays, and it is believed that it will be finished by the end of January.

Tivoli Club Dance.

The regular dance of the Tivoli Club will be given at Hotel Tivoli on the evening of January 9.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION.
MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STREAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	65,632	62,835	62,835	65,632
February.....	81,850	67,436	81,850	67,436
March.....	54,333	32,022	54,333	32,022
April.....	731	15,257	731	15,257
May.....	16,309	28,857	16,309	28,857
June.....	45,475	41,078	45,475	41,078
July.....	47,153	46,945	47,153	46,945
August.....	590,955	172,851	590,955	172,851
September.....				
October.....				
November.....				
December.....				
Totals.....				

Total to January 1, 1909—763,805 cubic yards.

COLON—DREDGES.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	111,100	44,403	111,100	44,403
February.....	105,500	401,887	105,500	401,887
March.....	84,145	515,223	84,145	515,223
April.....	69,889	496,366	69,889	496,366
May.....	60,700	64,875	60,700	64,875
June.....	107,118	572,749	107,118	572,749
July.....	17,000	17,000	17,000	17,000
August.....	69,000	104,322	69,000	104,322
September.....	53,183	54,000	53,183	54,000
October.....	48,800	123,540	48,800	123,540
November.....	38,000	409,682	38,000	409,682
December.....	92,250	63,260	92,250	63,260
Totals.....	399,820	1,027,645	399,820	1,027,645

Total to January 1, 1909—10,792,375 cubic yards.

* No work done inside of Canal Prism.

There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STREAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	47,539	193,567	47,539	193,567
February.....	70,177	176,291	70,177	176,291
March.....	100,151	202,763	100,151	202,763
April.....	103,459	196,109	103,459	196,109
May.....	70,528	138,815	70,528	138,815
June.....	3,832	127,932	3,832	127,932
July.....	59,537	14,628	59,537	14,628
August.....	78,357	26,866	78,357	26,866
September.....	87,423	36,315	87,423	36,315
October.....	136,777	40,236	136,777	40,236
November.....	121,635	40,987	121,635	40,987
December.....	160,795	69,756	160,795	69,756
Totals.....	26,628	1,107,559	26,628	1,107,559

Total to January 1, 1909—4,125,692 cubic yards.

* No work done outside of Canal Prism.

There were also 8,583 cubic yards, outside canal prism, removed by dredges from the Gatun locks side in December, 1908.

CENTRAL DIVISION.

CULEBRA SECTION—STREAM SHOVELS.

Months.	1904		1905		1906		1907		1908	
	From Canal Prism	Outside Canal Prism								
January.....	27,556	70,650	27,556	70,650	120,990	566,750	120,990	566,750	1,227,022	1,227,022
February.....	32,851	73,200	32,851	73,200	168,410	632,112	168,410	632,112	1,246,885	1,246,885
March.....	31,092	132,840	31,092	132,840	239,178	815,279	239,178	815,279	1,270,855	1,270,855
April.....	34,851	126,749	34,851	126,749	213,177	879,352	213,177	879,352	1,420,374	1,420,374
May.....	31,092	79,953	31,092	79,953	196,209	690,863	196,209	690,863	1,374,075	1,374,075
June.....	31,092	76,506	31,092	76,506	212,623	724,866	212,623	724,866	1,374,075	1,374,075
July.....	31,092	70,570	31,092	70,570	179,879	770,570	179,879	770,570	1,171,927	1,171,927
August.....	49,226	44,453	49,226	44,453	786,868	1,171,927	786,868	1,171,927	1,171,927	1,171,927
September.....	25,226	29,452	25,226	29,452	731,466	1,171,927	731,466	1,171,927	1,171,927	1,171,927
October.....	19,695	52,940	19,695	52,940	327,079	834,989	327,079	834,989	1,321,865	1,321,865
November.....	28,660	60,540	28,660	60,540	221,642	790,632	221,642	790,632	1,022,576	1,022,576
December.....	42,935	70,630	42,935	70,630	307,689	1,025,485	307,689	1,025,485	1,210,046	1,210,046
Totals.....	243,472	914,254	243,472	914,254	2,702,991	9,177,130	2,702,991	9,177,130	13,686,407	13,686,407

Total to January 1, 1909—26,724,254 cubic yards.

CHAGRES SECTION—STREAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	169,447	200,145	169,447	200,145
February.....	324,233	324,233	324,233	324,233
March.....	325,902	325,902	325,902	325,902
April.....	322,145	322,145	322,145	322,145
May.....	345,757	345,757	345,757	345,757
June.....	2,900	366,810	2,900	366,810
July.....	21,546	346,948	21,546	346,948
August.....	25,627	421,911	25,627	421,911
September.....	44,044	336,390	44,044	336,390
October.....	98,652	383,948	98,652	383,948
November.....	192,769	378,619	192,769	378,619
December.....				
Totals.....				

Total to January 1, 1909—3,980,761 cubic yards.

CANAL EXCAVATION TO DATE.

By French Companies.....	Cu. Yds.
By Americans.....	\$1,548,000
By Steam Shovels.....	
May 4 to December 31, 1904.....	37,111,790
Dredges.....	22,661,389
January 1 to December 31, 1905.....	213,472
January 1 to December 31, 1906.....	1,799,227
January 1 to December 31, 1907.....	4,948,497
January 1 to December 31, 1908.....	15,765,290
Total.....	37,016,693
Total.....	59,773,179

EXCAVATION IN TERRITORY OF PRESENT DIVISIONS

Month.	Excavated.
May 4, 1904, to December 31, 1908.....	Amount excavated.
Atlantic.....	Cubic yards—Total.
Steam shovels.....	4,889,498
Dredges.....	10,839,383
Total.....	15,728,881
Central, all steam shovels.....	
Culebra Cut.....	28,347,934
All other points.....	2,583,127
Pacific.....	
Steam shovels.....	1,291,231
Dredges.....	11,822,006
Total.....	13,113,237
Grand total.....	59,773,179

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Months.	1907		1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	6,832	18,964	6,832	18,964
February.....	21,203	9,684	21,203	9,684
March.....	28,750	1,014	28,750	1,014
April.....	47,658	1,187	47,658	1,187
May.....	55,401		55,401	
June.....	65,578		65,578	
July.....				
August.....				
September.....				
October.....				
November.....				
December.....				
Totals.....	244,416		244,416	

Total to January 1, 1909—256,780 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY.

Months.	Dredges—1908.		Steam Shovels, 1908	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	7,203	385	7,203	385
February.....	28,661	67,963	28,661	67,963
March.....	92,261	6,682	92,261	6,682
April.....	54,006	18,417	54,006	18,417
May.....	68,691		68,691	
June.....	87,675	4,204	87,675	4,204
July.....	91,065	375	91,065	375
August.....	88,605	501	88,605	501
September.....	71,201	497	71,201	497
October.....	65,416		65,416	
November.....				
December.....				
Totals.....	780,456		780,456	

Total to January 1, 1909—816,748 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at the La Boca locks and dams in 1907, and 139,298 cubic yards at Cardenas Hill in March, April, May, June, July, August, September, October, November and December, 1908.

LA BOCA—DREDGES.

Months.	1903*		1906*		1907		1908	
	Outside Canal Prism	From Canal Prism						
January.....	95,940	460,250	95,940	460,250	94,710	93,480	94,710	93,480
February.....	116,820	783,281	116,820	783,281	110,700	104,855	110,700	104,855
March.....	112,340	122,157	112,340	122,157	122,157	530,466	122,157	530,466
April.....	50,676	62,697	50,676	62,697	64,352	65,621	64,352	65,621
May.....	41,533	98,400	41,533	98,400	108,338	696,170	108,338	696,170
June.....	54,508	111,930	54,508	111,930	168,284	737,774	168,284	737,774
July.....	114,300	105,780	114,300	105,780	144,625	750,080	144,625	750,080
August.....	51,856	97,170	51,856	97,170	357,122	762,276	357,122	762,276
September.....	71,176	92,988	71,176	92,988	365,423	609,089	365,423	609,089
October.....	71,094	90,528	71,094	90,528	349,551	675,766	349,551	675,766
November.....								
December.....								
Totals.....	485,153	1,191,233	485,153	1,191,233	1,557,695	586,094	1,557,695	586,094

Total to January 1, 1909—11,822,006 cubic yards.

* No work done inside Canal Prism.

COST OF CANAL CONSTRUCTION

TABLE No. 1—"CLASSIFIED" EXPENDITURES FROM MAY 4, 1904, TO OCTOBER 1, 1903.

The total classified expenditures from appropriations for Canal construction, amounted in round numbers, up to October 1, 1903, to \$83,275,000. "Classified" expenditures do not include the following: Advances to Panama railroad, (amounting to nearly \$5,000,000); purchase of Panama railroad stock; services rendered and material sold to individuals and companies (amounting to about \$2,500,000); and all material and supplies on hand not drawn from store.

Table No. 1 divides this total sum into 17 items, and into three periods, which are: May 4, 1904, to July 1, 1907; July 1, 1907, to July 1, 1908; and July 1, 1908, to October 1, 1908.

The items show separately, the expenditures for the Departments of "Civil Administration," "Sanitation," and "Construction and Engineering;" for buildings pertaining to the above departments; for "Military Protection;" for Construction and Maintenance of Water Works, Sewers and Roads, called "Municipal Improvements;" for "Lands purchased and expropriated;" and for expenditures in connection with the Panama railroad, which do not include loans to the Panama Railroad Company from the United States Treasury, secured by interest-bearing notes.

	May 4, 1904, to July 1, 1907.	July 1, 1907, to July 1, 1908.	July 1, 1908, to October 1, 1908.	May 4, 1904, to October 1, 1908.
(1) Department of Civil Administration.....	\$1,445,000	\$704,000	\$232,000	\$2,381,000
(2) Department of Sanitation.....	4,624,000	2,300,000	474,000	7,408,000
(3) Department of Construction and Engineering.....	20,643,000	24,210,000	6,659,000	51,512,000
(4) Buildings for Department of Construction and Engineering, including quarters.....	6,374,000	1,924,000	252,000	8,550,000
(5) Buildings for Department of Civil Administration.....	83,000	220,000	33,000	336,000
(6) Buildings for Department of Sanitation.....	65,000	305,000	58,000	1,228,000
(7) Buildings for Military protection.....	30,000	34,000		64,000
(8) Construction of Electric Light plants.....	82,000	91,000	33,000	206,000
(9) Purchase of steamers Panama and Colon.....	1,300,000			1,300,000
(10) Double-tracking Panama Railroad.....	937,000	119,000		1,056,000
(11) Relocation of Panama Railroad.....	221,000	1,415,000	188,000	1,824,000
(12) Docks and Wharves leased to Panama Railroad Company.....	403,000	100,000	11,000	514,000
(13) Municipal improvements for the benefit of the cities of Panama and Colon, to be repaid to the United States.....	2,015,000	234,000	32,000	2,281,000
(14) Municipal improvements for the benefit of the Canal Zone settlements, paid from Congressional appropriations.....	2,059,000	1,453,000	179,000	3,701,000
(15) Lands purchased and expropriated.....	59,000		38,000	97,000
(16) Buildings, tools and machinery, Cristobal shops, leased to the Panama Railroad Company.....	170,000	4,000		174,000
(17) Locomotives, cars, and equipment, loaned to and used by the Panama Railroad Company.....	588,000	22,000		610,000
Totals.....	\$41,898,000	\$33,188,000	\$8,189,000	\$83,275,000

TABLE No. 2—EXPENDITURES OF DEPARTMENT OF CONSTRUCTION AND ENGINEERING.

Table No. 2 exhibits the total expenditures of the Department of Construction and Engineering (Item No. 3, Table No. 1), divided by periods into expenditures for "Work," "Plant," and "General Administration;" amounting in round numbers to \$51,512,000, up to October, 1903.

"Work" includes all direct charges, and all indirect charges not included under "General Administration."

"Plant" represents the total plant purchased to October, 1903.

"General Administration" includes the expenses of the Office of the Chief Engineer; the Disbursing Officer; the Examiner of Accounts; the Secretary of the Commission; the Chief Quartermaster's Department; the Meteorological and River Hydraulic Service; and the V. M. C. A. work in the Commission club-houses; and also the cost of general surveys, and of transportation of the employes of the Commission on the Isthmus by the Panama Railroad Company, and expenses of telephone and telegraph service.

	Work.	Plant.	General Administration.	Total.
May 4, 1904, to July 1, 1907.....	\$12,322,000	\$7,236,000	\$1,085,000	\$20,643,000
July 1, 1907, to July 1, 1908.....	13,495,000	7,621,000	3,094,000	24,210,000
July 1, 1908, to October 1, 1903.....	3,981,000	1,879,000	799,000	6,659,000
Total, May 4, 1904, to October 1, 1908.....	\$29,798,000	\$16,736,000	\$4,978,000	\$51,512,000

TABLE No. 3—TOTAL EXPENDITURES AND UNIT COSTS OF WORK—DEPT OF CONSTRUCTION AND ENGINEERING.

Table No. 3 shows the expenditures for the Department of Construction and Engineering under the general items of "Work," "Plant," and "General Administration," divided into the three periods. It also gives the excavation, both wet and dry, the yardage and unit costs, and a complete comparison of these costs. These figures show that there has been a constant reduction in unit costs. They show that dry excavation, for the first quarter of the present fiscal year, cost 63 cents per cubic yard for direct charges, and 12 cents per cubic yard for general administration, making a total of 75 cents. Dredging cost 9 cents per cubic yard for direct charges, and 2 cents per cubic yard for general administration. The average cost per cubic yard for excavation was 10 cents for the direct charges, and 5 cents for general administration, making a total of 15 cents as against an average cost of 57 cents for these two items for the last fiscal year, a reduction of about 15 per cent.

The expenditures for work other than excavation reported on the same table, comprise the following:

Sundry preparatory and construction work pertaining to the locks and dams at Gatun, and on the Pacific slope, consisting of special surveys and borings; the shutting off and pumping out of old channels; the construction of trestles for filling of toe-walls and other purposes; the filling of the toe-walls; the construction of the railroad tracks necessary for the above named purposes, and work in connection with the rock-crushing, receiving and handling plant for Gatun locks.

	May 4, 1904, to July 1, 1907.			July 1, 1907, to July 1, 1908.			July 1, 1908, to October 1, 1908.			May 4, 1904, to October 1, 1908.		
	Expenditures.	Cubic yards.	Unit costs.	Expenditures.	Cubic yards.	Unit costs.	Expenditures.	Cubic yards.	Unit costs.	Expenditures.	Cubic yards.	Unit costs.
<i>Dry Excavation—</i>												
Work.....	\$11,249,000	8,581,152	\$1.32	\$11,944,000	17,579,958	\$0.63	\$3,451,000	5,495,223	\$0.63	\$26,647,000	31,656,338	\$0.84
Plant.....	6,863,000		.79	4,276,000		.21	1,197,000		.22	12,336,000		.39
General administration.....	924,000		.11	2,686,000		.15	692,000		.12	4,302,000		.14
Totals.....	\$19,036,000	8,581,152	\$2.22	\$18,906,000	17,579,958	\$1.07	\$5,340,000	5,495,223	\$0.97	\$43,285,000	31,656,338	\$1.37
<i>Wet Excavation—</i>												
Work.....	762,000	4,378,048	.17	1,020,000	10,399,417	.10	388,000	4,072,514	.09	2,170,000	18,849,979	.12
Plant.....	373,000		.09	2,695,000		.26	432,000		.11	3,500,000		.17
General administration.....	78,000		.02	2,340,000		.02	79,000		.02	3,911,000		.02
Totals.....	\$1,213,000	4,378,048	\$0.28	\$3,949,000	10,399,417	\$0.38	\$899,000	4,072,514	\$0.22	\$6,061,000	18,849,979	\$0.33
<i>Total Excavation, Wet and Dry—</i>												
Work.....	12,011,000	12,959,200	.92	12,964,000	27,979,375	.46	3,842,000	9,567,742	.40	28,817,000	50,506,317	.57
Plant.....	7,236,000		.56	6,971,000		.25	1,629,000		.17	15,836,000		.32
General administration.....	1,002,000		.07	2,920,000		.11	771,000		.08	4,693,000		.09
Totals.....	\$20,249,000	12,959,200	\$1.55	\$22,855,000	27,979,375	\$0.82	\$6,242,000	9,567,742	\$0.65	\$49,346,000	50,506,317	\$0.98
<i>For Construction Work other than Excavation—</i>												
Work.....	311,000			531,000			139,000			981,000		
Plant.....				650,000			250,000			900,000		
General administration.....	83,000			174,000			28,000			288,000		
Totals.....	\$394,000			\$1,355,000			\$417,000			\$2,169,000		
Grand totals.....	\$20,643,000			\$24,210,000			\$6,659,000			\$51,512,000		

THE COAL TRAIN.

Method of Supplying Steam Shovels in Culebra Cut.

On the last day in November the steam shovels of the Central Division took out 67, - 130 cubic yards of rock and earth, and thus established the best record, up to that time, for excavation in a single day. Many factors entered into the making of that record—the enthusiasm of the shovel and train crews, the smooth working of the shovels and spoil trains, freedom from accidents, the quality of the material handled, and other elements of seemingly small importance or of dull routine. Of the last named kind was the coal supply.

The evening before the record was made two trains ran into the Cut, and when they returned before daylight the next morning the bins of all the shovels were full of coal. One of these trains went out from Pedro Miguel, and supplied the shovels between that point and Culebra. The other was made up at the Lirio coal pile, between Culebra and Empire, where a gang of West Indian negroes had been at work since morning shoveling soft coal onto eight 20-yard cars. It ran onto the incline into the Cut at Empire, where it waited until the 5 o'clock whistle blew and the work train ahead cleared the track. Four cars were then switched from the back of the train and placed in front of the engine, so that the shifting in the Cut could be done from both ends. The crew was made up of two conductors, one for each end of the train, two flagmen, two brakemen, the engineer, the fireman, and two negro laborers for each car.

"Spotting a shovel" is running the train alongside and leaving a car there. The track layout in the Cut is favorable for systematic "spotting." It is easy for the coal train to run up to a shovel and drop a car from either front or rear and return to the main track without covering much distance in the shift. When the car is left at the shovel two laborers are on it, and their work then begins. If the loading track is near the shovel, as it is in the beginning of a cut, it is possible to throw the coal from the car into the bin. Ordinarily a plank must be run out from the shovel to the car, and the man who watches on the shovel all night brings out a wheelbarrow, which the laborers fill with coal. The coal is then wheeled down the plank to the shovel, and this proceeding is repeated until two or three tons of coal have been piled in the bin.

While the laborers were coaling the first shovel on the night referred to the train had run to various part of the work and left seven cars alongside as many shovels, all along the Cut, from Empire to Bas Obispo. Eighteen shovels were supplied by this one train, with an amount of coal varying from 40 to 50 tons. Six nights a week for 52 weeks, rainy season and dry, this work goes on, for the shovels must have coal.

While the first eight shovels to be "spotted" were being coaled, the engine tied up at Bas Obispo, and the white men of the crew picked their way by the light of a lantern up the rocky side of the Cut, and walked over to the Commission hotel for dinner. After dinner the "spotting" was repeated, but this time more slowly, for care must be

used in threading the web of tracks in the dark.

Effort is made to have the tracks in the Cut clear of spoil trains before the locomotives are sent home at night, but this sometimes fails, and when it does the coal train must shift 17 loaded 20-yard cars away from the shovels, so that a coal car may be run alongside. Just at dark the shovel that was working at grade near Bas Obispo was "spotted," and at midnight the train ran up to a shovel which was making a cut for a track on the top of the bank, 100 feet above grade. From Bas Obispo to Culebra, on both sides and in the middle of the Cut, on every level where a shovel was at work, and at the field repair shops on the banks, the coal train made its calls. At midnight the last "spot" had been made. The cars, some of them still half full of coal, were collected and at 2 o'clock on the morning of the record-breaking day, the train was run alongside the Lirio coal pile, ready for the loading gang to resume its work.

Visit of Congressmen.

The Congressional party, consisting of nine members of the Committee on Interstate and Foreign Commerce of the House of Representatives, eight other members of the House, and several friends, arrived at Cristobal on the *Alliance* on Saturday, January 2. They were met on the wharf by the Isthmian Canal Commission with the Chairman at its head and were brought by special train directly to Panama and taken to the Hotel Tivoli, where they will remain during their stay. The personnel of the party is as follows:

Members of the Committee on Interstate and Foreign Commerce—

W. P. HEPBURN of Iowa.
F. C. STEVENS of Minnesota.
J. J. ESCH of Wisconsin.
F. W. CUSHMAN of Washington.
JAMES KENNEDY of Ohio.
J. R. KNOWLAND of California.
W. P. HUBBARD of West Virginia.
WILLIAM RICHARDSON of Alabama.
C. L. BARTLETT of Georgia.
J. F. Bryan, Clerk of Committee.

The Representatives who are not members of the committee are—

G. A. BARTLETT of Nevada.
J. P. CONNOR of Iowa.
E. C. ELLIS of Missouri.
W. E. HUMPHREYS of Washington.
GORDON LEE of Georgia.
G. A. LOUD of Michigan.
E. A. MORSE of Wisconsin.
D. E. MCKINLAY of California.

Among the persons with the Congressional party are: R. U. Sherman, son of the Vice President-elect; Richard Reid Rogers, General Counsel of the Isthmian Canal Commission; Ray L. Smith of the Washington office of the Commission. Several of the Congressmen have their wives and other members of their families with them.

On Sunday morning a large number of the party were taken on an excursion to Taboga Island on the tug *Bolivar*, leaving La Boca about 10 o'clock and returning about 5 in the evening. On Monday morning the entire party was taken across the Isthmus by special train and the day was spent in visiting points of interest at Cristobal and making a thorough inspection of the sites of the locks, dam and spillway at Gatun, returning to the Hotel Tivoli for the night. On Tuesday an inspection of Culebra Cut was made, a train with an observation car attached, being run through the Cut for that purpose.

Criticism of Gatun Dam.

[Engineering News, December 24.]

We believe we speak advisedly in saying that not one of the published criticisms of the Gatun Dam which have appeared in the newspapers of late have brought forward a single technical fact or argument worth the attention of the engineering profession. It is not difficult, either, to find the inspiration for most of these widely published statements. One of the most pretensions of these prophets of evil, for example, is a French engineer who had his own pet plan for building the Canal. He wanted to transform the Culebra Cut into a lake and excavate it by dredging under water with Lobnitz chisels instead of in the dry. He submitted his fantastic plan to the International Board of Consulting Engineers, which was, of course, compelled to turn it down; and of course the French engineer has lost no opportunity to criticize Panama methods since. There are other critics of Panama who have likewise had pet plans for carrying out the work which have not been adopted, and who have spared no pains since in criticizing the work which is being done there.

We believe that if right standards of professional ethics prevailed, such practices would meet with general condemnation among engineers. In a paper at the Mechanical Engineer's meeting this month on the relations of the engineers to the public, the idea was put forward that it is the duty of the engineering profession to see that the public is properly informed on public questions in which engineering is involved.

It may be too much to hope for this advanced position at present; but it is surely the duty of engineers to refrain from circulating misinformation and misleading the public on engineering questions.

Of course it is not uncommon for inventors, whose schemes are turned down by a concern, to seek revenge by public criticisms; but any man aspiring to the title of engineer ought to be above such practices. Particularly is this the case where an engineer acquires reputation, so that his name carries weight with the public. Such an engineer ought to be particularly careful in his public utterances not to mislead the public in any way.

And if an individual engineer should be careful of his public utterances, much more should an engineering society. It is idle to say that the common disclaimer of responsibility for statements made in papers and discussions before the society really absolves it from responsibility. Actually the society is just as responsible for its publications and for the good or harm they may do as is the editor of a journal.

A remarkable illustration of what may result from carelessness as to obligations of this sort is a paper widely circulated last week by the American Institute of Mining Engineers. The paper advocates a change to a sea-level canal at Panama and advocates it on the ground that the author of the paper has invented some excavating machinery which he believes would so revolutionize the work at Panama that a sea-level Canal could be dug inside of two years.

It is a standing rule with reputable engineering journals of good standing not to print descriptions of new inventions until they are actually built or tested. In this paper, however, published under the auspices of a national engineering society, seven different new machines and methods of excavation are described, not one of which has ever been built or even reduced to working drawings. It is a long road from the first crude ideas of the inventor to actual practical use in engineering work. Would a mining company, after spending millions in the development of a huge ore deposit by shafts and tunnels under advice of the best engineers, suddenly abandon the whole and adopt stripping merely because an inventor brought them some sketches of a new type of steam shovel? It would be vastly absurd for the United States to change the type of canal at Panama because of some undeveloped inventions in excavating machinery.

If the American Institute of Mining Engineers values its reputation as a serious professional society, it ought to promptly withdraw the paper referred to and undo, so far as possible, the harm it has done in misleading the public.

It is not at all difficult, as we have shown above, to account for the alarmist reports concerning the Panama plans and work. Besides the interviews given out by the disgruntled ones, whose ideas did not prevail, we have the undoubted fact that the newspapers give large space to every scare story from Panama and practically ignore statements of responsible engineers giving the real truth. The settling of the waste rock dumped in the south toe of the dam has been magnified into a disaster of ominous portent to the whole work. Stories concerning it has been published in ten thousand newspapers, while hardly one has published the real truth—that the settlement of the rock was expected to occur and saved the needless expense of dredging out the layer of soft mud before dumping the rock.

Of course the Administration has to recognize the effect of such stories upon the popular mind; and it has been decided to send down to Panama with President-elect Taft, a party of well-known engineers who will inspect the entire work and advise the Government whether the present plans and methods being pursued are sound and safe in every particular.

OFFICIAL CIRCULARS.

New Monthly Schedule of Pay Car.

EMPIRE, C. Z., December 31, 1908.
TWELFTH.

Leave Empire at 7.30 a. m.
East La Boca dumps, 8.10 to 9.10 a. m.
Corozal, 9.25 to 10.30 a. m.
Miraflores—East side, 10.45 to 11 a. m.
Miraflores—West side, 11 a. m. to 12 m.
Pedro Miguel 12 m. to 1.30 p. m.
Through Cut, Paraiso to Cucaracha incline, 1.30 to 3.30 p. m.
Cucaracha shops, 3.30 to 4 p. m.
Rio Grande, 4 to 4.30 p. m.

THIRTEENTH.

Leave Empire at 7.30 a. m.
Lirio shops, 7.30 to 7.45 a. m.
Culebra, 7.45 to 8 a. m.
Through Cut, Cucaracha to Las Cascadas, 8 to 11 a. m.
Las Cascadas Round House, 11 a. m. to 1 p. m.
Through Cut north to Bas Obispo (lower level) 1 to 3.30 p. m.
Las Cascadas shops, 3.45 to 4 p. m.
Empire shops and Empire 4.30 p. m.

FOURTEENTH.

Leave Empire at 7.30 a. m.
Enter Cut at Bridge 53, running over high line, paying Santa Cruz and P. R. R. relocation dumps, 7.45 to 9.15 a. m.
Matachin, 9.30 to 10 a. m.
Gorgona shops and Gorgona, 10.30 a. m. to 1 p. m.
Caimito, 1.30 to 3.30 p. m.
San Pablo, 3.30 to 5 p. m.

FIFTEENTH.

Leave Empire at 7 a. m.,
Mindi, 8.15 to 9 a. m.
Lock site, 9.15 to 10.15 a. m.
Spillway, 10.30 a. m. to 12 m.
Bobio, 1 to 2 p. m.
Bahernilla, 2.30 to 4 p. m.
When one of above days falls on Sunday payment will be made on the same schedule as for a week day.

EDWARD J. WILLIAMS,
Disbursing Officer.

Approved:
GEO. W. GOETHALS, Chairman.

Advance Payments for Ice.

COMMISSARY DEPARTMENT,
CRISTOBAL, C. Z., December 26, 1908.

TO ALL CONCERNED:

With the approval of the Chairman, on and after January 1, 1909, the sale of ice to individuals on charge accounts will be discontinued and deposits must be made in advance to secure shipment by all individuals who now have the privilege of charge accounts. Remittances may be made at sender's risk in cash, coupon books, post-office money orders, personal checks on local banks or banks in New York City, and should be addressed to the Deposit Clerk, Commissary Department, Building No. 2, Cristobal. Checks and money orders should be made payable to the Panama Railroad Company.

Purchasers are requested to make their first remittance to cover the estimated supply for at least forty days, and thereafter for a monthly supply from the first to the last day of a calendar month. In case of departure from the Isthmus, the amount on deposit to cover undelivered portion of orders will be refunded.

JOHN BURKE, Manager.

Approved:
EUGENE T. WILSON, Subsistence Officer.

Employees' Twenty-four Trip Tickets.

CULEBRA, C. Z., December 31, 1908.
HEADS OF DEPARTMENTS AND DIVISIONS:

In accordance with list submitted by you, I am forwarding to-day, under separate cover, Employees' Twenty-four Trip Tickets, for distribution among the gold employees in your department.

Please see that the receipt form on first page of ticket is signed by employe upon delivery of ticket and forwarded at once to this office.

In event that any employes in your department have severed their connection with the Commission, or have been transferred to another department, subsequent to submitting list, tickets issued to them must be returned for cancellation, and in the case of transfers, request should be made for new ticket on Form 188 C. E. by the head of department to which employe has been transferred.

In the case of future transfers between the various departments and divisions under the Department of Construction and Engineering, employe may be allowed to retain the ticket originally issued to him. This does not apply, however, to transfers between the Department of Construction and Engineering,

Civil Administration and Sanitation. In the latter case, ticket should be taken up by the head of department to which employe is transferred and request made for new ticket, in order that the transportation may be charged to the proper department.

All undelivered tickets should be reported to this office, stating reason for nondelivery, such as "on leave of absence," etc.

Lost tickets must be reported at once to this office, in order that bulletin may be issued. If not found within 30 days, new ticket will be issued upon regular request.

Timekeepers issuing pay checks should be furnished a list of lost tickets, in order that the rule requiring the surrender of ticket upon termination of service may be waived.

Comps may be filled out before entering train, but must be signed in the presence of conductor, and employes should be instructed to provide themselves with pencil for that purpose, in order to avoid delay in the collection of coupons.

GEO. W. GOETHALS
Chairman and Chief Engineer.

LEGAL NOTICES.

United States of America, } First Judicial Circuit.
Canal Zone.

Notice is given to all concerned to appear at the court house in Ancon, Canal Zone, on or before February 18, 1909, at 9 o'clock, a. m., to claim the following named estates, which the Collector of Revenues seeks to have escheated to the Government of the Canal Zone.

Oscar Olson, a Swede, resident of La Boca, died May 24, 1907, leaving \$1.10 silver.
Peter Gross, resident of Panama, died July 9, 1905, leaving \$6.35 silver.

WALTER EMERY,
Circuit Court Clerk.

United States of America, } In the Third Judicial
Canal Zone. } Circuit, Cristobal.

To any and all persons whom it may concern:
Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 576 hectares of the lands known as "Palo Horqueta and Matias" situated in the Canal Zone, near the villages or hamlets of Lion Hill and Tiger Hill, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$5,760; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

NELSON R. JOHNSON,

Clerk of the Circuit Court, Third Judicial Circuit,
Cristobal, Canal Zone.

In the Circuit Court, Second Judicial Circuit, Canal Zone, Empire, December 26, 1908.

To any and all persons interested:
You are required to enter your appearance in the clerk's office in the above named court at Empire in the said Canal Zone on the 6th day of April, 1909; and to answer the petition of Tom M. Cooke, Collector of Revenues acting under Section 779, Code of Civil Procedure, stating that each of the deceased persons named below died intestate, leaving property in the Canal Zone, and that no heirs have appeared to claim the same; and asking that a day be fixed for inquiries to ascertain whether said estates escheat to the Government of the Canal Zone:

(1) Joseph P. Roche, San Pablo, died on or about May 22, 1903, leaving about 50 acres of growing bananas and personal property at Frijoles and San Pablo.

(2) John J. Farrill, Empire, died on or about July 24, 1905, leaving a pay certificate for \$20 and cash 70 cents at Empire;

(3) George L. Walker, Empire, died on or about September 21, 1906, leaving Isthmian Canal Commission pay certificate for \$92.50, cash \$1.40, and personal belongings of little value;

(4) Laughlin Short, Empire, died on or about March 8, 1905, leaving Isthmian Canal Commission pay certificate for \$2.25 United States currency and personal belongings of little value at Empire;

(5) Unknown man (white), killed on or about August 4, 1905, by Panama railroad passenger train south of Matachin, leaving \$32 Panamanian currency. In the hands of the Treasurer of the Canal Zone at Empire;

(6) Unknown man (white), found dead in Las Salinas on or about January 7, 1908, leaving \$6.5 United States currency and ten cents in Panamanian currency. In the hands of the Treasurer of the Canal Zone at Empire;

(7) Unknown man, skeleton found on or about July 8, 1908, in the woods near Gorgona water shed, leaving \$4.25 Panamanian currency, two keys, one French copper coin, one signet ring, and one pocket knife. In the hands of the Treasurer of the Canal Zone at Empire;

(8) Unknown man (Indian), killed by a Panama railroad train near Mount Hope, leaving \$6.20 Panamanian currency, one silk handkerchief, a silver watch, and leather chain and key. In the hands of Treasurer of Canal Zone at Empire.

(9) Unknown man, killed by a passenger train

near Corozal on or about June 3, 1906, leaving \$1.70 United States currency, and \$1 Panamanian currency. In the hands of Treasurer of Canal Zone at Empire;

(10) Jean B. Stone, Empire, died on or about March 17, 1903, leaving cash \$160.35 United States currency and \$156.50 deposited with the International Banking Corporation, and varied personal effects at Empire;

(11) Joseph Allman, resident at Culebra, died on or about July 20, 1905, leaving \$22 United States currency and \$2 Panamanian currency.

E. M. GOOLSBY,

Circuit Court Clerk.

United States of America, } In the Third Judicial
Canal Zone. } Circuit, Cristobal.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 243 hectares of the lands known as "Calle Bruja" situated in the Canal Zone, near the villages or hamlets of Lion Hill and Tiger Hill, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$2,430; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

NELSON R. JOHNSON,

Clerk of the Circuit Court, Third Judicial Circuit,
Cristobal, Canal Zone.

United States of America, } Circuit Court Second
Canal Zone. } Judicial Circuit.

United States of America, }
Plaintiff, vs. }
Mrs. Lucroisada and hus- }
band, Manuel Corrales, }
Carlos Corrales et al. De- }
fendants. } Summons for Relief.

To Mrs. Lucroisada and husband, Manuel Corrales, and Carlos Corrales:

You are required to enter your appearance in the Clerk's office of the above-named court at Empire in the said Canal Zone within forty days after the next publication of this notice, which shall be at the next regular session of said court after the expiration of said forty days; and to answer the complaint of the plaintiff, a copy of which has been mailed to your last known place of residence.

If you fail to appear within the time aforesaid the plaintiff will take judgment against you by default and demand from the said court the relief applied for in said complaint.

Witness the Honorable H. A. Gudger, Judge of said Circuit this 23d day of December, 1908.

E. M. GOOLSBY,
Circuit Court Clerk.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, January 2, 1908:

	STATIONS.					
	Vigia	Alhajuela	Gambon	Bobio	Gatum (Canal)	G. Junc. (W. Diver)
Height of low water above mean sea level, feet.....	129	92	46	1	0	0
Maximum height above low water, feet:						
Sunday, Dec. 27.....	9.3	7.3	10.7	10.5	6.7	4.7
Monday, Dec. 28.....	5.1	4.7	10.6	12.8	7.4	6.4
Tuesday, Dec. 29.....	12.0	8.7	13.2	13.5	7.2	5.9
Wednesday, Dec. 30.....	6.4	5.5	13.2	15.8	9.2	7.7
Thursday, Dec. 31.....	4.0	4.3	8.0	11.6	8.0	7.1
Friday, Jan. 1.....	2.5	2.8	4.1	8.4	6.1	5.3
Saturday, Jan. 2.....	1.8	2.2	3.5	6.8	4.7	3.9

Rainfall, December 1 to 31, 1908, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum Total in for one day period.	
	one day	for period.
<i>Atlantic Division—</i>		
Porto Bello.....	5.70	25.72
Cristobal.....	2.20	9.07
Brazos Brook.....	1.86	9.48
Gatum.....	2.09	7.95
<i>Central Division—</i>		
Bobio.....	.56	3.40
Taberulla.....	.57	3.25
San Pablo.....	1.10	4.12
Gambon.....	1.70	6.92
Bas Obispo.....	2.50	6.63
Empire.....	1.17	5.09
Culebra.....	.95	4.40
Rio Grande.....	.94	5.53
<i>Pacific Division—</i>		
Pedro Miguel.....	4.15	10.27
La Boca.....	.75	4.61
Ancon.....	1.11	4.16
<i>Upper Chagres.</i>		
El Viejo.....	1.05	3.69
Alhajuela.....	.82	4.02

RESOLUTIONS OF SYMPATHY.

John J. Korp.

Panama Local, No. 19, I. B. S. S. and D. M., has adopted the following resolutions:

WHEREAS, It has pleased Almighty God to remove from our midst our beloved brother, John J. Korp, who departed this life December 12, 1903;

WHEREAS, By this act we have lost a true, devoted and fellow brother, refined in the highest traits of character, whom to know was to love; therefore be it

Resolved, That we, his brothers of Panama Local, No. 19, International Brotherhood of Steam Shovel and Dredge Men, desire to express our sense of bereavement at his untimely death and our sincere sympathy to his family in this their dark hour of sorrow; be it further

Resolved, That a copy of these resolutions be spread upon the minutes of Local No. 19, and a copy be furnished his family, and that a copy be also furnished THE CANAL RECORD and Steam Shovel and Dredge for publication.

S. I. LYONS, II. E. WHYDE, J. I. MAJOR, Committee.

Henry Muller.

At a recent meeting of the Order of Isthmian Conductors held at Las Cascadas the following resolutions were adopted:

WHEREAS, We have learned of the sad intelligence, through Brother John F. McGovern, of the death of our worthy brother, Henry Muller, who lost his life, by drowning, on the ill-fated steamer *Finance*; therefore be it

Resolved, By the Order of Isthmian Conductors, That we have lost a worthy brother, and his family a kind loving father and husband; and be it

Resolved, That our banner be draped for three regular meetings of this lodge, while we mourn his untimely taking away; and be it further

Resolved, That a copy of these resolutions be spread on our minutes, and that a copy of the resolutions be sent to his hereaved family at Newark, N. J., and published in THE CANAL RECORD.

C. C. BARNETT, Committee.

Mrs. Frank E. Shuck.

The following resolutions of sympathy were adopted by Court No. 6, I. O. P. K., at their regular meeting on December 17, 1903:

WHEREAS, The Supreme Being has in His infinite wisdom seen fit to remove from our midst Grace Andrus Shuck, beloved wife of Frank E. Shuck; and

WHEREAS, We feel that Brother Shuck has lost a loving helpmate, her parents an affectionate daughter, and the community a valuable resident; be it now

Resolved, That we extend to Brother Shuck our sincere sympathy in this his hour of bereavement, and to her parents our feeling of deep regret at her untimely end; and be it further

Resolved, That an engrossed copy of these resolutions be presented to Brother Shuck, a copy sent to THE CANAL RECORD for publication, and that they be spread upon the minutes of this meeting.

HOWARD CLARK, FREDERICK SHORT, HARRY A. PORTER, Committee.
Gatun, C. Z., December 17, 1903.

Women's Clubs Meetings.

The Culebra Woman's Club will meet in the club house on Thursday afternoon, January 7. A full attendance is desired. Owing to a misunderstanding it was stated in these columns last week that the Culebra club would hold an election of officers at this meeting. This was an error as the President, Mrs. W. P. Wheeler and Secretary Mrs. W. H. Butler, will continue to

hold office until the regular election in the spring.

The meeting of the Ancon Woman's Club, on Wednesday, January 6, will be the regular business session. The social meeting, January 20, is in charge of the home department, and a lecture on the "Fruits of the Isthmus" will be given by the Commission horticulturist, Mr. Henry F. Schultz.

The Paraiso Woman's Club held its regular meeting on Thursday, December 31, the president in the chair. A number of new members were admitted and the club has now a membership of twenty. A meeting with a program of special interest to women interested in club work, will be held at the club room at 2.30 p. m. on January 7. All women in Paraiso are invited to attend.

Changes in Judiciary.

H. A. Gudger, Associate Justice of the Supreme Court of the Canal Zone, has been appointed by the President, Chief Justice of that Court to succeed Dr. F. Mutis Durán, whose term of office expired January 4.

Wesley M. Owen of LeRoy, Ill., formerly city attorney of LeRoy and a member of the Illinois legislature, has been appointed Associate Justice of the Supreme Court of the Canal Zone, to succeed Justice Gudger.

Box Social and Dance.

A box social and dance will be given at Las Cascadas on Friday evening, January 15, for the benefit of the Roman Catholic Church at Culebra. A special train will be run from both Gorgona and Culebra, leaving each station at 7.30 p. m. Everyone is invited to attend, and ladies are asked to bring boxes. The grand march will start at 8 p. m.

Missing Men.

Information is wanted in regard to H. E. W. Quiney, who was employed by the Commission as steward, from August 10, 1907, to October 21, 1907.

Information is also wanted in regard to Louis Goldman, who was discharged from the position of yard clerk in the Central Division on April 6, 1908.

Any one having knowledge concerning either of these men is requested to communicate with M. B. DePatron, Assistant to the Chairman, Culebra, C. Z.

Information is wanted in regard to B. A. Hoffmann of New Braunfels, Tex., who was formerly employed as an engineer at the cold storage plant at Cristobal. Any one having knowledge concerning him is requested to communicate with H. V. Schumann, New Braunfels, Tex.

Independent Order of Odd Fellows.

Installation of officers of Cristobal lodge, No. 2, I. O. O. F., for the ensuing term will take place at the meeting to be held in the I. C. C. lodge hall, Cristobal, Monday, January 11, at 7.30 p. m. All Odd Fellows of the third degree are earnestly requested to attend.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Colon	P. R. R. Saturday	Jan. 2
Prinz Aug. Wilhelm	H. A. Saturday	Jan. 2
Panama	P. R. R. Friday	Jan. 8
Tagus	R. M. Saturday	Jan. 9
Advance	P. R. R. Thursday	Jan. 14
Prinz Joachim	H. A. Saturday	Jan. 16
Allianca	P. R. R. Wednesday	Jan. 20
Magdalena	R. M. Saturday	Jan. 23
Colon	P. R. R. Tuesday	Jan. 26
Prinz Aug. Wilhelm	H. A. Saturday	Jan. 30
Panama	P. R. R. Monday	Feb. 1
Advance	P. R. R. Saturday	Feb. 6
Orinoco	R. M. Saturday	Feb. 6
Allianca	P. R. R. Saturday	Feb. 13
Prinz Joachim	H. A. Saturday	Feb. 13
Colon	P. R. R. Friday	Feb. 19
Atrato	R. M. Saturday	Feb. 20
Panama	P. R. R. Thursday	Feb. 25
Prinz Aug. Wilhelm	H. A. Saturday	Feb. 27
Trent	R. M. Saturday	Mar. 6

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca	P. R. R. Friday	Jan. 8
Colon	P. R. R. Thursday	Jan. 14
Magdalena	R. M. Tuesday	Jan. 12
Prinz Aug. Wilhelm	H. A. Tuesday	Jan. 19
Panama	P. R. R. Friday	Jan. 20
Advance	P. R. R. Tuesday	Jan. 26
Orinoco	R. M. Tuesday	Jan. 26
Allianca	P. R. R. Monday	Feb. 1
Colon	P. R. R. Sunday	Feb. 7
Prinz Joachim	H. A. Tuesday	Feb. 8
Atrato	R. M. Tuesday	Feb. 9
Panama	P. R. R. Saturday	Feb. 13
Prinz Aug. Wilhelm	H. A. Tuesday	Feb. 16
Advance	P. R. R. Friday	Feb. 19
Trent	R. M. Tuesday	Feb. 23
Allianca	P. R. R. Thursday	Feb. 25
Prinz Joachim	H. A. Tuesday	Mar. 2
Tagus	R. M. Tuesday	Mar. 9
Prinz Aug. Wilhelm	H. A. Tuesday	Mar. 16

NEW ORLEANS TO COLON.

Heredia	U. F. C. Saturday	Jan. 9
Ellis	U. F. C. Saturday	Jan. 16
Parismina	U. F. C. Saturday	Jan. 23

COLON TO NEW ORLEANS.

Parismina	U. F. C. Tuesday	Jan. 12
Heredia	U. F. C. Tuesday	Jan. 19
Ellis	U. F. C. Tuesday	Jan. 26
Parismina	U. F. C. Tuesday	Feb. 2

COLON TO BARBADOS, CALLING AT TRINIDAD.

Tagus	R. M. Tuesday	Jan. 19
Magdalena	R. M. Tuesday	Feb. 2

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., January 6, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Beverley, Vesta	Lohman, Ervin O.
Clark, F. P.	Maxwell, Mrs. L. (photo)
Colchester, Cecil	Maxwell, Olive
Connell, Timothy O.	McLeer, Mrs. Nellie
Delvally, Jas.	McLeod, Mrs. Maud
Fairman, C. P.	Nichols, Fred C.
Findley, Thos.	Peet, E. M.
Gellizeau, J. Zet.	Smith, William R.
Gendreau, H.	Stanley, Mrs. L. P.
Gnauck, E.	Storer, Miss Floss
Gregg, D. D.	Stevens, James E.
Hammur, H. H.	Swanson, Anna
Harrold, Henry H.	Walsh, Mr. and Mrs. James W.
Harper, Mrs. C. O.	Wilkinson, Joseph W.
Hollis, Henry R.	Wilson, L. E.
Kaul, Will	Woodards, Charlie
Kempfer, Lauro	Woodbine, C. A.
Kopp, Albert T.	Wood, J. C.
Lloyd, Howard M.	

The following steamers have recently arrived at La Boca: December 28, *Palena* from Valparaiso; January 1, *Lausing* from Port Harford. Departures were: December 29, U. S. S. *Cotorado* for Talcahuano; December 29, *Indiana* for San Francisco; December 31, *Peru* for Valparaiso; January 1, *Barracouta* for Central America.

WEATHER CONDITIONS, CANAL ZONE, DECEMBER, 1908.

Stations.	Pressure (reduced to mean of 24 hours)	Temperature.				Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.		Date.	Total.	Number of rainy days.	Station average per month.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Date.
Cristobal	29.86	78	84	4	69	15	88	9.07	22	11.93	7.156	n. e.	25	25
Bas Obispo	29.86	77	89	8	64	17	95	6.63	22	8.50	2.824	n. w.	18	26
Ancon	29.84	80	91	22	68	13	89	4.16	22	3.21	1.065	n. w.	10	14



The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

John F. Stevens on the Gatun Dam.

[Letter in the Engineering News, Dec. 31]

The thanks of the engineering profession of the United States are due to *Engineering News* for the editorial comments which appeared in your issue of December 24, on the recent outbreak of yellow journalism in regard to the Gatun dam. It is high time some recognized, qualified, standard authority on engineering questions took up the matter.

This is merely an individual expression, which may be justified by the writer's former connection with the work, by which he can justly be considered to be as well qualified to judge as to the actual conditions, as are some of the "eminent engineers" who are being so widely quoted.

If there have been any lingering doubts in the minds of any engineers as to the practicability of the plans for the Gatun dam, a study of Mr. Saville's report should dispel them. The report is a masterpiece, but will be entirely thrown away on the class of people who are, for reasons entirely apart from the merits of the case, making these attacks.

You are entirely correct in your suggestion that the long down-stream toe of the dam, as planned by the engineers, was a concession to prejudice. So was at least 25 feet in the height of the proposed dam. And the writer had intended, at the proper time, to have taken up the question of a reduction in the cross section before actual construction had begun. It is certain, had private enterprise been financing the work that a less massive structure would have been considered absolutely safe.

The animus of the attack on the canal work lies deeper than any alleged fears as to the practicability of the proposed dam or locks. A recent suggestion in the newspaper which is at the head and front of the agitation, to the effect that "had not the

whole work better be dropped and the money already spent be charged up to profit and loss," is very suggestive. Once such action was taken, the Nicaraguan scheme would come to the front backed again by all the powerful influences which before tried to foist it upon the American people for reasons not hard to understand.

The question of the advisability of building an Interoceanic Canal has nothing whatever to do with the matter. The people have decided they want the canal and they are ready to pay for it. The choice of its location has been wisely made, and the work properly planned. It is in competent hands, and is being executed with a rapidity that surprises even its friends. And the thing to do is to extend to Col. Goethals and his assistants all the encouragement and moral help possible, which the importance of the work demands. And the engineering world will have every reason to be proud of the result when it is an accomplished fact.

JOHN F. STEVENS.

New Haven, Conn., Dec. 26, 1908.

Sub-Aqueous Rock Excavation.

The material for the drill barge to be used in sub-aqueous rock excavation in the Canal between La Boca and Miraflores has arrived on the Isthmus. The purpose of the drill barge is to sink holes in which dynamite can be exploded, shattering the rock into pieces suitable for dredging with dipper or ladder dredges. As the clearing of mud from the rock in the channel between La Boca and Miraflores was begun only recently the barge will not be needed for several months.

The Lobnitz sub-aqueous rock breaker is making ready for its ten-day trial in the prism of the Canal at La Boca.

Horses and Mules in Canal Work.

Only 558 horses and mules are used on the Canal Zone in the service of the Isthmian Canal Commission. They are used chiefly in short hauling, on road work, making deliveries, collecting garbage, and in other sanitary and municipal work. The animals are cared for by the Quartermaster's Department which maintains 12 corrals for that purpose.

The amount of money paid for live stock from May 4, 1904, to November, 1908, was \$115,034, and corral supplies were purchased in the following amounts:

1904 (from May 4).....	\$ 6,150.00
1905	112,332.89
1906	97,211.14
1907	88,824.27
1908 (to Nov. 12).....	110,413.19
	\$414,927.49

Forage is contracted for in six months' supplies, and the recent proposals were so worded that supplies may be delivered either from the Pacific or Atlantic and Gulf coasts. Heretofore most of the forage has come by way of New Orleans. A warehouse to hold a six months' supply has been built

at Mount Hope. A noteworthy economy has recently been effected by the feeding of grass cut for sanitary reasons.

Where stable room is available animals owned by private persons are cared for at \$9 a month for a pony, and \$14 a month for an American horse. In December 104 of these horses were cared for in the Commission corrals.

Distribution of Seed.

Two hundred and fifty packages of vegetable seed, each containing five varieties, and 500 packages of flower seed, in two assortments of five varieties each, have recently been received by the Quartermaster's Department from the United States Department of Agriculture, for free distribution to the "gold" employes in the Canal Zone. Employes desiring to obtain seed, who have not already made application, should do so at once, in writing, to the Chief Quartermaster, at Culebra, stating the kind and quantity of seed desired. Applications will be filled in the order in which they are received.

Mount Hope Printing Plant.

Plans have been approved for a printing plant building to be erected at Mount Hope, in which the printing and stationery work of the Commission and the Panama Railroad Company on the Isthmus will be done. The building will be erected north of the Mount Hope Depot office, will be 195 feet 8 inches in length and 60 feet in width, and will have two wings. The height from the floor to the eaves will be 16 feet. The roof will be of corrugated iron, with a ventilator running the full length and with two skylights, each 6 feet wide, also running the length of the building on either side of the ventilators. The floors will be of pine laid on concrete, excepting in the toilet and engine rooms, where the concrete will not be covered.

Across the north end of the building will be an office 60 feet long and 20 feet wide, separated from the remainder of the main building with a railing three feet high. The entrance to the building will be so arranged that employes and others must pass in front of the office in entering the building. The remainder of the building will consist of one room, a portion of which will be used as a packing and shipping room, part as a composing room and bindery, and part as a press room. The foundations of the building will be made with a view to the placing of two Optimus presses, Nos. 5 and 6 respectively; 1 pony cylinder press; 18 job presses; 2 cutting machines; 3 ruling machines, and 1 folding machine. The part assigned for a press room is 60 feet 4 inches long, and 60 feet wide, and the composing room, bindery, and packing and shipping room will be enlarged or contracted in accordance with the demands made upon these departments.

Around two sides and the office end of the

NOTES OF PROGRESS.

(Continued)

part assigned for the composing room, bindery, and packing and shipping rooms a gallery, 9 feet wide, will be built, which will be used for storage space.

On the east side of the main building and at the north end, a wing will be built for use as a receiving and shipping room. It will be 60 feet 8 inches long, 26 feet wide, and will have a 4-foot concrete platform running out to a railroad siding. In this wing will also be toilet rooms for the office employes and for women. At the south end will be a wing 14 feet long and 51 feet 5 inches wide. It will be divided into a toilet room for "silver" employes, a room for the manufacture of rubber stamps, an engine room, and a stereotyping room.

Cost of Equipment.

From the beginning of the Canal work to November 12, 1908, \$10,792,429.79 was spent on floating equipment, and rolling stock and machinery. A statement by the Chief Quartermaster showing the amount spent each year follows:

Floating Equipment—			
1904.....	\$1,657.39		
1905.....	85,976.00		
1906.....	1,423,457.88		
1907.....	422,165.68		
1908.....	1,241,203.76	\$3,174,460.71	
<hr/>			
Rolling Stock and Machinery—			
1904.....	\$85,150.00		
1905.....	3,142,874.00		
1906.....	1,989,606.00		
1907.....	1,127,332.00		
1908.....	773,007.08	7,617,969.08	
		\$10,792,429.79	

December Record of Track Shifters.

The six track shifting machines in the Central Division moved a total of 510,568 feet, or 96.7 miles of track during December. In the Tabernilla District track shifter No. 5 moved 100,703 feet, or 19.1 miles. At San Pablo and Caimito shifter No. 6 moved 62,546 feet, or 11.8 miles. At Gorgona and Mataclin No. 7 moved 139,697 feet, or 26.5 miles. At Santa Cruz, No. 1 moved 57,392 feet, or 10.9 miles. At Miraflores No. 8 moved 64,880 feet, or 12.3 miles, and at La Boca track shifter No. 2 moved 85,350 feet or 16.2 miles.

Dynamite Explosion at Paraiso.

An explosion of dynamite occurred in Culebra Cut near Paraiso, on Sunday morning, January 10, in which two men were killed and 10 were injured. Saturday evening a blast had been set off in the east hill along the the Cut and Sunday morning a powder gang was set at work under the direction of the Superintendent of Construction, Joseph Little, breaking the rock into pieces small enough to be handled by a steam shovel. This was done by exploding dynamite on the surface of the rock in a manner known to the powder men as "dobeying." Shortly after 9 o'clock a "dobey" of 14 shots was prepared and 13 of the charges were exploded. Thinking that all the charges had been exploded the men went back to where the blast had been set off. Two of them, John Moore and Michael Lee, negroes, were standing over the unexploded charge when it exploded. They were killed.

Joseph Little, Superintendent of Construction, in the Culebra district, was seriously

injured. His skull was fractured, but he was operated on at Ancon hospital, and it is believed that he will recover.

Antonio Delgado, Bolivian; Jesus Cabrera, Spaniard; Elton Hinds, Barbadian; and Job Joseph, Grenadian, are injured, but not dangerously so.

Three other men were taken to Ancon hospital but their injuries are not serious. The other men injured sustained only cuts and slight bruises.

Visit of the Congressmen.

The members of the House Committee on Interstate and Foreign Commerce, and other members of the Congressional party that arrived on the *Allianca* on January 2, returned to the States on January 8. The inspection of Canal work was finished on January 5. Wednesday evening, a smoker was given by the Kangaroos, at Empire, and some members of the party were entertained at dinner at the American Legation. Thursday night a reception was given at the American Legation.

Wednesday morning, afternoon, and night, and Thursday morning and afternoon, the committee held hearings in the President's suite at the Hotel Tivoli. On Wednesday, Major Sibert and Major Harding gave testimony on the foundations of the dam and locks at Gatun; Colonel Hodges, on the subject of lock gates and lock construction; Mr. Rousseau, on the dimensions of naval vessels as related to the size of the locks; Major Gaillard, on Canal excavation with special reference to the Central Division; Chief Justice Gudger, on the judicial system of the Canal Zone; Col. Tom M. Cooke, on the question of leased lands in the Canal Zone; Major Wilson, Chief Subsistence Officer, on all questions relating to the Subsistence Department, including the Commissary.

On Thursday morning Joseph Bucklin Bishop, Secretary of the Commission, testified in relation to the hearing of complaints of employes, to the publication and distribution of THE CANAL RECORD, and to other matters in his department; Major Devol, testified in relation to the Quartermaster's Department, of which he is head. The final session of the Committee on Thursday afternoon was given up entirely to hearing Colonel Goethals, Chairman and Chief Engineer, who testified on the entire work of the Canal and on the subject of Zone Government.

Teachers' Meeting.

The fourth teachers' meeting of the present school year was held in the Ancon school building on January 9, the white teachers meeting in the morning from 8 to 11, and the colored teachers in the afternoon from 1 to 4. Mr. Luis Amenabar of Coquimbo, Chile, was a visitor at the morning meeting. He is on his return to Chile after a visit to the United States where he has been inspecting the public school system and expects to visit some of the schools in the Zone while he is on the Isthmus. After a discussion of the method and benefits of the proposed medical inspection the work of the meeting was a continuation of the work begun the previous month in regard to the method of developing efficiency in oral and written composition. There was a short discussion of the report made by the instructor of Helen Keller as to how Miss Keller learned the significance

and use of language. This report throws light on the natural way of acquiring language.

In the afternoon meeting the following resolutions of sympathy were adopted:

WHEREAS, It has pleased Almighty God, the Sovereign Ruler of the Universe, to call from this world the soul of our dear brother, Stephen Parker Dale, who labored as school teacher and catechist at Mount Hope, for a period of three years; also as one of the teachers of the Cristobal colored school for a period of one year, and who was always of a quiet and genial disposition, and whose death is deeply lamented, be it

Resolved, That we, the colored teachers, and the Superintendent of the Canal Zone Free Public Schools, sincerely condole with the family and relatives of the said brother, Stephen Parker Dale, in their sad and irreparable loss, and be it further

Resolved, That a copy of these resolutions be entered on the minutes of this meeting, a copy be sent for publication in the columns of THE CANAL RECORD, The Chronicle, and The Independent, and a copy be sent to the bereaved family.

Injured Canal Employes.

The bill introduced in the House of Representatives by Mr. Mann of Illinois, providing compensation for injured employes on the Isthmian Canal, which was published in full in THE CANAL RECORD of December 23, has been reported back to the House from the committee with recommendation that it be passed. In returning the bill to the House the committee made the following report:

The act of the last session of Congress, approved May 30, 1908, entitled "An act granting to certain employes of the United States the right to receive from it compensation for injuries sustained in the course of their employment," was specifically made applicable to persons engaged "in hazardous employment under the Isthmian Canal Commission." That act provided for no compensation for injuries to an employe unless said injury shall continue for more than fifteen days. It also forbade any compensation where the accident was due to negligence on the part of the employe injured.

Prior to the passage of the act the Isthmian Canal Commission, under its practice, continued the pay of employes injured in the regular performance of their duties, regardless of the character of the employment, unless the injury was due to gross negligence on the part of the employe. So far, then, as temporary injuries of employes under the Isthmian Canal Commission are concerned, the act does not operate to the benefit of the injured employes, but to their detriment. As the Government in the construction of the Isthmian Canal is engaged much upon the same basis as an ordinary contractor in making arrangements with employes for work, it is considered desirable that the Isthmian Canal Commission may, through its own rules and regulations, provide that employes injured without gross negligence in the regular performance of their duties be retained on the pay roll whether they are detained from labor less than fifteen days or not.

The proposed bill authorizes the Isthmian Canal Commission, under rules to be fixed by it, to grant leave of absence to employes with pay for time necessarily lost as the result of injuries received in the course of employment, not exceeding in the aggregate thirty days per annum. The passage of this bill is urged by the Isthmian Canal Commission and also by the employes of the Government working on the Canal. The bill was prepared by the general counsel of the Isthmian Canal Commission, who appeared before the committee and presented the reasons for its enactment.

Commission Action.

At a meeting of the Isthmian Canal Commission on December 24, 1908, the following action was taken:

Resolved, That for all employes appointed on and after January 1, 1909, the Government rate of transportation on the steamers of the Panama Railroad Steamship Line, allowed employes and dependent members of their families, shall be thirty dollars. Such transportation shall be granted in accordance with the rules prescribed by the Chairman.

The office of District Dental Surgeon, James Grant, was opened for business at Gorgona on Monday, January 11.

DECEMBER HEALTH REPORT.

Improvement in Sick Rate.

ANCON, C. Z., Jan. 9, 1908.

To the Chairman Isthmian Canal Commission, Culebra, C. Z.

Sir: I forward herewith, report of the Department of Sanitation for the month of December, 1908.

The sick rate for December shows a slight improvement over November, it being 25.95 per thousand, as compared with 27.16 per thousand for November.

The death rate for December shows a considerable increase over November. This is mainly due to the fact that the deaths from violence during December show the largest in the history of the work on the Isthmus, being 48.6 per cent of the total number of deaths. Eliminating the deaths from violence, the death rate shows a great improvement over the same period of last year; in December, 1907, there being 56 deaths from disease, with a ratio of 14.69 per thousand, per annum, while in December, 1908, there were but 44 deaths from disease, with a ratio of 12.81 per thousand, per annum.

The malarial cases show a diminution of 214 cases over the previous month; the death rate from this disease remaining practically the same.

The death rate of the Canal Zone, from all causes shows a considerable difference, in favor of the Zone, over Panamanian territory. The Panamanian territory, (Panama and Colon) with a population of 54,472, shows a total of 151 deaths, with a ratio of 33.28 per thousand per annum, while the Canal Zone, with a population of 71,707, shows 124 deaths, with a ratio of 20.75 per thousand per annum.

The rate for the Zone is for both employes and non-employes.

There have been no cases of yellow fever, smallpox or plague upon the Zone, or, in Panama or Colon.

A small epidemic of smallpox has been reported from the country tributary to San Carlos, a small town in Panamanian territory, about 50 miles from Panama City. No spread of the disease from its present location is anticipated.

Very respectfully,

R. E. NOBLE,

Acting Chief Sanitary Officer.

Gatun Dam Facts Perverted.

It seems to be the fate of every great national enterprise undertaken by the United States to be assailed by a more or less numerous and always vociferous, crowd of detractors and prophets of disaster. Such has been, and evidently will continue to be, the fate of the Panama Canal. The latest evidence of this was the altogether misleading statement that the settlement of a small section of the Gatun dam proved that the site for the dam was unstable, and that the structure when completed, must inevitably cave in and let loose the waters of the great Gatun Lake.

From the newspaper point of view, this item, as cabled from Panama, was a most attractive piece of sensationalism; and one of the leading New York dailies has not hesitated to exploit the incident, with all those refinements of the art which are so well understood and remorselessly practised to-day. Interviews were sought with engi-

neers who were known to be opposed to the present lock-and-lake plan of construction as adopted by the Government, and their lurid predictions of what would happen, if the canal were completed along the present lines, were spread upon many a page of the journal in question.

Now, the *Scientific American* is in a position to assure its readers that this subsidence of a small portion of the dam is a matter of no significance whatever, and gives not the slightest reason to suppose that the dam when raised to its full height will not be perfectly stable.—*Scientific American*, Dec. 26, 1908.

EXECUTIVE ORDERS.

Appointment of Justices.

Under authority vested in me by law, and until otherwise provided by law or ordered, H. A. Gudger is appointed Chief Justice of the Supreme Court of the Canal Zone, at a salary of six thousand five hundred dollars per annum.

Effective January 4, 1909.

THEODORE ROOSEVELT.

THE WHITE HOUSE,

December 23, 1908.

[No. 996.]

Under authority vested in me by law, and until otherwise provided by law or ordered, Wesley M. Owen, is appointed an Associate Justice of the Supreme Court of the Canal Zone, at a salary of six thousand dollars per annum.

Effective January 4, 1909.

THEODORE ROOSEVELT.

THE WHITE HOUSE,

December 23, 1908.

[No. 997.]

Improving Panama Railroad.

It has been decided to straighten the line of the Panama railroad between Corozal and Panama. In the 6,000 feet from Corozal to the La Boca "Y" there are at present five curves. The reconstruction which will begin immediately, will eliminate three curves, will reduce the sharp curve at Camp Diablo from 9 to 4 degrees, and will take out a total of 110 degrees of curvature, at the same time making the line 100 feet shorter and giving good vision at all points. The economy in operation which the new line will effect has been computed as justifying a capitalization of \$56,000 at 4 per cent and the work will cost only \$36,000. This is on the permanent line.

Twenty-Fourth Victim of Bas Obispo Explosion.

Simeon Osborn of Deersland, St. Michael's, Barbados, who was injured in the dynamite explosion at Bas Obispo, on December 12, sustaining a fracture of the spine and a fracture of the left thigh, died at Ancon Hospital on January 8. He was 23 years of age, unmarried, and had resided on the Isthmus four years. His death is the twenty-fourth resulting from the Bas Obispo explosion.

The sea-going suction dredge *Culebra* has been beached at Perico Island and is undergoing general overhauling. It has been in service without extensive repairs for a year. From 15 to 20 days will be consumed in the overhauling and repainting.

DECEMBER DREDGING.

Wet Excavation in December—New Record for Pipe Line-Suction Dredges.

The total amount excavated by the dredges in December was 1,466,755 cubic yards. Of this amount, only 1,438,323 cubic yards are included in the official figures of Canal excavation. The first statement of dredging in the Pacific Division gave the amount excavated as 675,766 cubic yards, but later returns show that the amount excavated actually was 750,136 cubic yards.

In the Atlantic Division the dredges at work in the entrance at Limon Bay are striking harder material as they advance, and it is believed that they will be unable to make such good records in the future as they have been making in the past few months. The sea-going suction dredge *Ancon* will soon leave the outer channel and begin work in the harder material inside the coral reef. Excavating harder material and making longer runs will probably reduce her output.

Dredge No. 85, in the nineteen days that it was working in the prism in Limon Bay, excavated 119,000 cubic yards, an average of 6,263 cubic yards a day. It was excavating in favorable material. This is the best record so far made on the Canal work for a dredge of this type—20-inch pipe-line suction. This dredge is now working its way into the chamber for the south or lower locks at Gatun, to excavate 400,000 cubic yards. In this work it excavated 18,934 cubic yards before the close of the month.

The dredges of the Atlantic Division made the following records in December:

DREDGES.	Cubic Yards.		
	Earth.	Rock.	Total.
20-inch suction, No. 82	28,432		28,432
20-inch suction, No. 85	137,934		137,934
Sea-going suction, Ancon	315,250		315,250
Ladder, No. 1	113,501		143,501
Ladder, No. 6	29,259	20,432	49,691
Dipper, Mindi	30,235	11,576	41,811
Total	684,611	32,008	716,619

The records of the dredges in the Pacific Division were as follows:

DREDGES.	Cubic Yards.		
	In prism.	Outside prism.	Total.
Dipper Dredge	51,980		51,980
Ladder, Mole	3,560	105,870	109,430
Ladder, Gopher	114,962		114,962
Ladder, No. 14	58,132		58,132
Sea-going suction, Culebra	357,801		357,801
20-inch suction, Sand-piper	57,831		57,831
Total for month	644,266	105,870	750,136

The sea-going suction dredge *Culebra* was working in the outside channel at La Boca and was excavating mud and a small amount of rock. The sea-going dredge *Gopher* excavated in the outside channel and also in the channel above the La Boca wharf, the material being principally mud. The ladder dredge *Mole* was at work in the channel and in deepening the approach to the shipways. In the channel to the shipways the excavation amounted to 105,870 cubic yards. Ladder dredge No. 14 and the dipper dredge were working in the Canal channel above the wharf. The dipper dredge was excavating both mud and rock.

SOCIAL LIFE OF THE ZONE.

Meeting of Canal Zone Federation of Women's Clubs.

Arrangements for the January meeting of the Canal Zone Federation of Women's Clubs have been completed. The president, Mrs. Lorin C. Collins sailed from New York January 8, on the *Panama*, accompanied by Mrs. John D. Sherman, secretary of the General Federation of Women's Clubs, who is coming in order to be present at the convention.

The meeting will take place at the Hotel Tivoli, Ancon, on January 30, beginning with a business session at 9.30 a. m. Details in regard to the transportation of delegates and other club members will be given as soon as they are determined upon. Each club is entitled to a representation of four delegates and alternates, and all women who are interested in the woman's movement are urged to be present at the meetings. The social session in the afternoon will be of special interest. Preparations have been made by the entertaining club to provide for the comfort of the visiting women during the day.

The president of the General Federation of Women's Clubs in the United States, Mrs. Philip North Moore, has accepted the invitation of the Zone Federation to be present at the January convention, as the guest of the Canal Zone Federation of Women's Clubs. She will arrive on the Isthmus on January 26. Mrs. Moore has been associated with public work in her home city, St. Louis, Mo., since 1890. She is actively interested in the St. Louis Training School for Nurses, and is a member of the board of directors and chairman of District Nurse work, in which she has been actively interested since its inception. She is vice-president of the St. Louis School of Philanthropy, and is a charter member of the Wednesday Club of that city, having been president and director from 1892 to 1896. Her interest in music led her to become one of the principals in the formation of the Musical Club, and she is also interested in the St. Louis Symphony Society. Mrs. Moore is one of the three alumnae trustees of Vassar College, from which institution she was graduated in 1873, and has served two terms as president of the National Association of Collegiate Alumnae. She was at one time president of the Missouri State Federation of Women's Clubs. Her association with the General Federation is of long standing. She was corresponding secretary for four years, treasurer for two years, and first vice-president for four years. At the biennial convention held in Boston in June, 1908, she was elected president of that organization. Mrs. Moore has travelled extensively both in the United States and in Europe. She will be accompanied on her visit to the Isthmus by her daughter who is a student at Vassar College.

Another visitor who will be present at the convention in January, as the guest of the President of the Zone Federation, is Mrs. John Dickenson Sherman of Chicago. Mrs. Sherman has served since 1902 as recording secretary of the General Federation, and is now second vice-president. She is a member of the faculty of the John Marshall Law School in Chicago where she gives instruction in parliamentary law. She is parliamentarian of the Illinois State Federation and is often

called to act in that capacity in various state and national organizations. Her book on parliamentary law has reached its fifth edition and is the adopted authority in many organizations.

The Ancon Woman's Club entertained the women of the Congressional party at the meeting on January 6. It was the regular quarterly business meeting of the club. The visitors having expressed their interest in the work of the Zone clubs and wishing to know something of what is being done, the regular business was transacted without deviation from the usual routine. The president gave a short address of welcome and outlined briefly the aims and efforts of the club and this was followed by the reports of chairmen of departments. Songs were interspersed by Mrs. Frank M. Roberts of Pedro Miguel and Mrs. Charles W. Boxer of Ancon with Mrs. Orenstein at the piano. In addition there was a five-minute talk on the history of the organization of the Zone clubs and their general purpose. The program was followed by a short recess during which refreshments were served by the social committee. Just before 4 o'clock the visiting ladies were obliged to take their leave in order to attend a reception which was given at that hour by the President of the Republic of Panama and Mrs. Obaldia.

The club resumed its business meeting when matters of importance were presented. An effort is being made to secure permanent quarters for the club and the committee made a favorable report on the work that has been done in this direction. It is hoped to have provision made for the club library, and special equipment for the art classes which are to be organized in connection with the art department. A meeting in the interest of this department was held at the home of the chairman, Mrs. R. W. Fenn, on Saturday afternoon, January 9. The home department announced its program meeting for January 20, also programs arranged for later meetings, one of which will be on "Native dishes and how to prepare them." The educational and literary departments announce their meetings for the next four weeks as follows: January 13 at the residence of Mrs. George L. Campen, a review of the history of Rome, religions of early Romans, and other subjects; January 27, the social life of ancient Rome; February 9, the greatest romance of ancient Rome, and February 24, Rome's bequest to modern times. At each of these meetings there is a fifteen-minute drill in parliamentary law. The philanthropy department continues its monthly excursions to the various institutions in Panama. Letters of thanks and acknowledgment of gifts from the superintendent of the Palo Seco leper colony and from individual inmates of the home for the aged were read by the chairman.

The Paraiso Woman's Club entertained the women of the community at a reception on Thursday afternoon, January 7, there being about 60 guests present. The club rooms were decorated with palms and bunting and cut flowers. A mixed program was given, consisting of piano solos by Mrs. Montgomery, Miss Margaret Penman, Miss Maisie Blount, and Miss Bertha McCombs; songs by Mrs. Wm. Lowe and a recitation by Mrs. L. M. Vacher, and an informal talk on the clubs on the Isthmus. Refreshments, ice cream and cakes were

served at small decorated tables. Miss Lulu Grobe was chairman of the committee on arrangements and a large number of club members acted as her assistants. Guests from Pedro Miguel and Las Cascadas were present.

The Cristobal Woman's Club gave its annual complimentary concert in the clubhouse on Wednesday evening, January 6, before a well filled house. On the program were Mrs. E. Lewis Baker, Mrs. Otis Biddel, and Mr. Muller with songs; Mrs. Frank Ullrich piano, Miss Ruby Delgarde, violin. The Cecilian chorus, consisting of club members, was heard for the first time in three numbers and a trio of Italian musicians gave several selections on stringed instruments.

The Gorgona Dramatic Club repeated its performance of the comedy "The Doctor" on Thursday evening, January 7, before an audience of the residents of Gatun, San Pablo and Tabernilla which overflowed the entertainment hall of the Commission clubhouse at Gorgona. The farce was received with interest and amusement. At the close of the performance the guests from the Line gave an expression of their appreciation and enjoyment by hearty applause and a vote of thanks. The performance was entirely complimentary to out of town visitors, although a small number of Gorgona residents were also present. The dramatic club, which is a permanent organization, has under preparation a rural drama entitled "Down in Maine."

The Gorgona Woman's Club has preparations under way for an entertainment to be given about the end of February.

The Las Cascadas Woman's Club held its semi-annual election of officers on January 7, with the following result: President, Mrs. J. E. Martin; first vice-president, Mrs. F. L. Crosby; second vice-president, Mrs. T. G. Williamson; secretary, Mrs. W. D. Stanton, treasurer, Mrs. H. H. Doylan. The entertainment committee appointed for the current month is Mrs. A. N. Naylor, Mrs. D. Watts, Mrs. T. J. Grimmison, and Mrs. F. L. Crosby; visiting, Mrs. T. G. Williamson, and Mrs. Charles R. Lingo. Delegates to the Federation meeting were elected and the usual business disposed of.

The Pedro Miguel club held its business meeting on Wednesday, January 6. Arrangements for an entertainment will be made shortly. The social meetings are well attended. On the evening of January 20 Mr. J. W. Holland will give an entertainment consisting of monologues and impersonations in the club rooms, one-half the proceeds of which will be donated to the Woman's club.

Evangelistic Meetings.

The executive committee of the Canal Zone Christian Federation held its meeting on Sunday afternoon, January 3, at Empire, where final arrangements were made for the Munhall evangelistic meetings which began in the Commission chapel in Empire on Sunday, January 10. Dr. L. W. Munhall, with his "gospel singer," John J. Lowe, arrived Friday, January 8, on the *Colon*, and will remain on the Isthmus about six weeks. He will hold services in Empire, Gorgona, Culebra, Cristobal, Gatun, Las Cascadas and, if time permits, in several other towns. Dr. Munhall is a well known evangelist, and a very forceful speaker.

LABOR PROBLEMS.

Laborers Who Prefer "The Bush" to Commission Quarters.

Supplementing the statements of the Chief Subsistence Officer published in THE CANAL RECORD of December 30, 1908, in regard to the operations of the Commission hotels and messes, the following comments by the Chief Quartermaster are published:

The following statistics in regard to the situation as it presents itself at the present time are furnished, including both Isthmian Canal Commission and Panama railroad employes:

	No. of West Indians actually at work.	No. of same employed by the Commission.	No. in Com. h. and P. R. R. quarters.	No. not in Com. or P. R. R. quarters.
1907—				
November 1.....	20,655	25,199	11,920	13,279
1908—				
November 1.....	19,811	21,164	7,569	16,600
October 1.....	19,932	21,317	7,889	16,428
September 1.....	21,122	25,768	9,434	16,334

From the above it will be seen that 3,321 more West Indians were living in the "bush" on November 1, 1908, than on November 1, the year previous. Should the present rate of transfer from Isthmian Canal Commission houses to villages continue, there would be no West Indians in Commission houses at the end of two years. This of course is taking an extreme view of the matter, but it must be admitted that at the present time a population of 16,600 West Indian employes living outside of Commission houses enters into the problem of sanitation.

It is believed that the existing conditions result from the evident preference of the West Indian for a home of his own, no matter how crude and unsanitary. This is not unnatural, viewed from a broad standpoint, and the West Indian is only following the instinct inherent in all classes of people for domestic life.

There are three viewpoints of this matter—that of the Sanitary Department, that of the Quartermaster's Department, and that of the Subsistence Department.

Sanitary Department—Sanitary regulations were promulgated as early as January 25, 1905, under Ordinance 1. The gist of the rules governing the inhabitants of villages is found in the "Notice to Owners and Tenants," posted in the villages, and which is as follows:

Within 24 hours you are required to remove and bury all bottles, tin cans and such useless articles lying around your premises as will hold water; also to burn all paper and old clothing scattered about.

You are further warned to keep said premises in a sanitary condition at all times, and never to allow the above-mentioned articles to accumulate on said premises.

Disregard of this notice will be considered a violation of sanitary regulations, and will be dealt with according to the laws of the Zone.

The difficulty presented here would appear to lie in the enforcement of rules, rather than in their formulation. The population is widely scattered and strict enforcement of compliance with rules would of necessity require house to house visits at very frequent intervals, and insistence on obedience.

Quartermaster's Department—This deals with the subject of labor and quarters. Adequate quarters are available for this class of labor, and the continued movement to the "bush" only vacates quarters, creating no difficulty. It has been authoritatively stated that the physical condition of laborers subsisting outside of Isthmian Canal Commission kitchens and messes, is not on a par with that of those subsisting in the kitchens and messes. How much this actually re-

duces effectiveness in the performance of work is not known, perhaps not to a very great extent. This was undoubtedly true two years ago, or even a year ago, but it is doubtful whether it is entirely applicable at the present date. Branch commissaries are established at practically every point in the Zone, and all laborers have access to them. Foodstuffs in the outside markets are considerably cheaper, facilities for housing the laborers outside are better, and a large proportion of the West Indians have brought their women over, and are better cared for than they were at home.

A very decided advantage is presented to the Quartermaster's Department from a stable population reducing almost entirely the necessity for any recruiting. There has been allotted for the current fiscal year \$288,604.68 under "Incidental Expenses," the major item being for recruiting. There has been expended during the four months ended October 31, for recruiting only \$57,387.07, of which \$40,097.06 has been collected, leaving only \$17,290.01 as the actual expenditure. Under date of November 7, 1908, the Acting Chairman was informed by this office that there will probably remain \$188,604.68 unexpended from this appropriation at the end of the fiscal year; this with the request to divert \$40,000 to other purposes.

The appropriation, therefore, for one year, will probably cover two years or more. This is a very decided reduction in expenses. Another advantage of a permanent force in the Canal Zone is that the men became accustomed to the work, fitted into certain places—or in other words, localized, creating a much more efficient force than would a shifting population to and from the West Indies.

Subsistence Department—The matter pertaining to the Subsistence Department are presented by letter from the Subsistence Officer under date of November 16, 1908, who states:

The attendance in the messes has been falling off from about 4,000 per day the first of August to 3,400 the first of November; the kitchens have been falling off from 6,000 the first of July to 4,000 the first of November.

Under date of September 2, 1908, the Chairman issued instructions that previous instructions from this office requiring that all West Indians show a meal check before they were provided with sleeping quarters, should be rigidly enforced—this with a view to compelling the laborers to eat at the kitchens. It was thought at the time that the enforcement of this order would have the effect of increasing the patronage of the kitchens by about 1,000. The results show it had the opposite effect. As soon as it was enforced, about 1,600 of the laborers went into the "bush" altogether, neither eating nor sleeping in Commission houses. It is believed from the report of the Subsistence Officer that a method of feeding West Indians by sale from the commissaries instead of by messes, can be met, if it is definitely understood that such action is sanctioned.

In conclusion, it is my belief that the only real difficulty presented is that pertaining to the Sanitary Department. The Quartermaster's Department and the Subsistence Department can arrange the quarters and food to fit the circumstances. I am also of the opinion that the time to prevent the West Indians living in the "bush," has passed. The situation is not theoretical, but an accomplished fact, and it must be dealt with as such. It is not believed that some 16,000 laborers could be driven from their homes into Commission quarters without labor trouble serious enough to interfere with the construction of the Canal.

In his report for November, the Chief Quartermaster states that 345 additional West Indians left Commission quarters dur-

ing the month, and presumably have moved to native villages or the "bush." Notwithstanding this continued movement the number of cases of malaria among employes admitted to the hospitals has decreased and was lower in November than in any month since August, although the total force has remained practically stationary. The number of cases of malaria among employes admitted to the hospital in August, September, October, and November, of this year, and 1907, was as follows:

Month.	1907.	1908.
August.....	2,181	1,525
September.....	1,811	1,410
October.....	1,596	1,822
November.....	943	1,086

These figures show that the present measures of sanitation extended to the native settlements and to the inhabitants in the "bush" are proving effective in controlling malaria there.

PERSONAL.

Commissioner Jo C. S. Blackburn and family, Judge L. C. Collins and family, and Judge Wesley M. Owen, are passengers on the *Panama*, due at Cristobal on January 14.

Capt. Geo. M. Hoffman and family of Gatun, returned to the Isthmus on the *Colon* on January 8.

Obituary.

Bert Gumble, 35 years old, of Pittsburg, Pa., died at Colon Hospital on January 1. He had lived on the Isthmus for three years and eight months. Mr. Gumble was unmarried and his nearest relative is his brother, J. A. Gamble, who resides at 316 East 31st street, Chicago, Ill.

J. H. Petry, an American, 61 years old, died at Ancon hospital on January 5. He had been on the Isthmus for three years; was married, and his widow lives at Empire, C. Z.

Missing Man.

Information is wanted in regard to Herman H. Dell, who voluntarily resigned from the position of seaman in the Atlantic Division on June 15, 1908. Anyone having knowledge concerning him is requested to communicate with Mr. J. A. Moore, care of Panama Railroad Company, Ancon, C. Z.

Red Cross Society.

All persons desirous of becoming members of the Canal Zone branch of the International Red Cross Society are requested to send their names to Maj. C. A. Devol at Culebra, at once, in order that an organization may be perfected before the arrival of Mr. Taft, who is expected the latter part of this month. Sixty persons have already signified their intention of becoming members.

Religious Services at Las Cascadas.

Religious services will be held in the Commission chapel at Las Cascadas every Sunday afternoon at three o'clock. Rev. John W. Holland, Commission chaplain at Culebra, will be the regular preacher.

A requisition has been made for 1,000 tons of open hearth steel rails to be used on the relocation of the Panama railroad. This amount will lay ten miles of tracks, and will furnish about a six months' supply to the construction gangs.

LETTERS FROM THE LINE.

(Communications to this column must be signed in each instance with the name and address of the writer.)

Medical Service.

THE CANAL RECORD:

Would be very grateful for information as to whether I am entitled to a medal under the following conditions: Entered the service of the Panama railroad on the Isthmus, January, 1907, silver roll; gold roll October 1907; transferred to Electrical Department Isthmian Canal Commission, July, 1903; service has been continuous. No doubt this same condition applies to a number of employes who would be glad to know if their silver service is to count.

AMERICAN CITIZEN.

[Continuous service on either the gold or the silver roll or on both will count].

To Attend Inauguration.

THE CANAL RECORD:

Lieut.-Col. Guthrie has authorized the use of your columns for the furthering of a scheme to have the Canal workers represented at the inauguration of President Taft.

It is hoped that during their stay at Washington they will be taken care of by the Inaugural Committee. They will take their leave at that time and after the inauguration will be at liberty to go to their homes or wherever they wish.

It is desired to have all classes and occupations represented, but those who have had service in the Army or who have attended military colleges will be given preference.

Any one interested should communicate with the undersigned, stating age, position, date next leave is due, and service with any military or semi-military organization.

PERCY T. SEALY,

Chief Elec., P. R. R. Mfg. Plant, Cristobal, Cristobal, C. Z., December 14, 1908.

Card of Thanks.

THE CANAL RECORD:

I wish to express my heartfelt gratitude and thanks to all of my friends and brethren of the different fraternities, who rendered me so much comfort and sympathy in my sad bereavement, and also for the beautiful floral offerings.

FRANK E. SHUCK.

Gatun, C. Z., December 30, 1908.

Gatun Court No. 6, I. O. P. K.

The following officers were chosen at the first annual election of Gatun Court No. 6, I. O. P. K., on December 31, 1908: Judge, S. B. Adkins; prosecuting attorney, W. H. Hausel; defending attorney, C. O. Hobson; chaplain, E. F. Braun; comptroller, C. P. Shea; sheriff, R. E. Hopkins; clerk, F. E. Shuck; inner guard, R. G. Henning; deputy sheriff, C. R. Hughes; delegates to supreme court, G. P. Ball, H. A. Porter, and G. C. Peterson; supreme jurors, G. P. Ball and L. P. Stanley.

Notice to Shovel Men.

The regular meeting of the I. B. of S. S. and D. M. will be held in the I. C. C. lodge hall, Empire, on Sunday, January 17, at 2.30 p. m.

Brotherhood of Locomotive Engineers.

Regular meeting of Division 756, Brotherhood of Locomotive Engineers will be held at Las Cascadas on Sunday, January 17, at 1 p. m.

In Favor of the Commissaries.

CRISTOBAL, C. Z., Jan. 4, 1909.

THE CANAL RECORD:

At a mass meeting held in Cristobal, Saturday evening, January 2, it was resolved that a copy of the appended resolution be submitted to the President of the United States, the Secretary of War, the Isthmian Canal Commission, to all employes of the Isthmian Canal Commission and Panama Railroad on the Canal Zone, and to THE CANAL RECORD.

S. C. POTTS,
Secretary.

WHEREAS, It has come to our notice that certain bankers and business men established in the cities of Colon and Panama, in the Republic of Panama, are circulating for signature a memorial addressed to the President of the United States, in which memorial it is asked, among other things:

(1) That the commissary stores should import only such articles as are authorized to be sold in post offices in the United States;

(2) That the Commissary stores should sell merchandise only to the employes of the United States and should supply only victuals to the employes of the PANAMA RAILROAD;

(3) That the Isthmian Canal Commission should not be permitted, directly or through the Panama Railroad Company to enter into competition with native enterprises; and

WHEREAS, It is apparent that if the prayer of such memorial were granted by the President and Congress of the United States, there would ensue a great curtailment of the commissary privileges now enjoyed by the Americans resident in the Canal Zone; and

WHEREAS, It is apparent that the request "That the Isthmian Canal Commission should not be permitted, directly or through the Panama Railroad Company to enter into competition with native enterprises," is intended to accomplish the discontinuance of the operation by the Commissary of the laundry, the bakery, and other similar departments of the Commissary; and

WHEREAS, Past and present experience leads the American employes of the Isthmian Canal Commission and the Panama Railroad Company to the conclusion that the operation of all the various departments of the Commissary, without any curtailment to their continued physical well being, happiness and efficiency, and that the proposals of the Panamanian merchants are made solely with a view to the enrichment of such merchants at the expense and to the detriment of the employes of the Isthmian Canal Commission and Panama Railroad Company; and

WHEREAS, The employes of the Panama Railroad Company are an inherent and essential portion of the organization used for the construction of the Canal; and

WHEREAS, The Commissary Department is an institution in the nature of a co-operative mercantile establishment rather than a governmentally-owned concern, its shareholders being the employes of the Isthmian Canal Commission and Panama Railroad Company; such shareholders by their purchases from the Commissary; paying all the expenses of operation, including the construction of plant; Now, therefore, be it

Resolved, By the employes of the Isthmian Canal Commission and the Panama Railroad Company, resident in Colon and Cristobal, that we respectfully protest against any action on the part of the Government of the United States or the Isthmian Canal Commission which will result in curtailing in any degree the Commissary privileges now enjoyed by us, and be it further

Resolved, That all employes of the Isthmian Canal Commission and Panama Railroad Company be communicated with, to the end that there may be made a united protest against the proposals of the merchants and bankers of the Republic of Panama, and be it further

Resolved, That a copy of these resolutions be forwarded to the President of the United States, the Secretary of War, the Isthmian Canal Commission and the Congressional Committee now visiting the Isthmus of Panama.

DR. M. E. CONNOR, I. C. C. Health Officer, Colon and Cristobal.

W. O. ADAMS, I. C. C. Dry Dock.
E. L. HUBBARD, P. R. R. Storekeeper.
I. A. GILES, I. C. C. District Quartermaster.
DR. LLOYD NOLAND, I. C. C. Surg., Colon Hospital.
LOUIS LOEFFLER, Clerk, P. R. R. Commissary Dept.
M. F. SWAN, Clerk, I. C. C. Subsistence Dept.
M. E. ENGLANDER, P. R. R. Locomotive Engineer.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

Appended is the score made in the duck pin tournament for singles and doubles held at the Commission clubhouse at Cristobal between the four Young Men's Christian Associations on the Isthmus on January 1, 1909:

SINGLES.		
Association	Name of Contestant.	Total.
Culebra	Oliver, gold medal.	284
Cristobal	Morrill, silver medal.	282
Empire	Short, bronze.	278
Empire	Thatcher	274
Empire	Huson	266
Cristobal	Louch	266
Cristobal	Birdge	265
Empire	Durand	264
Cristobal	Birte	263
Empire	Gorham	257
Cristobal	Simka	256
Gorgona	Davis	249
Empire	Schmahl	241
Cristobal	McCormack	237
Empire	Gustavson	236
Culebra	Vogel	234
Empire	Bardelson	234
Cristobal	Robertson	225
Gorgona	Weiser	219
DOUBLES		
Empire	Huson, gold medal.	316 / 576
	Gorham, gold medal.	260 /
Cristobal	Birte, silver medal.	284 /
	Louch, silver medal.	282 / 566
Culebra	Vogel, bronze medal.	288 /
	Oliver, bronze medal.	246 / 534
Empire	Gustavson	248 /
	Durand	275 / 523
Gorgona	Weiser	241 /
	Davis	264 / 505
Empire	Schmahl	245 /
	Thatcher	249 / 494
Gorgona	King	251 /
	Loughery	221 / 482
Empire	Bardelson	231 /
	Shore	220 / 481
Cristobal	Birdge	262 /
	Morrill	254 / 476
Cristobal	Bullard	219 /
	McCormack	236 / 455
Cristobal	French	206 /
	Hertel	235 / 441

Mr Huson of Empire received a gold medal for the highest individual score of 124.

Dance at Paraiso.

The Paraiso Court No. 5, Independent Order of Panamanian Kangaroos, will give a dance on Saturday night, January 16th, at their hall in Paraiso. All Kangaroos of this and sister courts are cordially invited to attend.

Order of Isthmian Conductors.

The next regular meeting of the Order of Isthmian Conductors will be held at Las Cascadas, January 17 at 9 a. m. By direction of the Chief Conductor, all members are instructed to be present. Important business.

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., January 13, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Balmakam & Son	Ives, Jesse R.
Beelan, Wm. H.	Johnson, Mrs. Jul
Berry, Enoch S.	Johnson, Geo. A. (pkg.)
Biseau, P. A.	Kemp, Mrs. J.
Bradly, Carl C.	Kinder, Elmer
Brinkley, R. C.	Lawrence, W. S. (pkg.)
Buck, L. D.	Lee, James
Butterbaugh, Frank	Lipsey, Mr. Thos. C. L.
Carlo, Faustino Fenela	Lord, Charles
Clemens, Walter	Marbony, J.
Cook, Miss Dorothy—2	Marshall, Carry
Craig, E. E.	Martin, Miss Nell
Crosby, F. L.	Minor, Ernest
Dow, F. H.	Parker, Fred E.
Dressler, Mr. & Mrs. John M.	Patheier, Jno. A.
Dugand, Jean	Perkins, Samuel
Dullahan, Chas.	Petrikim, M. C.
Dyer, Alfred D.	Poole, Hugh
Eichorn, G. M.	Pruyne, Allen
Fanger, Joe	Robicheaux, Mrs. J. P.
Fors, Daniel	Surgeon, Cecil
Frank, Sol	Thayer, Albert (pkg.)
Gemsinger, George—2	Thayer, Mrs. Tra
Gill, F. A.	Tyers, Charles
Grand Keeper of K. & S.	Vasquez, Isaac A.
Knights of Pythias	Viall, H. H.
Gray, Mrs. W. W.	Walker, John A.
Harwood, Robert	Wilber, D. H.
HeRoy, Wm.	Willett, Henry F.
Hines, William P.	Wise, J. C.
Huff, T. T.	Young, Wilfred

OFFICIAL CIRCULARS.

Employment of Panamanians.

CULEBRA, C. Z., January 4, 1909.

CIRCULAR No. 230

The following Executive Order of the Acting Secretary of War is published for the information and guidance of all concerned:

EXECUTIVE ORDER.

By authority of the President it is ordered:

That the Executive Order of February 5, 1908, restricting the personnel of gold employees to American citizens be amended to read as follows:

On and after this date, the employment by the Isthmian Canal Commission of skilled laborers, clerks, and all others who have heretofore been known as gold employees of the Commission shall be restricted to American citizens and citizens of Panama, except where American or Panamanian labor of service of the character required is not available.

Foreign employes now upon the pay-rolls of the Commission shall not be affected by this order, save that in the event of any reduction of force preference shall be accorded American citizens and citizens of Panama.

ROBERT SHAW OLIVER,
Acting Secretary of War.

WAR DEPARTMENT.

Washington, D. C., December 23, 1908.

GEO. W. GOETHALS,
Chairman.

Checks on New York Sub-Treasury.

DISBURSING DEPARTMENT,
EMPIRE, January 8, 1909.

CIRCULAR No. 48.

In future, when an employe on the gold roll desires to send money to the States, a Disbursing Officer's check on the Sub-treasury, New York, will be given for the entire net amount due for the month in question, upon proper request being made upon this office, this check being given as stated only for use in sending money away from the Isthmus and not for use here.

A list of checks desired should be given in a letter addressed to this office and attached to the pay roll. Requests otherwise received will not be honored.

EDWARD J. WILLIAMS,
Disbursing Officer.

Approved:

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Quartermaster's Department Changes.

CULEBRA, C. Z., January 4, 1909.

TO WHOM CONCERNED:

Effective this date: The Ancon and La Boca Districts of the Quartermaster's Department are consolidated, and placed in charge of Mr. B. C. Poole, District Quartermaster, with headquarters at Ancon.

Effective this date: The San Pablo and Tabernilla Districts of the Quartermaster's Department are consolidated, and placed in charge of Mr. J. H. Humphrey, District Quartermaster, with headquarters at Tabernilla.

C. A. DEVOL,
Chief Quartermaster.

LEGAL NOTICES.

In the Circuit Court, Second Judicial Circuit, Canal Zone, Empire, December 26, 1908.

To any and all persons interested:

You are required to enter your appearance in the clerk's office in the above named court at Empire in the said Canal Zone on the 6th day of April, 1909; and to answer the petition of Tom M. Cooke, Collector of Revenues, acting under Section 779, Code of Civil Procedure, stating that each of the deceased persons named below died intestate, leaving property in the Canal Zone, and that no heirs have appeared to claim the same; and asking that a day be fixed for inquiries to ascertain whether said estates escheat to the Government of the Canal Zone:

(1) Joseph P. Roche, San Pablo, died on or about May 22, 1908, leaving about 50 acres of growing bananas and personal property at Frijoles and San Pablo;

(2) John J. Farrill, Empire, died on or about July 24, 1905, leaving a pay certificate for \$20 and cash 70 cents at Empire;

(3) George L. Walker, Empire, died on or about September 21, 1906, leaving Isthmian Canal Commission pay certificate for \$92.50, cash \$1.40, and personal belongings of little value;

(4) Lauchlin Short, Empire, died on or about March 8, 1905, leaving Isthmian Canal Commission pay certificate for \$2.25 United States currency and personal belongings of little value at Empire;

(5) Unknown man (white), killed on or about August 4, 1905, by Panama railroad passenger train south of Natachin, leaving \$32 Panamanian currency. In the hands of the Treasurer of the Canal Zone at Empire;

(6) Unknown man (white), found dead in Las Tabanas on or about January 7, 1908, leaving \$5.25 United States currency and ten cents in Panamanian currency. In the hands of the Treasurer of the Canal Zone at Empire;

(7) Unknown man, skeleton found on or about July 8, 1908, in the woods near Gorgona water shed, leaving \$3.25 Panamanian currency, two keys, one French coin, one signet ring, and one pocket knife. In the hands of Treasurer of the Canal Zone at Empire;

(8) Unknown man (Indian), killed by a Panama railroad train near Mount Hope, leaving \$6.20 Panamanian currency, one silk handkerchief, a silver watch, and leather chain and key. In the hands of Treasurer of Canal Zone at Empire.

(9) Unknown man, killed by a passenger train near Corozal on or about June 3, 1906, leaving \$1.70 United States currency, and \$1 Panamanian currency. In the hands of Treasurer of Canal Zone at Empire;

(10) Jean B. Stone, Empire, died on or about March 17, 1908, leaving cash \$760.35 United States currency and \$156.50 deposited with the International Bank of Commerce, and varied personal effects at Empire;

(11) Joseph Allman, resided at Culebra, died on or about July 20, 1905, leaving \$22 United States currency and \$2 Panamanian currency.

By order of the Court E. M. GOOLSBY,
Circuit Court Clerk.

United States of America, / In the First Judicial Circuit,
Canal Zone.

Notice is given to all concerned to appear at the court house in Ancon, Canal Zone, on or before February 18, 1909, at 9 o'clock, a. m., to claim the following named estates, which the Collector of Revenues seeks to have escheated to the Government of the Canal Zone:

Oscar Olson, a Swede, resident of La Boca, died May 24, 1907, leaving \$1.10 silver.
Peter Gross, resident of Panama, died July 9, 1905, leaving \$5.35 silver.

WALTER EMERY,
Circuit Court Clerk.

United States of America, / In the Third Judicial Circuit, Cristobal,
Canal Zone.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 576 hectares of the Lands known as "Palo Horqueta and Matias" situated in the Canal Zone, near the villages or hamlets of Lion Hill and Tiger Hill, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$5,760; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been heretofore filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

NELSON R. JOHNSON,
Clerk of the Circuit Court, Third Judicial Circuit, Cristobal, Canal Zone.

United States of America, / In the Third Judicial Circuit, Cristobal,
Canal Zone.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 248 hectares of the Lands known as "Calle Bruja" situated in the Canal Zone, near the villages or hamlets of Lion Hill and Tiger Hill, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$2,480; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been heretofore filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

NELSON R. JOHNSON,
Clerk of the Circuit Court, Third Judicial Circuit, Cristobal, Canal Zone.

United States of America, / Circuit Court Second Judicial Circuit,
Canal Zone.

United States of America, Plaintiff, vs. Mrs. Lacroisada and husband, Manuel Corrales, Carlos Corrales et al. Defendants.
Summons for Relief.
To Mrs. Lacroisada and husband, Manuel Corrales, and Carlos Corrales:

You are required to enter your appearance in the Clerk's office of the above-named court at Empire in the said Canal Zone within forty days after the last publication of this notice, which shall be at the next regular session of said court after the expiration of said forty days; and to answer the complaint of the plaintiff, a copy of which has been mailed to your last known place of residence.

If you fail to appear within the time aforesaid, the plaintiff will take judgment against you by default and demand from the said court the relief applied for in said complaint.

Witness the Honorable H. A. Gudge, Judge of said Circuit this 22d day of December, 1908.

E. M. GOOLSBY,
Circuit Court Clerk.

DECEMBER SHOVEL RECORDS.

A new record for excavation in one day was made on December 18, 1908, when the 50 shovels at work in the Central Division took out 70,087 cubic yards.

The high record for the month was made by shovel 207 at work in the Empire District, which took out 50,411 cubic yards in 26 days. The best record for shovels in the 70-ton class was made by shovel 108, working in Bas Obispo District, which took out 35,754 cubic yards in 25 days.

Shovel 207, at work in Empire District, made the highest record for one day by excavating 3,005 cubic yards of rock on December 28.

The shovels in the cut at Mindi broke all previous records for that part of the work.

Best Records for the Month.

CENTRAL DIVISION,
TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
181	33,455	682	34,138	26
127	31,772	983	32,755	26

BAS OBISPO DISTRICT.

256	12,073	26,197	38,270	24
108	20,380	15,374	35,754	25

EMPIRE DISTRICT.

207	2,114	4,297	50,411	26
262	2,296	43,624	45,920	26

CULEBRA DISTRICT.

203	15,400	2,618	44,027	26
208		43,530	43,530	26

PEDRO MIGUEL DISTRICT.

209		13,969	13,969	9
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OBISPO DIVERSION.

226	25,030	10,727	35,757	24
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ATLANTIC DIVISION,
GATUN SPILLWAY.

135	20,883	2,721	23,604	26
251	10,477	8,253	18,730	26

GATUN LOCKS.

112	6,350	26,713	33,063	26
129	1,863	26,31	28,694	24

MINDI.

101	6,450	27,910	34,360	26
120	8,109	17,784	27,593	26

PACIFIC DIVISION,
PEDRO MIGUEL LOCKS.

258		29,550	29,550	
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MIRAFLORES LOCKS.

153			27,580	
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Best Records for One Day.

CENTRAL DIVISION.

The best daily records were as follows:

Shovel No.	Location.	Date.	Character material excavated.	Cubic yds. excavated.
132	Tabernilla	Dec. 24	Rock and earth	2,000
254	Tabernilla	Dec. 9	Earth	1,110
226	Bas Obispo	Dec. 15	Earth	2,280
255	Bas Obispo	Dec. 21	Rock	2,170
207	Empire	Dec. 28	Rock	3,005
262	Empire	Dec. 28	Rock	2,788
208	Culebra	Dec. 16	Rock	2,683
260	Culebra	Dec. 17	Rock and earth	2,510
209	Pedro Miguel	Dec. 3	Rock and earth	2,220

ATLANTIC DIVISION.

135	Gatun spillway	Dec. 12	Earth and rock	1,700
251	Gatun spillway	Dec. 11	Earth and rock	1,450
129	Gatun Locks	Dec. 7	Clay and rock	2,070
112	Gatun Locks	Dec. 9	Rock	1,500
120	Mindi	Dec. 15	Rock	2,174
101	Mindi	Dec. 22	Rock	2,018

PACIFIC DIVISION.

258	P. Miguel Locks	Dec. 1	Rock	1,900
153	Miraflores Locks	Dec. 12	Not classified	1,700

COMMISSARY DEPARTMENT.

Laundry Claims.

Hereafter laundry claims or articles claimed to have been damaged in the laundry will not be accepted by commissary storekeepers. All such claims must be sent to the Subsistence Officer, Cristobal. Damaged articles returned will be at owner's risk, all expressage or postage must be prepaid, and all packages should be shipped to the P. R. R. Laundry, Cristobal. In case credit is allowed the commissary department will refund shipping charges.

JOHN BURKE, Manager.

Approved:

EUGENE T. WILSON, Subsistence Officer.

Deposits for Bread and Ice.

CRISTOBAL, C. Z., December 26, 1908.

CIRCULAR No. 11551.

To all concerned: 1. Effective January 1, 1909: It will be required that persons having ice or bread accounts must have on January 27, and on the 27th day of each month thereafter, sufficient funds to cover their ice and bread bills during the succeeding month. The only exceptions to this rule will be in cases of people returning from vacation, transferred from one place to another, or leaving or entering the service. New accounts will be opened only when sufficient funds have been deposited to cover deliveries during the calendar month in which the account may be opened.

2. On and after January 1, 1909, funds deposited to secure shipment of bread and ice will not be transferred to any other account and used to pay for cold storage supplies, groceries, etc.

3. After January 1, no deposits will be accepted to cover deliveries of bread where purchasers are located at the following points: Gatun, Tabernilla, Gorgona, Bas Obispo, Las Cascadas, Empire, Culebra, Rio Grande, Paraiso, Pedro Miguel, La Boca, and Porto Bello, unless remittance is accompanied by sufficient funds to pay for extra cost of invoicing, billing and shipping, which has been fixed at five cents per day in addition to cost of bread. This rule is made necessary by the fact that we are delivering bread from Cristobal to 85 families located at points where there are Commissaries and where a delivery service is maintained. As this delivery service is very expensive, it is desired that it be employed to its fullest capacity, and the wholesaler plant be placed out of competition with the retail store.

Arrangements have been made so that local Commissaries will carry no stale bread in stock.

JOHN BURKE, Manager.

Approved:

EUGENE T. WILSON, Subsistence Officer.

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning January 12:

FRESH MEATS.		Price.
Mutton—Stewing.....	per lb	6
Shoulder and neck (not under 6 pounds).....	per lb	7
Entire forequarter (not under 10 pounds).....	per lb	9
Leg (8 to 10 pounds).....	per lb	16
Short-cut chops.....	per lb	22
Lamb—Stewing.....	per lb	6
Entire forequarter.....	per lb	9
Leg (6 to 8 pounds).....	per lb	27
Chops.....	per lb	29
Veal—Stewing.....	per lb	10
Entire forequarters (15 to 20 lbs.).....	per lb	11
Loin for roasting.....	per lb	21
Chops.....	per lb	22
Cutlets.....	per lb	26
Pork—Cuts.....	per lb	20
Beef—Suet.....	per lb	4
Soup.....	per lb	8
Stew.....	per lb	12
Corned.....	per lb., 12, 14, 16	
Pot roast (from sirloin half).....	per lb	17
Rib-roast second cut (not under 3 pounds).....	per lb	19
Rib-roast short cut (not under 3½ pounds).....	per lb	23
Sirloin roast.....	per lb	29
Rump roast.....	per lb	29
Porterhouse roast.....	per lb	29

Beef—Steak, round.....	per lb	23
Rib.....	per lb	24
Sirloin.....	per lb	29
Porterhouse.....	per lb	29
Rump.....	per lb	29
Tenderloin.....	per lb	30

MISCELLANEOUS

Livers—Beef.....	per lb	11½
Calf.....	each	65
Sausage—Pork.....	per lb	18
Bologna.....	per lb	17
Frankfurter.....	per lb	17
Leberwurst.....	per lb	17
Sweet bread—Veal.....	each	1.20
Sweet bread—Beef.....	per lb	30
Ox tongues.....	each	1.00
Pigs' feet, pickled.....	per lb	14
tongues, pickled.....	per lb	16
Eggs, fresh.....	dozen	50
Oysters, 1 gallon kegs.....	keg	1.00

POULTRY AND GAME

Chickens—Fancy Roasting.....	1.20 and 1.40
Fowls, medium and large.....	each, 80c. and 1.00
Ducks, fatted.....	each 1.22
Broilers.....	each 75
Squabs.....	each 45
Capons.....	each 2.40

CURED AND PICKLED MEATS

Bacon—Strips.....	per lb	23
English, breakfast sliced.....	per lb	\$26
Ham—Sugar-cured, sliced.....	per lb	\$25
One-half, for boiling.....	per lb	\$21
Hunter's York cut.....	per lb	25
Ferris.....	per lb	20
Beef, salt, family.....	per lb	16
Salt pork.....	per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....	per lb	45
Cheese—Roquefort.....	per lb	45
Neufchatel.....	each	6
Young America.....	per lb	22
Swiss.....	per lb	31
Edam.....	each	1.05
Camembert.....	per lb	28
McLaren's.....	jar	15
Gouda.....	per lb	34
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....	tin	20
Buttermilk.....	quart	15

VEGETABLES AND FRUITS

Parsnips.....	per lb	7
Lettuce.....	per lb	12
Celery.....	head	10
White potatoes.....	per lb	3½
Sweet potatoes.....	per lb	2½
Cabbage.....	per lb	5
Onions.....	per lb	4
Yams.....	per lb	3½
Turnips.....	per lb	3½
Carrots.....	per lb	4
Beets.....	per lb	5
Lemons.....	dozen	24
Oranges.....	dozen	12
Apples.....	per lb	6
Grapes.....	per lb	20
Grapefruit.....	each	3½
Tangerines.....	each	1½
Limes.....	hundred	60
Cranberries.....	per lb	17
Pineapples.....	each	15

§ Sold only from cold-storage and not from Commissaries.

Rainfall, January 1 to 9, 1909, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	.62	2.09
Brazos Brook.....	.62	1.79
Gatun.....	.62	1.29
Bohio.....	.47	1.53
<i>Central Division—</i>		
Tabernilla.....	.62	1.18
San Pablo.....	.35	1.14
Bas Obispo.....	.25	.73
Gamboa.....	.30	.80
Empire.....	.28	.72
Camacho.....	.33	1.25
Culebra.....	.49	1.11
Rio Grande.....	.57	1.23
<i>Pacific Division—</i>		
Pedro Miguel.....	.25	.60
La Boca.....	.22	.42
Ancon.....	.39	.82
<i>Atlantic Coast—</i>		
Porto Bello, (to p. m. Jan. 8).....	.60	1.65
<i>Upper Chagres.</i>		
El Vigia.....	.37	1 10
Alhajuela.....	.39	.97

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change.

NEW YORK TO COLON.

Advance.....	P. R. R. Thursday.....	Jan. 14
Prinz Joachim.....	H.-A. Saturday.....	Jan. 16
Allianca.....	P. R. R. Wednesday.....	Jan. 20
Magdalena.....	R.-M. Saturday.....	Jan. 23
Colon.....	P. R. R. Tuesday.....	Jan. 26
Prinz Aug. Wilhelm.....	H.-A. Saturday.....	Jan. 30
Panama.....	P. R. R. Monday.....	Feb. 1
Advance.....	P. R. R. Saturday.....	Feb. 6
Orinoco.....	R.-M. Saturday.....	Feb. 6
Allianca.....	P. R. R. Saturday.....	Feb. 13
Prinz Joachim.....	H.-A. Saturday.....	Feb. 13
Colon.....	P. R. R. Friday.....	Feb. 19
Atrato.....	R.-M. Saturday.....	Feb. 20
Panama.....	P. R. R. Thursday.....	Feb. 25
Prinz Aug. Wilhelm.....	H.-A. Saturday.....	Feb. 27
Trent.....	R.-M. Saturday.....	Mar. 6

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK

Colon.....	P. R. R. Thursday.....	Jan. 14
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Jan. 19
Panama.....	P. R. R. Friday.....	Jan. 20
Advance.....	P. R. R. Tuesday.....	Jan. 26
Orinoco.....	R.-M. Tuesday.....	Jan. 26
Allianca.....	P. R. R. Monday.....	Feb. 1
Colon.....	P. R. R. Sunday.....	Feb. 7
Prinz Joachim.....	H.-A. Tuesday.....	Feb. 8
Atrato.....	R.-M. Tuesday.....	Feb. 9
Panama.....	P. R. R. Saturday.....	Feb. 13
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Feb. 16
Advance.....	P. R. R. Friday.....	Feb. 19
Trent.....	R.-M. Tuesday.....	Feb. 23
Allianca.....	P. R. R. Thursday.....	Feb. 25
Prinz Joachim.....	H.-A. Tuesday.....	Mar. 2
Tagus.....	R.-M. Tuesday.....	Mar. 9
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	Mar. 16

NEW ORLEANS TO COLON.

Ellis.....	U.F.C. Saturday.....	Jan. 16
Parismina.....	U.F.C. Saturday.....	Jan. 23
Heredia.....	U.F.C. Saturday.....	Jan. 30

COLON TO NEW ORLEANS.

Heredia.....	U.F.C. Tuesday.....	Jan. 19
Ellis.....	U.F.C. Tuesday.....	Jan. 26
Parismina.....	U.F.C. Tuesday.....	Feb. 2

COLON TO BARBADOS, CALLING AT TRINIDAD

Tagus.....	R.-M. Tuesday.....	Jan. 19
Magdalena.....	R.-M. Tuesday.....	Feb. 2
Orinoco.....	R.-M. Tuesday.....	Feb. 16
Atrato.....	R.-M. Tuesday.....	Mar. 2
Trent.....	R.-M. Tuesday.....	Mar. 16

The next sailing of the Leyland Line for New Orleans via Kingston, Ja., will be the steamship *Tampican* on or about January 24.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, January 9, 1909:

Height of low water above mean sea level, feet.	STATIONS					
	Veragu	Alhajuela.	Cambon.	Bohio.	Gatun (Canal).	Gr-tun (W. Diver'n
Maximum height above low water, feet:	129	92	46	1	0	0
Monday, Jan. 5.....	1.9	2.4	3.2	6.0	3.8	3.1
Tuesday, Jan. 5.....	1.3	2.4	3.6	6.0	3.6	3.1
Wednesday, Jan. 5.....	1.5	2.1	3.2	5.3	3.2	2.7
Thursday, Jan. 6.....	1.0	1.8	2.8	5.0	2.6	2.1
Friday, Jan. 7.....	1.0	1.7	2.6	4.4	2.3	1.8
Saturday, Jan. 8.....	0.5	1.7	2.6	4.2	2.3	2.0
Sunday, Jan. 9.....	1.8	2.3	2.8	4.5	2.2	2.0

The following steamers have recently arrived at La Boca: January 3, *City of Para*, from San Francisco, and *Ammon*, Kosmos line steamer, from Northern ports; January 5, *Victoria*, from Valparaiso. Departures were: January 3, *Hornelen*, for Guayaquil; January 4, *Lansing* for Port Harford; January 5, *Selja*, for Central America, and *Ammon*, for Southern ports; January 6, *Quito*, for Buenaventura; January 7, *City of Sydney*, for San Francisco; January 8, *Palena*, for Valparaiso.



The Canal Record

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Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Lighting Cristobal-Colon Harbor.

Six new automatic gas buoys are being placed in the harbor of Colon and Cristobal to mark the channel of the Canal as it has been dredged from deep water to the shores. Three buoys of this type, which will give light for three months without recharging, have been in use in the harbor for a year. The new buoys when charged to their full capacity with calcium carbide will remain lighted six months without recharging.

Piles Preserved by Water.

The 20-inch pipe-line suction dredge that worked its way from the old French canal into the prism of the new Canal at the north end of the Gatun lock site, made a cut through the old line of the Panama railroad. It encountered piles that were completely rotted down to sea-level, but below sea-level they were as full of pitch and as sound as when they were driven sixty years ago. The excavation shows that the original line of the railroad was built over the lowlands between Colon and Gatun on a trestle which later was filled.

Atlantic Division Sand Service.

At Nombre de Dios, the dipper dredge recently taken to that port from Cristobal has made a bay for itself entirely sheltered from the sea, and is in a position to load sand on barges at any time required. The plan for the sand service at this place was to take the material and load it upon barges by means of a clam-shell dredge, and to use a 16-inch suction dredge as an auxiliary. This plan has not been changed, although the sinking recently of the suction dredge necessitated the aid of the dipper dredge in opening up the sand pit. The pump of the suction dredge will be installed on a hull of one of the dredges recently brought down the Chagres from Chagrecito. The machinery for a clam-shell dredge has been contracted for,

and on its arrival will be installed on the hull of another old French ladder dredge recently brought down from Frijoles. The barges for use in this service are ready, and 12 towing machines have been ordered. The stern-wheel steamer, which is to tow barges from Cristobal to Gatun, was launched recently and is being tried out in the old French channel at the dry dock.

December Money Order Business.

During the month of December, 1908, the sixteen post-offices in the Canal Zone at which money order business is done, sold 16,931 money orders, aggregating \$432,487.97, an increase of \$13,944.20 over the amount reported for November. Of the \$432,487.97 in December, \$328,143.30 was in orders drawn payable in the United States and elsewhere, and \$104,344.67 in orders drawn payable in the Canal Zone. The fees collected amounted to \$1,895.11, and the amount paid and repaid \$124,755.87.

The largest number of orders, 3,135 was issued at Cristobal, and amounted to \$83,085.20. Ancon was second, with 2,502 orders, aggregating \$48,303.97. Empire was third, with 1,955 orders, amounting to \$44,057.26. Of the amount payable in the United States, Cristobal was first, with \$69,916.92; Ancon second, with \$43,066.19, and Empire third, with \$35,259.71. In orders payable in the Canal Zone, Cristobal was first, with \$13,168.28; Gorgona was second, with \$11,131.17, and Pedro Miguel third with \$9,984. In the amount paid and repaid Cristobal was first, with \$20,923.57; Empire second, with \$13,387.28, and Gorgona third, with \$13,337.15.

The average of all the orders issued was \$25.54, the highest being at La Boca where 660 orders, aggregating \$21,602.49, were sold, an average of \$32.73, and the lowest was at Ancon where the orders issued averaged \$19.31.

Freight Carrying Equipment Increased.

On December 9, 1908, the Panama railroad shops at Cristobal began work setting up three hundred, 60000-pound box cars, which had arrived on the Isthmus from the States, knocked down. Last week the last of the cars were painted and all of them are now in service. The work involved unloading the trucks and the bundles of lumber for the bodies, assembling the parts, and putting the superstructure together. The new cars, have been numbered from 6001 up, to indicate that they are 60000-pound cars. All cars that are turned out by the shops hereafter will be numbered in a "thousand" series, the first figure of which will indicate the capacity of the car. The freight car equipment of the Panama railroad now includes:

Box cars—80,000-pound, 480; 60000-pound, 300; 50000-pound, 54; 24000-pound, 462;

fast freight cars fitted with signal attachment and brake rigging for passenger service, 13; 70000-pound refrigerator cars, 18; stock cars, 16; specie cars, 2.

Other cars—New cabooses, 12; old cabooses, 12; 80000-pound Rodger ballast cars for coal and gravel service, 100; 80000-pound coal cars, 15; 24000-pound coal cars, 83; old flat cars, 34; construction cars, 24.

Dredge for Atlantic Division.

The three old ladder dredges that were pulled off the banks of the Chagres River near Frijoles during the last weeks of the rainy season are at Cristobal dry dock. One of them is in the dry dock where the machinery has been stripped from the hull, and the hull itself is undergoing repairs. Another is alongside the wharf and the machinery is being taken from it also. The hull of one of these dredges will be used as the float for a clam-shell dredge, and the other as the hull of a suction dredge. The third of the old dredges is in such good condition that it will be repaired and put to work in the Canal prism. Its machinery consists of two Scotch marine boilers and two steple compound engines, 28 half-yard buckets, and the usual equipment for a ladder or elevator dredge. It is estimated that about \$10,000 will be spent in putting it in condition.

Two old French suction dredges and five old barges taken from the same berths are now in the river, ready to be floated to the dry dock.

Engineering, Building Construction, and Municipal Improvement Inspection.

A report has been made on engineering and building construction inspection by a committee appointed for that purpose, and has been approved by the Chairman and Chief Engineer. No changes are recommended in the methods now in use in the Canal Zone. The land owned by the Panama Railroad Company will be staked out by its forces, and that owned by the Isthmian Canal Commission will be staked out by the employes of the Commission. New village plats will be prepared by the organization owning the land, and will be submitted to the Department of Sanitation, and to the municipal and public works officials of the Commission. The sanitary and building construction inspection will be done by the Department of Sanitation.

All work of staking out lots and grades in the city of Colon will be done by the Panama Railroad Company. The Atlantic Division will prepare maps to show the lines and grades of all streets in the city of Colon as now established, and after they have been approved by the Chief Engineer of the Panaman Government these maps will be turned over to the Panama Railroad Company.

In the city of Panama the Panama Railroad Company will stake out lots and grades

NOTES OF PROGRESS.

(Continued)

on its own lands, and all other engineering work will be done by the Chief Engineer of the Panaman Government. The Pacific Division will prepare maps showing lines and grades of the entire city of Panama, which will be submitted to the Chief Engineer of the Panaman Government for his approval.

Street improvements between curbs in Panama will be carried on as at present by the Pacific Division, according to the lines and grades previously established, and repairs and maintenance will be handled by the Division of Public Works. The construction of sidewalks in both cities will remain as at present, in the hands of the municipal governments, with the understanding that all the space between the curb line and the building line be provided with a permanent concrete sidewalk with a slope of not less than one-third of an inch to the foot.

The inspection of the construction of buildings in the city of Colon and on Panama railroad property in the city of Panama is transferred to the Panama Railroad Company, and committees have been appointed to draw up new rules for sanitation and building construction. The inspection of the construction of buildings in the city of Panama on ground not owned by the Panama Railroad Company is placed under the Chief Engineer of the Panaman Government.

Railroad and Steamship Business.

Passengers to the number of 1,385,645 were carried by the Panama railroad in the year ending June 30, 1908, of which number, 479,586 were first-class passengers. This was an increase of 57.05 per cent over the total number of passengers carried in 1907. Earnings from passenger traffic increased 61.32 per cent over 1907, the gross revenue from this source being \$526,846.86. The average receipt per passenger for first-class through passengers was \$4.54, and for local passengers 52 cents. The average receipt per passenger for second-class through passengers was \$4.27, and for local passengers 28 cents. The revenue received from the through passengers decreased 15.61 per cent, and the number of such passengers decreased 21.70 per cent, as compared with the year 1907. The increase in the number of local passengers was 57.73 per cent, and in the revenue from this source 69.47 per cent.

The earnings of the Panama Railroad Steamship Line were \$1,458,554.28, a decrease of 6.56 per cent, as compared with 1907. The freight traffic decreased 14,823 tons, or 6.90 per cent, and the revenue from this source decreased 8.46 per cent. The number of passengers carried was 342 less than in 1907, a decrease of 2.42 per cent, and the earnings on this account were 8.51 per cent less than in 1907. The Company maintained three boats of its own and two chartered boats in its service. In the chartered boats, 116,694 tons were carried and in the company's own boats 83,353 tons were carried. This is a decrease of 14,823 tons from the year 1907. The steamship line was run at a net loss for the year of \$179,810.67, as compared with a profit for the previous year of \$158,562.95. The loss was due principally to the chartering of the *Dunottar Castle* and *Esperanza* during the rebuilding of the

Allianca and the repairing of the *Colon* and *Panama*, to the low competitive rates, and to the insufficiency of cargoes on north-bound voyages without a proportionate decrease in the expense for labor.

Lidgerwood Unloaders in December.

The eleven Lidgerwood unloaders in the Central Division during the month of December unloaded a total of 2,821 trains composed of a total of 49,113 cars. Of this number, 1,367 trains composed of 23,249 cars were unloaded by the five unloaders at Tabernilla; 725 trains, composed of 12,750 cars, were unloaded by the three unloaders at the Miraflores dumps, and 729 trains, composed of 13,114 cars, were unloaded by three unloaders at La Boca. As all the cars were of 20-yard capacity the material unloaded represented about 982,260 cubic yards. In addition, there were 2,638 Western dump cars, containing about 44,000 cubic yards of material, unloaded at the La Boca dumps during the month.

Mount Hope Corral and Forage Warehouse.

The Commission corral at Mount Hope is nearing completion. In addition to the stables there are seven buildings, an office, hospital, harness shop, wagon shed, cart shed, paint and blacksmith shop, and a forage warehouse. All the buildings except the forage warehouse are located east of the Panama railroad tracks and north of the Mount Hope Depot on land made by pumping coral sand from Folks River. This land has dried out and, having been drained, is well adapted for the purpose.

The stables are 187 feet 10 inches long, 68 feet wide, 11 feet 10 inches under the eaves, and will have 112 stalls. The building is divided into four equal parts by a driveway 14 feet wide running from end to end through the center, and a passageway 11 feet wide running through the center from side to side. A concrete walk 8 feet wide runs around the stables and the stalls, and the stalls and walk drain into a covered concrete gutter. A concrete floor 4 inches thick underlies the whole stable excepting the driveway, which is macadamized. The driveway from end to end through the center divides the stable into two parts, each part consisting of two parallel rows of stalls, the heads of which look out into a feed passageway while the backs open into the driveway. At the end of each feed passageway is a feed room 27 feet long and 22 feet 10 inches wide. Each stall is 10 feet 6 inches long, 5 feet 6 inches wide, floored with 2-inch plank over the concrete, and drains into the concrete gutter at the end. The manger has a hay trough and oats box.

The hospital stable will be 88 feet 10 inches long, 11 feet wide, and will contain 16 stalls, each 5 feet 6 inches wide, and 10 feet 6 inches long, and will have a 2-inch plank floor over the concrete. It will drain into a gutter at the rear, and in other respects will be like the stalls in the stables proper.

The wagon shed is 208 feet long, and 19 feet 6 inches wide; the cart shed, 272 feet long, and 19 feet 6 inches wide; the paint and blacksmith shop, 64 feet 6 inches long, and 30 feet 6 inches wide, and the harness repair shop, 30 feet long, and 20 feet wide.

The office building will be in the style of Commission houses, and will have an office 16 by 12 feet, a bedroom of the same size,

a toilet room with bath, a front veranda, and a back porch.

The forage warehouse is ready to receive supplies. It is built on high ground southwest of the Mount Hope Depot, as it was feared that the filled in ground on which the corral is built might not be dry enough for a storage place for forage. The warehouse is 198 feet 8 inches long, and 19 feet 4 inches wide. The roof is of corrugated iron and the floor is made of cast iron plates left on the Isthmus by the French. The building has a ventilator at the peak of the roof and also has an open space between the sides and the roof. A six months' supply of forage for Commission animals will be stored here and will be issued to the corrals along the Line as needed.

Public and Panama Railroad Lands.

Of the 448.47 square miles of territory in the Canal Zone, 244.03 square miles are available for leasing by the Government under the law which permits the Secretary of War to lease public lands for a period less than five years, on leases revocable at the will of the Government. The Panama Railroad Company owns 68.12 square miles of the land in the Canal Zone, and the remaining 136.32 square miles are owned by private persons.

The annual statement of the Collector of Revenues showing the land leases in force June 30, 1908, gives the number of leases under the Isthmian Canal Commission as 1,081. Of these 878 are for building lots, 9 are for buildings, and 194 are held for agricultural purposes. The land held for agricultural purposes aggregates 1,458 acres. The rent collected in the fiscal year was \$17,436.76, as compared with \$7,974.78 in the fiscal year 1907. The rental charge for agricultural lands is \$3 per hectare, or \$1.21 per acre per annum. Building lots in towns are rented at from 5 cents to 30 cents per square meter per annum. A statement of the leases in effect at the end of the past three fiscal years and in 1905 follows:

	1905*	1906	1907	1908
Agriculture.	376	121	83	194
Building....	441	405	479	878
Collections..	\$86,871.53	\$9,255.13	\$7,974.78	\$17,436.76

*On September 30, 1905.
†Period January 21 to September 30, 1905.

The 68.12 square miles of land in the Zone owned by the Panama Railroad Company are divided into that used for railroad purposes and that available for rental. The land available for lease is divided into lots, and rent was collected from 1,900 of these lots in the fiscal year 1903. The lots are distributed as follows:

Place.	Lots.	Place.	Lots.
Colon.....	754	Empire.....	473
Folks River.....	38	Culebra.....	67
Gatun.....	143	Panama.....	367
Bohio.....	11	Scattering.....	10
Frijoles.....	37		

Injured Canal Employees.

The bill introduced in the House of Representatives by Mr. Mann of Illinois, providing compensation for injured employes on the Isthmian Canal, which was published in full in THE CANAL RECORD of December 23, was passed by the House on January 5, 1909. It was introduced in the Senate on January 6, and was referred to the Committee on Inter-oceanic Canals.

SCREENING EXPENDITURES.

Total Cost from May, 1904, to October, 1908, about \$619,000.

In the effort to protect its employes against malarial and yellow fever infection by preventing *anopheles* and *stegomyia* mosquitoes from entering the houses, the Isthmian Canal Commission has expended, since the beginning of canal operations in May, 1904, until September 30, 1908, approximately \$619,000. This amount includes not only the wire, but all extra wood work, painting, and labor required on account of the screening and a large allowance for brass screen, which has proved defective or which has been unsuitable to the Isthmian climate.

The screening used by the Commission has been principally of two kinds: bronze wire, containing from 80 to 90 per cent copper, and brass wire, containing from 62 to 66 per cent copper. The brass wire has not proved satisfactory.

The amount of screening used during this period was 666,975 square yards, at a cost for the wire of \$255,714, averaging 38.34 cents per square yard. Of this amount 266,667 yards were brass wire, costing \$98,645, an average of 36.99 cents per square yard.

The brass screening was ordered between April and December, 1906, because the initial cost was less than that of copper wire, and was used until the supply was exhausted. It has been found that the brass wire is unsuitable for use on the Isthmus, and that a portion of it has failed on account of being defective, and a portion from injury received in the Mount Hope storehouse fire. A large amount of this screening was damaged in the fire, but it was deemed advisable to use it because of the scarcity of screening material on the Isthmus at that time. Since the fact was established that brass wire was not suitable for use on the Isthmus, none but bronze screening, containing about 90 per cent copper, has been ordered.

It is estimated that the cost of copper wire screening is \$1.05 per square yard in place. This figure covers all extra wood work, as supports for the screening, the painting, labor, and all charges of every nature.

In order to obtain the proper protection it has been found advisable to screen the verandas instead of the openings. This method furnishes protection to persons using the verandas, and also reduces the number of exits to a minimum, thereby increasing the efficiency of the screening.

On account of the great number of doors and windows required in the buildings the expense for screening the verandas is very little more than for screening the openings. The estimated expense on a type 14 house for screening the openings is \$400, and for screening the verandas \$421.

The general principles and details of screening were published in THE CANAL RECORD of January 8, 1908.

Cement Purchased.

At the close of the calendar year 1908, there had been purchased for Canal work 183,730 barrels of cement. In addition to this amount, 20,000 barrels had been ordered, the contract having been let to the Alpha Portland Cement Company at \$23,150. Up to the present time cement has been used in comparatively small quantities and principally for municipal and sanitary work, in building foundations, lining bath rooms,

and in making concrete blocks for building purposes. The cement to be used in the concrete work at the Gatun Locks and Dam and at the Pacific locks and dams has been contracted for in a single order, about 4,500,000 barrels. Delivery has already been begun on the 80,000 barrels that will be required for the Gatun spillway. A statement of the cement purchased from May 4, 1904, to the end of the calendar year 1908, follows:

1904.....	2,600 barrels....	\$4,499.00
1905.....	39,500 barrels....	63,360.00
1906.....	47,350 barrels....	87,967.00
1907.....	53,000 barrels....	102,045.00
1908.....	41,280 barrels....	66,048.90
Total.....	183,730 barrels....	\$323,910.90

Instruction by Employes Restricted.

The following letter has been received by the Chairman of the Commission and is published for the information and guidance of employes:

UNITED STATES CIVIL SERVICE COMMISSION,
WASHINGTON, D. C., January 5, 1909.

Isthmian Canal Commission, Washington, D. C.

Gentlemen: The Commission advises you that it is in receipt of information from time to time that certain employes in the Executive civil service are engaged in instructing applicants for civil service examinations in violation of the Executive Order of October 13, 1905, which reads as follows:

"No officer or employe of the Government shall directly or indirectly instruct or be concerned in any manner in the instruction of any person or class of persons, with a view to their special preparation for the examinations of the United States Civil Service Commission. The fact that any officer or employe is found so engaged shall be considered sufficient cause for his removal from the service."

In some cases it is found that the persons concerned were ignorant of the existence of the order quoted above. It is therefore requested that this order be promulgated to all employes of the Isthmian Canal Commission. By direction of the Commission.

Very respectfully,

JOHN C. BLACK, *President.*

December Police Report.

The December report of the Chief of Police shows that 507 persons, representing 43 nationalities, were arrested in the Canal Zone during the month. This is an increase of 30 for the month, there having been 477 arrests in November. Of the 507 persons arrested, 458 were men and 49 were women, and they were charged with 56 different offenses. They were divided among the towns of the Zone as follows: Ancon, 28; Las Sabanas, 3; La Boca, 36; Corozal, 3; Miraflores, 5; Pedro Miguel, 35; Paraiso, 20; Culebra, 26; Empire, 83; Las Cascadas, 21; Bas Obispo, 10; Gorgona, 60; San Pablo, 19; Tabernilla, 25; Bohio, 9; Gatun, 42; Cristobal, 82. The total effective police force on December 31 was 168, and the pay roll amounted to \$20,220.96.

One hundred and fifty-one cases were tried in the courts, 18 of which were dismissed, 104 continued, 28 in which convictions were secured, and one case in which bail was forfeited. Of the 28 persons convicted, 5 were fined, 1 received a jail sentence, 2 received a jail sentence and a fine, 18 were sentenced to the penitentiary, and in 2 cases sentence was suspended. Fourteen convicts were discharged from the penitentiary during the month, leaving a total of 122 in the penitentiary on December 31. The number of district prisoners on the same date was 161, a decrease of 30 for the month. The value of work performed by the convicts on roads, etc., amounted to \$2,163.70.

There were 27 deaths by violence requiring

action by the Coroner during December. Six of these deaths were caused by railroad accidents, 2 by drowning, and 18 by the dynamite explosion at Bas Obispo on December 12. The total number of deaths in December resulting from this explosion was 23, but only 18 required action by the coroner.

Improvements at Cristobal Marine Shops.

A new boiler house has been completed at Cristobal marine shops, which will increase the capacity of the boiler department to about 30 per cent.

A new storehouse, 200 feet by 50 feet, is under construction. It is being built on piles along the French canal, and will be accessible both by rail and water.

Notice to Knights of Pythias.

A meeting will be held in the Ancon lodge room (the old mechanical building) on Thursday night, January 21, at 7.30 p. m. for the purpose of arranging for the installation of the lodge of Knights of Pythias in Ancon. All interested are urged to attend.

Tivoli Club Dance.

The Tivoli Club will give its next dance at Hotel Tivoli on Saturday evening, January 23.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, January 16, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. Diver'n)
Height of low water above mean sea level, feet.....	129	92	46	1	0	0
Maximum height above low water, feet:						
Sunday, Jan. 10.....	3.0	3.2	4.4	5.3	2.4	2.1
Monday, Jan. 11.....	1.4	2.3	4.3	6.1	2.5	2.0
Tuesday, Jan. 12.....	1.2	1.7	2.5	4.3	2.0	1.8
Wednesday, Jan. 13.....	1.2	1.9	2.9	4.5	2.0	1.7
Thursday, Jan. 14.....	0.8	1.6	2.6	4.1	1.8	1.5
Friday, Jan. 15.....	1.6	2.2	3.2	4.5	1.7	1.4
Saturday, Jan. 16.....	1.1	1.9	2.8	4.5	1.9	1.6

Rainfall, January 1 to 16, 1909, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	.62	3.18
Brazos Brook.....	.62	2.64
Gatun.....	.62	1.86
Bohio.....	.72	2.46
<i>Central Division—</i>		
Tabernilla.....	.62	1.58
San Pablo.....	.35	1.35
Bas Obispo.....	.25	.97
Gamboa.....	.30	.97
Empire.....	.28	.77
Camacho.....	.33	1.34
Culebra.....	.49	1.29
Rio Grande.....	.57	1.32
<i>Pacific Division—</i>		
Pedro Miguel.....	.25	.69
La Boca.....	.22	.42
Ancon.....	.39	1.14
<i>Atlantic Coast—</i>		
Porto Bello, (to 5 p. m. Jan. 16)...	.74	3.54
<i>Upper Chagres</i>		
El Vigia.....	.37	1.21
Alhajuela.....	.39	1.04

In the assignment of Isthmian Canal Commission quarters in Cristobal and Colon the employes of the Commission in the "1907 class" will be assigned quarters until the list for that year is exhausted before any employe of the Panama Railroad Company will be given consideration.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

At a meeting of the executive board of the Cristobal Woman's Club on the morning of January 13, it was announced that the regular meeting would be held January 23, and that Mrs. A. O. Herman would entertain the art and literary department at her home on January 25. A resolution was adopted extending the sympathy of the board to Mrs. Thomas E. Brown, Jr., chairman of the philanthropy department, who is seriously ill.

Mrs. Charles Carter entertained the home department of the Cristobal Woman's Club on January 11.

The year book of the Cristobal Woman's Club is in circulation.

Studies and select readings bearing on the history of Panama occupied the attention of the members of the Gatun Woman's Club at the meeting held at the home of Mrs. H. K. Higgins on January 15. On January 27 (Wednesday instead of Friday) the club will meet at the home of Mrs. A. M. McCulloch, when Mrs. R. W. Fern will speak on Panama pottery, baskets, and needlework. Each member of the club may invite a guest.

The Gorgona Woman's Club is represented in the Federation committees as follows: Home, Mrs. Torberer; music, Mrs. Beetham; education, Mrs. McFarland. The election of officers will take place in March instead of in February, as heretofore announced.

At the meeting of the Empire Woman's Club, January 7, Mrs. H. C. Ball read a paper on the history of Panama which was discussed by the other members. Piano solos were given by Mrs. Hillerman. The resignation of the secretary was presented, but action was deferred.

The Culebra Woman's Club will hold its regular meeting on January 21.

The rooms over the office of the District Quartermaster in Ancon have been assigned for the use of the Ancon Woman's Club. Suitable furniture has been provided, and reading and writing rooms for members of the club will be opened. The meetings of the club and its department, and of the art classes soon to be organized will be held there.

The educational department of the Ancon Woman's Club met at the home of Mrs. George Campen on January 13. This department will ask the club for a small fund with which to purchase books to be used in its study work. Mrs. Stora was elected chairman of the department, vice Mrs. H. C. Hanson, who has resigned.

The morning session of the Federation meeting, which will be held at the Hotel Tivoli on January 30, will begin at 10 o'clock. The various committees will thus have ample time for their meetings before the sessions open. Transportation to and from Panama will be given on special cars attached to the trains leaving Colon at 4.35 and 10.30 o'clock in the morning, and returning leaving Panama at 5.30 in the afternoon. Each club member will be given a card entitling her to transportation.

J. W. Holland, monologist and impersonator, gave an entertainment at the club rooms at Gatun on the night of January 15.

The Paraiso Woman's Club had a large attendance at its regular meeting, January 14, at the home of Mrs. A. N. Naylor, chairman of the entertainment committee. The

meeting took the form of a reception to the outgoing and incoming presidents, Mrs. N. D. Stanton and Mrs. J. E. Martin, respectively. A gift of linen was presented to Mrs. Stanton in the name of the club by Mrs. O. G. Randall. At the close of the meeting tea was served in the dining room which was decorated with palms and cut flowers.

Canal Zone Branch American Red Cross Society.

At a meeting held at the Hotel Tivoli on Sunday, January 17, the Canal Zone branch of the American Red Cross Society was formally organized, and about 125 names were enrolled. Maj. C. A. Devol was elected president; Miss J. Macklin Beattie, secretary, and Mr. H. D. Reed, treasurer. A committee, consisting of Dr. H. R. Carter, Mr. B. C. Poole, and Miss Genevieve Russell, was appointed to prepare by-laws, to be submitted to the society. A second committee, consisting of Mr. A. Bruce Minear, Dr. A. J. Orenstein, Miss G. M. LePrince, Mrs. L. C. Collins and Mr. W. N. Pettit, was appointed to secure additional members and to suggest means of securing funds. It is expected that 500 members will be secured.

All persons who desire to become members are requested to send their names, accompanied by \$1, membership dues, to Mr. H. D. Reed, treasurer, Ancon, Canal Zone.

Celebration of One Hundredth Anniversary of Lincoln's Birth.

All who are interested in the celebration of the one hundredth anniversary of the birth of Abraham Lincoln are cordially invited to meet at the Circuit Court house in Empire at 3.30 p. m., on Sunday, January 24, when preliminary steps will be taken and committees appointed for the purpose of properly celebrating the event. Any and all citizens of the Canal Zone are invited to be present.

Empire Gun and Rifle Club.

At a meeting held at the District Court room, Empire, on January 8, 1909, preliminary steps were taken toward the organization of a club to be known as the Empire Gun and Rifle Club. All residents of Empire interested in revolver, rifle, or trap shooting are requested to send their names to either Mack B. Henry, or Edward N. Jerry, Empire, C. Z.

Pacific Masonic Club.

A regular meeting of the Pacific Masonic Club will be held Saturday evening, January 23. Installation of officers will take place, and all members are urgently requested to be present. Initiation in A. O. O. H. All American Masons, sojourning on the Isthmus, are cordially invited.

Concert by the I. C. C. Band.

EMPIRE, C. Z.,
Sunday, January 24, 1909, at 6 p. m.

- PROGRAM.
- 1 March—*Col. Estey*.....Bagley
 - 2 Selection—*A Knight for a Day*.....Hubbell
 - 3 Waltz—*Autumn Smiles*.....Bagley
 - 4 a Two Step—*Hoop-La-Kack*.....Allen
 - b Characteristics—*John Chinaman*.....Fessler
 - 5 Selection—*Reminiscences of Scotland*.....Godfrey
 - By request.
 - 6 Idyl—*The Glow Worm*.....Lincke
 - 7 Scottische—*Dancing on the Veranda*.....Woods
 - 8 Overture—*The Beautiful Galatea*.....Suppe
 - 9 Patrol—*American*.....Mackham
 - 10 March—*Victorious Eagle*.....Rosey
- CHAS. E. JENNINGS, Musical Director.
- The next concert will be given at Hotel Tivoli, Ancon, C. Z., Sunday, February 7, 1909.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

CULEBRA.

A local league of four teams has been playing a series of indoor base-ball games at Culebra, the last game having been played Saturday evening. Messrs. Roberts, Kirk, Rackle and Holstead have been acting as captains of the teams. Kirk and Roberts each having won 5 and lost one, the tie to be played off in the near future. Great interest has been manifested in these games and they have done much to aid in the formation of a first-class representative team.

The I. C. C. orchestra gave the monthly concert Monday evening in the library, and a good sized crowd thoroughly enjoyed the selections. These concerts are becoming more and more popular. They are given once a month without any admission fee.

An outing for the juniors of the four associations is being planned for the latter part of the month, and will probably be a trip to Fort Loreuzo and up the Chagres River.

PROPOSALS FOR BUILDINGS.

Contract Post-Office, Gatun.

Sealed proposals will be received at the office of the Depot Quartermaster, Isthmian Canal Commission, Mount Hope, Canal Zone, until 11 a. m., Saturday, January 30, 1909, when they will be publicly opened, for the erection by contract of a post-office at Gatun, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Architect, Culebra. A deposit of \$5 is required to insure their return.

Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$250 conditioned upon the faithful performance of the contract.

The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals.

Contract Schoolhouse, Tabernilla.

Sealed proposals will be received at the office of the Depot Quartermaster, Isthmian Canal Commission, Mount Hope, Canal Zone, until 11 a. m., Saturday, January 30, 1909, when they will be publicly opened, for the erection by contract of a one room schoolhouse at Tabernilla, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Architect, Culebra. A deposit of \$5 is required to insure their return.

Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$200 conditioned upon the faithful performance of the contract.

The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals.

Misdirected Letters.

Division of Posts, Customs and Revenues,
Ancon, C. Z., January 20, 1909

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be secured on request of addressee:

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|---------------------------|----------------------|
| Anderson, C. H.—2 | Moore, Arthur D. |
| Azema, Matthew | Murphy, M. |
| Backus, Sanborn | McIntosh, Norman—2 |
| Blanchard, Miss Rachel G. | Owens, Thomas |
| Bromley, Mrs. John Z. | Painter, Joe H. |
| Bungar, Shearn | Rackle, Oscar W. |
| Cochrane, W. W. | Robertson, R. R. |
| Crowell, R. N. | Rodgers, Ernest L. |
| Daly, T. | Rogers, Michael P. |
| Deer, E. H. | Rozo, Dr. Santiago |
| Delville, Mrs. Emily | Schroeder, H. F. |
| DeWitt, J. K. | Smith, W. L. |
| Downey, M. | Smith, George L. |
| Farrall, Mrs. E. D. | Stevens, Walter H. |
| Fisher, Mrs. Allen D.—2 | Sweeney, George F. |
| Freedman, Chas. L. | Tebbs, P. M. |
| Gross, Sam | Thomas, Charles |
| Hall, Q. A. | Von Der Lieth, T. R. |
| Haywood, Harry A. | Wales, George |
| Hubbard Hon Wm F | Waltz, H. C. |
| Hyde, W. H. (pkg) | Westcott, Fred |
| Mackenzie Alex | Williams, Mrs. I. C. |
| Macy, Robt. C. | Wilson, William S. |
| Madden, R. G. | Wright, Ernest |
| Meirowitz, Jacob | Wygant, R. C. |

OFFICIAL CIRCULARS.

Wage Classification of Silver Employees.

CULEBRA, C. Z., December 30, 1908.

CIRCULAR No. 229.

The tables given hereafter, showing ratings and rates of pay for employes on the "silver roll," Isthmian Canal Commission, effective on and after February 1, 1909, have been prepared with a view to limiting the rates of pay for "silver" employes, both hourly and monthly, and to securing uniformity in pay in the different departments and divisions for the same class of work. No attempt has been made to make any radical revision of, or reduction in, the number of ratings between the minimum and maximum limits fixed.

The following are the standard rates: Per hour, silver, 10 cents, 14 cents, 20 cents, 26 cents, 32 cents, 40 cents, and 50 cents. In addition to these seven standard silver hourly rates of pay, two special rates—64 cents and 88 cents, silver, per hour—have been established as described hereinafter. No other hourly rates will be paid.

For monthly silver employes, the maximum rate of pay, per month, is \$150, silver, except for the special ratings shown hereafter, which are applicable only to other than West Indian skilled and unskilled labor. Monthly silver rates of pay shall not in general exceed the pay which would be received for the number of hours worked at the hourly rate of pay established for that kind of work. The monthly silver roll is intended to cover employes whose hours of work are more or less irregular and consequently who would receive overtime, and whose time would be difficult to check up without special provision. It is desired that wherever practicable, an hourly rate be applied in preference to a monthly rate. The following table shows the corresponding monthly amount, at the different standard hourly rates of pay, based on eight, nine, ten, and twelve hours of work per day:

Standard rates per hr.	Monthly pay (silver) equivalent to different hourly rates. Sundays not included.			
	8 hours daily, 204 hours per month.	9 hours daily, 230 hours per month.	10 hours daily, 255 hours per month.	12 hours daily, 306 hours per month.
Silver.				
10 cents.....	\$20.40	\$23.00	\$25.50	\$30.60
14 cents.....	28.56	32.00	35.70	42.84
20 cents.....	40.80	46.00	51.00	61.20
26 cents.....	53.04	59.80	66.30	79.56
32 cents.....	65.28	73.60	81.60	97.92
40 cents.....	81.60	92.00	102.00	122.40
50 cents.....	102.00	115.00	127.50	153.00
64 cents.....	130.56	147.20	163.20	195.84
88 cents.....	179.52	202.40	224.40	260.28

No rating, in addition to those given in the tables below, shall be established until after same has been approved by the Chairman, and his approval shall likewise be necessary for any new rates of pay under any rating.

While the standard hourly rates of pay carry with them standard designations, such as Boy "A," Laborer "A," Laborer "B," etc., it is not intended that this should necessarily change the designations carried at the present time by employes, which more particularly fix the character of their work. For instance, while a trackman, receiving 26 cents, silver, an hour, is a Laborer "B," his designation on the pay-rolls should not be Laborer "B" but Trackman "B." Likewise a carpenter at 50 cents, silver, per hour, would be designated Carpenter "B." The rates of pay of all laborers—"A," "B," "C," and "D"—employed as trackmen, axemen, dumpmen, etc., should be fixed in accordance with the rules specified below under each of the standard ratings. For instance, Trackman "A" and Trackman "B" would be the standard rates for all trackmen except Europeans, and Trackman "C" and Trackman "D" would be the standard rates for European trackmen.

The standard rates of hourly pay, for silver employes, and description of duties, are as follows:

BOY "A," TEN CENTS (SILVER) PER HOUR.

Water-shop Messenger—This rating is for the lighter and easier work. It is intended that all boys shall be taken on at this rating, and not promoted until qualified and required to perform work of Boy "B."

BOY "B," FOURTEEN CENTS (SILVER) PER HOUR.

Water-shop Messenger—This rating is for heavier and harder work. In addition to boys, it may be filled by men who have been injured in the service of the Commission, when the grade of work which they are capable of performing does not entitle them to be carried in the next higher rating.

LABORER "A," TWENTY CENTS (SILVER) PER HOUR.

This is the standard rating for all common labor—except European and should not be exceeded except

for work out of the ordinary or where specified below. Men who have been injured in the Commission service performing the work of Boy "A" or Boy "B" may be rated Laborer "A," provided the circumstances in each particular case render same desirable or necessary. Other men performing work of Boy "A" or Boy "B" should be graded Laborer "A," unless boys cannot be obtained who can perform the work satisfactorily. Boys performing the work of Boy "A" or Boy "B" cannot be rated Laborer "A." Laborers performing work in this rating of a particular kind, such as track work, shall be known as Trackman "A," etc.

LABORER "B," TWENTY-SIX CENTS (SILVER) PER HOUR.

This rating is intended to include common labor, except European, on work requiring more intelligence and effort than Laborer "A," or where the liability of injury to health, from accident or otherwise, is greater. Length of service, however satisfactory, does not entitle Laborer "A," while performing work of that grade, to promotion to Laborer "B." Laborers, performing duties of helpers to shop and other mechanics, such as carpenters, etc., shall be known and graded as Carpenter Helper "B," etc.

LABORER "C," ARTISAN "C"—THIRTY-TWO CENTS (SILVER) PER HOUR.

This rating shall be applied to:

1. Laborer "C," which is intended to include common labor, except European, on work involving greatest effort and responsibility this class of employe is able to perform, as well as the greatest liability of injury to health, by accident, or otherwise. This rate shall also be standard for noncontract European and other white common labor.

2. Artisan "C," which shall be the standard rate of pay for shop, building construction and other mechanics and artisans, who shall be known as Machinist "C," etc.

LABORER "D," ARTISAN "D"—FORTY CENTS (SILVER) PER HOUR.

This rating shall be applied to:

1. Laborer "D," which is intended to cover European contract labor. It may also be applied to such European noncontract labor, on responsible work as may be found worthy of same, after not less than six months' continuous service.

2. Artisan "D," which shall be applied to such shop and other mechanics and artisans, the quantity and quality of whose work is above the average and whose length of satisfactory service in Grade "C" renders them worthy of promotion.

ARTISAN "E"—FIFTY CENTS (SILVER) PER HOUR.

This shall be the highest regular hourly rate of pay for silver employes and shall be applied only to those employes, the quality and quantity of whose work is most satisfactory. When this wage schedule goes into effect (February 1, 1909), all silver employes at present getting 50 cents silver and over, per hour, shall be re-rated to Grade "E," at 50 cents, silver, per hour, unless they are eligible for the special Grade "F" and "G" below.

ARTISANS "F"—SIXTY-FOUR CENTS (SILVER) PER HOUR—(SPECIAL).

This is a special grade established to cover (1) such employes as are now carried on the rolls at rates in excess of 50 cents, silver, per hour, in the following trades only, who, in the opinion of the Head of Department or Division, cannot be reduced to grade "E" at 50 cents, silver, per hour, without detriment to the work or injustice to the employe: blacksmiths, boilermaker, boiler-scaler, coppersmith, machinist, pipefitter, planing-mill hand, and shipwright. All such shall hereafter be rated Artisans "F," at 64 cents, silver, per hour, and all others now on the rolls shall be reduced to grade "E" at 50 cents, silver, per hour; (2) for such American citizens on the silver roll as are now or may hereafter be employed, the value of whose services properly classes them in this grade; (3) any special cases which may be approved by the Chairman, after having been recommended to him in a special letter. This third class is intended to cover, only, a situation or circumstances which cannot be anticipated at the present time.

No new employe and no employe receiving at present less than 64 cents silver, an hour, shall hereafter be given Grade "F," unless he comes under (2) or (3) above. American citizens in Grade "F" shall be entitled to the same benefits of longevity, under this schedule, as they now receive.

ARTISAN "G," EIGHTY-EIGHT CENTS (SILVER) PER HOUR (SPECIAL).

This is a special grade established to cover:

(1) Such employes as are now carried on the rolls at rates in excess of 50 cents, silver, per hour, in the following trades only, who in the opinion of the Head of the Department or Division cannot be reduced to Grade "E" or "F," without detriment to the work or injustice to the employe: blacksmith,

boilermaker, car repairer, caulker, coppersmith, diver, lineman, machinist, moulder, pipefitter, planing-mill hand, shipwright, wireman. All such shall hereafter be rated Artisans "G," at 88 cents, silver, per hour, and all others now on the roll shall be reduced to Grade "E," at 50 cents, silver, per hour, or Grade "F," at 64 cents, silver, per hour; (2) for such American citizens on the silver roll as are now or may hereafter be employed, the value of whose services properly classes them in this grade; (3) any special cases which may be approved by the Chairman, after having been recommended to him in a special letter. This third class is intended only to cover a situation or circumstances which cannot be anticipated at the present time.

No new employe, and no employe receiving at present less than 85 cents silver, per hour, shall be given Grade "G," unless he comes under (2) or (3) above. American citizens in Grade "G" shall be entitled to the same benefits of longevity as they now receive.

APPROVED RATINGS AND RATES OF PAY, SILVER ROLL, "OFFICERS AND EMPLOYEES."

Designation.	Rate Silver Mo'th. Hour.
Attendants.....	\$30.00
	40.00
	50.00
	60.00
	75.00
	80.00
	90.00
Captains. (Masters will be known and rated as "Captains.")	120.00
	140.00
	150.00
	160.00
	180.00
	200.00
	220.00
Clerks. (Copyists and hotel clerks will be known and rated as clerks.)	60.00
	75.00
(Note: Under the rules of the Civil Service Commission no silver employe holding the position and performing the duties of clerk, hotel clerk, or copyist can receive a compensation greater than \$150 silver per month.)	90.00
	100.00
	120.00
	150.00
Dispensers.....	80.00
	85.00
	90.00
	100.00
Foremen. (Note: Foremen on the silver rolls who are at present receiving more than \$150 silver, per month, will either (1) be reduced to \$150; (2) be discharged and replaced with American foremen, or (3) if the interests of the work require their retention, an application may be made to the Chairman for an exception in their favor in such a case.)	50.00
	75.00
	100.00
	120.00
	125.00
	150.00
Foremen, assistant to.....	100.00
	120.00
	50.00 \$0.40
	60.00 .50
	75.00
	80.00
	100.00
	120.00
	125.00
	150.00
Mates. (Note: Ratings above \$150 silver per month are only for other than West Indians and only for those now on the rolls.)	140.00
	160.00
	200.00
Storekeepers.....	50.00
	60.00
	75.00
	100.00
	120.00
Telephone operators; also telegraph operators.....	50.00
	75.00
Timekeepers. (Note: Under Civil Service rules, no timekeeper can be employed on the silver rolls at a compensation greater than \$150 per month. No exception can be made to this rule.)	75.00
	120.00
	125.00
	150.00
Teacher. (For Palo Seco).....	10.00
Watchmen. (Note: Watchmen should be employed on a monthly basis, unless special reasons exist which render an hourly rating more desirable and economical.)	40.00
	50.00
	60.00
	65.00
	70.00
	75.00
	80.00
	100.00
SILVER ROLL—"SKILLED AND UNSKILLED LABOR."	
Axemen—(a) For other than European labor.....	.20
(b) For other than European labor.....	.26
(c) For European labor only.....	.32
(d) For European labor only.....	.40
(Note: Monthly rating for axemen shall be limited to surveying parties, in which case the monthly rate shall be the equivalent of the above hourly rates as nearly as practicable, considering hours of work and other conditions of employment.)	

Designation	Rate Mo. th.	Silver Hour	Designation	Rate Mo. th.	Silver Hour	Designation	Rate Mo. th.	Silver Hour
Baker	\$15.00		Bir men—(continued)	\$100.00		Pressmen		\$0.32
Barber	150.00			110.00				.40
Boys, bill	50.00			120.00				.50
	25.00			125.00		Plumbers		.40
	50.00			130.00				.50
	10.00			150.00				.50
Boys, water (Use \$10 and messenger boys)	\$0.10		Flagmen		\$0.26	Helpers		.26
Blacksmiths. (Note: Blacksmiths shall not be carried on the rolls if a monthly rate of pay except under special conditions.)	110.00	.32	Helpers, kitchen	30.00	.32	Planing mill hands		.32
		.40		35.00				.40
		.50		40.00		(Special)		.50
		.64		50.00		(Special)		.64
		.8	Helpers, survey		32	Helpers		.88
		.26	Helpers, laboratory	100.00		Pumpmen	\$90.00	.26
Blueprinters. (Note: \$19 rate covers employees now on contract to receive payments will be made as follows: 100 \$19 in this rating.)	60.00		Helpers, observatory	120.00			100.00	
	80.00		Hostlers	70.00		Riggers		.32
	100.00			90.00		Rubber stamp maker		.50
	120.00			90.00		Saddler	100.00	
Boatmen	50.00			100.00		Seamen, sailors	60.00	
	60.00		Janitors	125.00			65.00	
	7.00			35.00			75.00	
	100.00			40.00			80.00	
	90.00			50.00			90.00	
Boatwatches		.32		60.00		Scavengers		65.00
Boilermakers		.40		70.00			75.00	
		.50	Head	75.00		Scrubbers		35.00
(Special)		.64	Laborers, common, "A"		.30	Scullions, (re-rate as helpers, kitchen)		
(Special)		.88	"B"		.26	Seamstress, (also \$1 per diem)	24.00	
Helpers		.26	"C"		.32	Shipwrights		.32
Bookbinder		.50	"D"		.40			.40
Boiler seals		.64	Laundresses	30.00		(Special)		.64
Car repairs		.32		35.00		(Special)		.88
(Special)		.40		40.00		Storemen	75.00	
Helpers		.50	Laundrymen	50.00		Stablemen	60.00	
Carpenters		.88		60.00			75.00	
		.26		65.00		Stewards	75.00	
		.32		70.00			100.00	
		.40		75.00			125.00	
		.50		120.00			150.00	
Helpers		.26	Leadsman	90.00		Switchman, "A"		.20
Carpenters	60.00		Linemen		.32	Switchman, "B"		.26
	70.00				.40	Teamsters	40.00	
		.32			.50		60.00	
		.40	(Special)		.88		70.00	
		.50	Helpers		.26		80.00	
(Special)		.88	Machetemen			Trackmen—		
Helpers		.26	"A," for other than European labor		.20	"A," for other than European labor		.20
Chambermaids	25.00		"B," for other than European labor		.26	"B," for other than European labor		.26
	30.00		"C," for European labor only		.32	"C," for European labor only		.32
	35.00		"D," for European labor only		.40	"D," for European labor only		.46
	40.00		Machinists		.32	Wardmaids	24.00	
	40.00				.40	Waiters	30.00	
	60.00		(Special)		.50		35.00	
Checkers		.64	(Special)		.88		40.00	
Chairmen. (Note: Monthly rate for chairmen shall be limited to surveying duties, former hourly ratings for chairmen shall be given in other ratings.)	90.00		Helpers		.26	Head	60.00	
	100.00		Masons		.32		50.00	
	60.00				.40		60.00	
	80.00				.50		75.00	
		.40			.50		100.00	
		.50			.50		100.00	
		.64	Helpers		.26		110.00	
		.88	Messengers. (Note: Messengers in general should be on a monthly basis. If any employee at present performing the duties of and rated as messengers, on an hourly basis, are recommended by the Head of their Department or Division to be retained on an hourly basis for any special reasons they need not be changed to an equivalent monthly basis. No further appointments of messengers with pay exceeding \$100 silver per month will be made. The pay of the three messengers now receiving \$120 per month will not be reduced. When a vacancy occurs in these three positions they will be filled at \$100 silver per month.)	20.00			120.00	
		.40		30.00			30.00	
		.50		35.00			35.00	
		.64		40.00			40.00	
		.88		45.00			50.00	
		.26		50.00			60.00	
		.32		60.00			75.00	
		.40		75.00			80.00	
		.50		80.00			100.00	
		.64		100.00			100.00	
		.88		120.00			110.00	
		.26		120.00			120.00	
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PERFORMANCE OF STEAM SHOVELS

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS

The subjoined tables show the monthly records of steam shovel work in Canal excavation since American occupation.

ATLANTIC DIVISION

COLON DISTRICT						GATUN LOCKS						GATUN SPILLWAY																																																																															
Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).																																																																										
																		1907—	July	1	13	56	731	11.12	1907—	July	1.33	27	4	10,795	31.12	August	2.0	27	4	13,417	4.7	September	2.0	24	77	8,155	8.03	October	2.1	27	743	2,115	11.7	November	2.11	21	854	20,491	11.27	December	2.00	25	1,395	39,878	5.53																														
1908—	January	2	26	1,215	31,418	3.18	1908—	January	5.72	26	1,302	33,840	3.18	January	3.00	26	1,264	22,863	3.1	February	3.75	24	1,483	28,402	1.29	February	2.6	26	1,311	34,149	2.81	March	4.51	26	1,154	27,795	1.7	April	5.0	25	1,184	27,795	1.7	May	4.42	25	908	23,001	17.0	June	3.53	26	1,117	29,045	13.82	July	3.00	25	971	25,514	13.67	August	2.85	25	753	20,851	15.88	September	2.05	25	792	19,312	8.52	October	2.95	27	555	14,999	12.22	November	2.71	23	487	11,203	21.37	December	2.00	25	814	21,167	7.95

CENTRAL DIVISION

CULEBRA SECTION						CHAGRES SECTION																																																																																																																																																																																																																																																																																																																																															
Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cubic yards).		Rainfall (inches).		Maximum temperature in shade (degrees Fahrenheit).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).																																																																																																																																																																																																																																																																																																																																								
			Per day.	Per month.	Panama.	Culebra.																																																																																																																																																																																																																																																																																																																																															
1906—	January	12.83	26	363	9,430	1.28	1.19	1907—	January	0.15	27	716	19,733	12.2	February	12.48	23	587	13,494	0.57	0.64	August	0.92	24	976	23,211	14.71	March	12.37	27	716	19,335	0.45	1.34	September	2.22	27	4,8	11,544	13.92	April	12.33	24	720	17,289	11.42	8.43	October	3.00	24	61	14,611	9.95	May	12.41	27	581	15,684	7.54	7.25	November	6.12	25	63	15,756	2.26	June	14.81	26	539	14,026	6.92	3.94	December	8.11	26	797	20,720	0.20	July	16.64	25	378	9,441	14.61	20.26	1908—	January	1.33	24	798	14,444	0.11	February	11.47	26	1,082	28,094	0.41	August	16.93	27	536	14,461	11.84	12.97	March	11.76	25	1,111	28,094	1.8	September	21.33	24	568	15,664	7.41	6.22	April	22.67	27	532	14,373	3.97	8.46	May	20.46	24	489	10,833	21.05	19.19	June	41.85	21	784	18,818	10.40	6.91	July	22.68	25	491	12,267	8.15	9.09	August	31.04	26	702	18,248	0.08	0.00	104	September	39.87	23	674	15,966	0.13	0.49	108	October	43.88	25	741	18,530	0.16	0.08	105	November	44.12	26	765	19,884	0.09	0.04	110	December	31.70	26	533	21,674	6.22	7.45	118	1909—	January	38.28	25	651	16,266	13.53	14.74	118	February	43.38	26	680	17,670	9.55	9.42	118	March	39.70	27	729	19,680	11.28	11.81	120	April	38.50	24	511	19,468	10.86	11.35	123	May	37.63	27	813	21,963	15.44	15.27	123	June	41.85	21	784	18,818	10.40	6.91	128	July	42.72	25	965	24,113	1.47	2.30	124	August	43.42	26	1,084	28,177	0.75	0.91	125	September	43.67	24	1,186	28,475	0.00	0.01	124	October	42.19	26	1,171	30,451	0.41	0.13	125	November	41.28	25	1,202	30,031	1.36	1.67	129	December	41.56	25	918	22,948	12.91	12.63	129	1907—	January	42.92	26	1,011	26,281	8.21	8.76	126	February	52.57	26	1,071	27,848	11.79	13.23	121	March	52.58	26	1,122	29,184	8.11	7.74	121	April	49.68	25	1,178	29,444	9.76	13.74	121	May	49.55	27	1,177	31,766	8.87	9.03	121	June	50.91	23	1,156	26,577	4.46	5.10	121	July	50.73	26	1,209	31,421	5.09	4.40	121

*After July 1, 1908, the old Chagres and Culebra divisions were consolidated in the Central Division. No separate record for steam shovels in the old divisions has been kept since that date. Figures for months after June under "Culebra section" include work done in the whole Central Division.

Summary for the month of December, 1908:
 Average number of shovels at work, 72.99.
 Average output per shovel per day, 1,000 cubic yards.
 Average output per shovel per month, 29,000 cu. yds.
 The working day for steam shovels is eight hours.

PACIFIC DIVISION

PEDRO MIGUEL LOCKS						MIRAFLORES LOCKS, DAMS AND SPILLWAY						LA BOCA DISTRICT																																																							
Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).	Period	Average number of shovels at work.	Number of working days in month.	Output per shovel (cu. yds.) per day.	Output per shovel (cu. yds.) per mo.	Rainfall (inches).																																																		
																		1908—	March	0.50	26	600	19,134	4.98	1908—	March	1.00	26	4	12,360	0.11	April	1.00	26	632	16,282	0.76	May	1.00	25	608	18,204	8.65	June	1.84	25	608	18,204	7.56	July	1.54	27	656	17,702	8.41	August	2.65	27	803	18,467	8.65	September	3.00	23	852	22,155	10.27

COMMISSARY DEPARTMENT.

The hours during which commissaries are open are as follows: Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m. All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning January 19:

FRESH MEATS.

Table listing fresh meats and their prices per lb. Items include Mutton (Stewing, Shoulder, etc.), Lamb (Stewing, etc.), Veal (Stewing, etc.), Pork (Cuts, etc.), and Beef (Suet, Soup, etc.).

MISCELLANEOUS.

Table listing miscellaneous items and their prices. Items include Livers (Beef, Calf), Sausage (Pork, Bologna, etc.), Sweet bread (Veal, Beef), Eggs, and Oysters.

POULTRY AND GAME

Table listing poultry and game items and their prices. Items include Chickens (Fancy Roasting), Fowls, Broilers, and Quails.

CURED AND PICKLED MEATS.

Table listing cured and pickled meats and their prices. Items include Bacon (Strips, English), Ham (Sugar-cured, One-half), and Beef (Salt, family).

DAIRY PRODUCTS.

Table listing dairy products and their prices. Items include Butter (Prints, Roquefort), Cheese (Neufchatel, Young America, etc.), and French cheese in tins.

VEGETABLES AND FRUITS.

Table listing vegetables and fruits and their prices. Items include Parsnips, Celery, White potatoes, Sweet potatoes, Cabbage, Onions, Yams, Turnips, and Carrots.

Table listing various fruits and their prices. Items include Beets, Lemons, Oranges, Apples, Grapes, Grapefruit, Tangerines, Limes, Cranberries, and Pineapples.

§ Sold only from cold-storage and not from Commissaries.

LEGAL NOTICES.

In the Circuit Court, Second Judicial Circuit, Canal Zone, Empire, December 26, 1908.

To any and all persons interested:

You are required to enter your appearance in the clerk's office in the above named court at Empire in the said Canal Zone on the 6th day of April, 1909; and to answer the petition of Tom M. Cooke, Collector of Revenues, acting under Section 779, Code of Civil Procedure, stating that each of the deceased persons named below died intestate, leaving property in the Canal Zone, and that no heirs have appeared to claim the same; and asking that a day be fixed for inquiries to ascertain whether said estates escheat to the Government of the Canal Zone:

(1) Joseph P. Roche, San Pablo, died on or about May 22, 1908, leaving about 50 acres of growing bananas and personal property at Frijoles and San Pablo;

(2) John J. Farrill, Empire, died on or about July 24, 1905, leaving a pay certificate for \$20 and cash 70 cents at Empire;

(3) George L. Walker, Empire, died on or about September 21, 1906, leaving Isthmian Canal Commission pay certificate for \$92.50, cash \$1.40, and personal belongings of little value;

(4) Lauchlin Short, Empire, died on or about March 8, 1905, leaving Isthmian Canal Commission pay certificate for \$2.25 United States currency and personal belongings of little value at Empire;

(5) Unknown man (white), killed on or about August 4, 1905, by Panama railroad passenger train south of Matachin, leaving \$32 Panamanian currency. In the hands of the Treasurer of the Canal Zone at Empire;

(6) Unknown man (white), found dead in Las Sabanas on or about January 7, 1908, leaving \$625 United States currency and ten cents in Panamanian currency. In the hands of the Treasurer of the Canal Zone at Empire;

(7) Unknown man, skeleton found on or about July 8, 1908, in the woods near Gorgona water shed, leaving \$3.25 Panamanian currency, two keys, one French copper coin, one signet ring, and one pocket knife. In the hands of Treasurer of the Canal Zone at Empire;

(8) Unknown man (Indian), killed by a Panama railroad train near Mount Hope, leaving \$6.20 Panamanian currency, one silk handkerchief, a silver watch, and leather chain and key. In the hands of Treasurer of Canal Zone at Empire.

(9) Unknown man, killed by a passenger train near Corozal on or about June 3, 1906, leaving \$1.70 United States currency, and \$1 Panamanian currency. In the hands of Treasurer of Canal Zone at Empire;

(10) Jean B. Stone, Empire, died on or about March 17, 1908, leaving cash \$160 35 United States currency and \$156.50 deposited with the International Banking Corporation, and varied personal effects at Empire;

(11) Joseph Allman, resided at Culebra, died on or about July 20, 1905, leaving \$22 United States currency and \$2 Panamanian currency.

By order of the Court.

E. M. GOOLSBY, Circuit Court Clerk.

United States of America, Canal Zone, Circuit Court Second Judicial Circuit.

United States of America, Plaintiff, vs.

Mrs. Lacroisada and husband, Manuel Corrales, Carlos Corrales et al. Defendants.

To Mrs. Lacroisada and husband, Manuel Corrales, and Carlos Corrales:

You are required to enter your appearance in the Clerk's office of the above-named court at Empire in the said Canal Zone within forty days after the last publication of this notice, which shall be at the next regular session of said court after the expiration of said forty days; and to answer the complaint of the plaintiff, a copy of which has been mailed to your last known place of residence.

If you fail to appear within the time aforesaid, the plaintiff will take judgment against you by default and demand from the said court the relief applied for in said complaint.

Witness the Honorable H. A. Gudger, Judge of said Circuit this 22d day of December, 1908.

E. M. GOOLSBY, Circuit Court Clerk.

The passenger car equipment of the Panama railroad includes 9 new first-class cars, 7 old first-class cars, 10 new second-class, 12 old second-class, 4 new combination baggage and mail, 4 old baggage cars, 2 hospital cars, 3 special cars, and 1 pay car.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Table listing ship movements from New York to Colon. Includes ship names like Prinz Joachim, Allianca, Magdalena, Colon, and dates of departure.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Table listing ship movements from Colon to New York. Includes ship names like Panama, Advance, Urinoco, Allianca, Prinz Joachim, Colon, Atrato, Panama, Prinz Aug. Wilhelm, Advance, Trent, Allianca, Prinz Joachim, Tagus, and Prinz Aug. Wilhelm.

NEW ORLEANS TO COLON.

Table listing ship movements from New Orleans to Colon. Includes ship names like Parismina, Heredia, Ellis, Parismina, Heredia, Ellis, Parismina, Heredia, Ellis.

COLON TO NEW ORLEANS.

Table listing ship movements from Colon to New Orleans. Includes ship names like Ellis, Parismina, Heredia, Ellis, Parismina, Heredia, Ellis, Parismina, Heredia, Ellis.

COLON TO BARBADOS, CALLING AT TRINIDAD.

Table listing ship movements from Colon to Barbados. Includes ship names like Magdalena, Orinoco, Atrato, and Trent.

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Generale Trans atlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line for New Orleans via Kingston, Ja., will be the steamship Median on or about February 2. The Tampican has been ordered to proceed to Galveston instead of New Orleans.

Since the beginning of the fiscal year the Panama railroad shops at Cristobal have done all the repair work for the railroad, and in addition have erected three 20-ton coaling cranes, 8 refrigerator cars, one 15-ton coaling crane, and three hundred 60000-pound box cars.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, JANUARY 27, 1909.

No. 22.

The Canal Record

Published weekly under the authority and supervision of the
ISTHMIAN CANAL COMMISSION

"The Canal Record" is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the "gold" roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for December is published in other columns of this issue of THE CANAL RECORD. The grand total of excavation for the month was 3,315,867 cubic yards, of which 1,897,720 cubic yards were removed by steam shovels, and 1,418,147 cubic yards by dredges. This total of 3,315,867 cubic yards is 54,194 cubic yards greater than that stated in the issue of THE CANAL RECORD of January 6, which was based upon telephone reports from the Division Engineers that have since been corrected to the present figures. The corrected figures for December make a grand total of excavation for the calendar year 1908, of 37,070,887 cubic yards instead of 37,016,693, as given in THE CANAL RECORD of January 6, which makes a monthly average of 3,089,240 cubic yards for 1908, instead of 3,084,724.

During the month 115,730 cubic yards of material were dumped on the toes of Gatun Dam, 73,897 cubic yards on the south toe, and 41,833 cubic yards on the north toe.

The average daily number of laborers actually employed in Canal work was 13,694. There were 380 43-ton of explosives used, and 416,978 feet of rock drilling was accomplished.

On the relocation of the Panama railroad, 63,478 cubic yards were excavated, and 188,724 cubic yards were placed in embankment, making, up to the present time, a total of 723,307 cubic yards of excavation and 3,023,694 cubic yards of embankment. During the month 3,820 linear feet of permanent track were laid, making a total of 57,286 feet. The force of laborers employed on this work during the month averaged 1,095 men daily.

Very few "gold" men were employed in the United States during December. Practically no laborers have been recruited since August, 1908, the force having reached a condition where all demands for laborers

are easily supplied from those already here or those who come to the Isthmus of their own accord. This is a noteworthy change from former conditions. Between January 1 and December 31, 1907, 8,875 West Indian laborers were recruited, an average of 739 per month, and the cost of their transportation was approximately \$88,750. During the same period there were recruited 7,469 European laborers, or an average of 622 per month. During the six months, from December 1, 1906, to May 31, 1907, it was necessary to recruit 14,000 laborers from Europe and the West Indies in order to increase the silver force by 4,500 men. Thus, in a period of six months, when no epidemic prevailed and there were no particularly unfavorable conditions on the Isthmus, 9,500 laborers deserted the work.

There was an increase in the number of rations served to Spanish laborers during the month of December, and also an increase in the number of meals served in the Commission hotels. The decrease in the attendance at the laborers' kitchens still continues. During the past two months the number of men leaving the kitchens has averaged about 200 per month.

The general revenues of the Canal Zone collected during December amounted to \$14,990.74, as compared with \$10,244.15 collected in November.

Expenditures for Rails, Ties, and Fastenings.

The total expenditures for rails, ties and fastenings, made by the Commission, exclusive of the second main track, Panama railroad, and for the relocation of the Panama railroad, are as follows:

From inception of work to June 30, 1907..	\$990,570.75
From July 1, 1907, to June 30, 1908.....	1,069,108.16
From July 1, 1908, to September 30, 1908..	139,671.67
Total to September 30, 1908.....	\$2,199,350.58

New Station at Gatun.

A concrete station on the permanent line of the Panama railroad at Gatun is nearing completion. It is of a type adapted to the climate of the Isthmus where the equable temperature makes outdoor waiting facilities desirable all the year around. A long platform of concrete, covered with a sheet iron roof, is divided in the center by a ticket office and news stand into two parts, one for first-class and one for second-class passengers. Each part will be provided with seats. At the south end of the platform is a two-story building of concrete blocks. The ground floor will be used for the safekeeping of baggage and express matter, and room is provided for the telegraph office.

The second floor is partitioned into six rooms, a screened veranda, toilet and bath rooms, and will be fitted up as living quarters for the agent and his family. Along

the front of the waiting platform and the building is a concrete walk extending to the tracks, and running to a concrete stairway by which passengers will mount to the highway that runs through the village. As the railroad cuts through one of the hills on which Gatun is built, the highway crosses the tracks on a bridge, avoiding a grade crossing.

Mr. Taft's Visit.

Mr. Taft, President-elect, accompanied by Mrs. Taft, his private secretary, and seven civil engineers, sailed from Charleston, S. C., on the armored cruiser *North Carolina* on Monday, January 25, for Colon, where they are expected to arrive Friday next. The seven civil engineers, who are coming for the purpose of examining the Canal work are: Frederick P. Stearns, John R. Freeman, A. P. Davis, J. D. Schuyler, Allen Hazen, Isham Randolph, and C. F. Allen. Mr. and Mrs. Taft will be the guests of Col. Goethals at Culebra, and the engineers will be the guests of various members of the Commission at Culebra and Gatun.

Rock for Pacific Locks and Dams.

Rock for the concrete work in the locks and dams at Miraflores and the locks at Pedro Miguel will be quarried from the south slope of Ancon Hill. A steam shovel and a force of men are at work grading for a track from the railroad at East La Boca up to the site of the proposed crusher plant back of "La Folie Dingler," the quarantine detention station. The quarry will be opened at 180 feet above sea-level and will extend up the hill to elevation 375, covering the east side of the hill back of the quarantine station, as far as necessary in order to procure the amount of rock needed—between 1,500,000 and 2,000,000 cubic yards. The rock will be transported from the quarry to the crushers by trains, and the preparatory work is advancing at a rate that justifies the expectation that crushed rock can be delivered during August, when it is proposed to begin the laying of concrete at Pedro Miguel.

The crusher plant will consist of one large and four auxiliary crushers. The large crusher will take pieces of rock as large as 36 by 36 inches as they come from the quarry and reduce them to five inches or less. This crusher can handle 400 cubic yards of rock an hour. Such rock as comes from the quarry in pieces that will pass through a 5-inch ring, and the product of the big crusher, will be conveyed by gravity to the four auxiliary crushers, where it will be broken into pieces that will pass through a 2½-inch ring. From the auxiliary crushers the rock will be conveyed to cars on the siding now in process of construction whence it will be hauled to the works at Miraflores and Pedro Miguel. Power for running the crushers will be supplied from the electric power house at Miraflores,

NOTES OF PROGRESS.

(Continued.)

which will be in operation before the concrete laying at Pedro Miguel is begun.

Bids for the crusher plant and auxiliary machinery have been approved, and the contract will be let in a few days.

Handling Plants for Pacific Locks.

The contract for the material and concrete handling plants for Miraflores and Pedro Miguel locks has been let to the Wellman-Seaver-Morgan Company of Cleveland, Ohio, for \$294,328, with a provision that a change may be made in the berm cranes on payment of \$14,200. The contract includes eight cantilever cranes erected and ready to operate, with a guarantee that 100 cubic yards of concrete can be handled each hour. It includes also, the motors necessary for operating the cranes, and all electric connections complete, excepting feeder and trolley wires which will be furnished by the Commission.

Four of the cranes will operate on the berms of the Miraflores locks and four in the lock chambers. The plant at Miraflores is to have the sand and rock dumped in piles the whole length of the lock site, and to this end a trestle will be built on either side of the site and parallel to it, on one side of which rock will be dumped while sand will be stored on the other side. Each berm crane is equipped on the end toward the storage piles with a grab bucket which will take the sand and stone from the respective piles and deliver them into a hopper above the mixer. The mixer, although not a part of the crane contract, will be erected on the tower of the crane beneath the power control house. From the hopper above the mixer the rock and sand will pass through a measuring hopper and then into the mixer. Cement will be delivered to a storage platform erected on the tower of each berm crane, whence a conveyor will take it to the measuring bin floor and a cross conveyor will carry it to any position desired. From the mixer the concrete will be delivered into buckets and will then be handled by the end of the berm crane that extends over the lock chamber, which will deliver it either at the side wall or onto a platform attached to the chamber cranes. The berm cranes can also handle material excavated from the side walls and deposit it in cars on the berm.

The chamber cranes will receive the concrete deposited on the platform by the berm cranes, pick up the buckets and deliver the material to one-half the middle wall. They will also handle all the forms. Although the berm and chamber cranes overlap, their height is such that their arms will pass over or under each other, according to the location where they are working.

Each berm crane will be equipped with four motors, two on each cantilever end, one for hoisting and one for trolleying. One of the hoist motors is provided with friction clutches and gears for moving the crane along its track. Both berm and chamber cranes will move laterally. Each chamber crane will be equipped with four motors, two for controlling and two for hoisting, and will be supplied with an extra motor for moving it along its track.

The contract is entered into with the un-

derstanding that a change can be made in the berm cranes by substituting a derrick boom for the cantilever that extends over the lock site.

The part of the handling plant that is to be used at Pedro Miguel is to be erected first. This consists of two berm cranes and two chamber cranes which, at the completion of the Pedro Miguel locks, will be moved to Miraflores. The layout at Pedro Miguel is such that the berm cranes will be used at the north end of the locks over the storage piles and only in handling material from the piles to the mixers and in delivering concrete into cars, in which it will be hauled to the chamber cranes.

Power for operating the cranes will be furnished from the Miraflores power plant now in process of erection.

Grievances of Conductors.

The Special Board, appointed by the Chairman of the Isthmian Canal Commission, to investigate certain grievances of railway conductors, will hold its next hearing at the Administration Building, Ancon, on Sunday, February 7, at 9.30 a. m. All conductors in the Isthmian Canal Commission and Panama railroad service, who have grievances of any kind or who desire to give testimony, and who have not yet testified before the Board, are requested to be present at that time. A round-trip pass over the Panama railroad will be sent to those who desire to attend and who forward their addresses to the Chairman of the Board, Joseph Bucklin Bishop, Ancon.

Civil Service Examination.

A Civil Service Examination, for the position of Superintendent of Construction, Supervising Architect's Office, Treasury Department, will be held in the office of the Chairman, February 4 to 5. Applicants must have had at least five years' practical experience in building construction, either as superintendent proper, contractor, architect, or engineer, and must establish this experience prior to being admitted to the examination. The initial salary of this position is \$2,000 per annum. A description of the examination, and a copy of the application form, may be obtained from the Secretary of the Isthmian Civil Service Board, office of the Chairman, Culebra, C. Z.

New Chief of Police.

Capt. George R. Shanton has resigned as Chief of Police of the Canal Zone to become Chief of Police of Porto Rico, with headquarters at San Juan. He has been at the head of the Zone police force since May 4, 1904. Mr. Grosvenor A. Porter, who is to succeed Capt. Shanton, and First Lieut. Charles W. Barber, Second Infantry, U. S. A., who is to be first lieutenant of police, arrived on the *Allianca* on January 26. Mr. Porter is the son of a Confederate blockade runner, was a member of the Rough Riders during the Spanish war, has served as a United States Marshal in Indian Territory, and when appointed to his present position was an assistant to a special agent in the Bureau of Indian Affairs.

Coal Sales.

The amount of coal sold on the Isthmus by the Panama Railroad Company in the fiscal year 1908 was 368,331 tons, as compared with 203,451 tons in 1907. Of the to-

tal for 1908, the Isthmian Canal Commission purchased 262,375 tons; the Panama Railroad Company used 54,344 tons; steamship lines 41,524 tons, and 10,088 tons were sold to other customers. In 1907 the Isthmian Canal Commission purchased 116,586 tons; the Panama Railroad Company, 41,883; steamship lines 37,887 tons, and 7,085 tons were sold to other customers.

A Canal Zone Family.

The average Isthmian Canal Commission family consists of a husband, wife, and one child, according to figures presented in the report of the Chief Quartermaster for December, in which the number of occupants of married quarters is given:

	Men.	Women.	Children.	Total.
American....	1,416	1,458	1,398	4,272
European laborers.....	317	333	397	1,047
Negro laborers.....	1,018	1,024	1,014	3,056
Total.....	2,751	2,815	2,809	8,375

The married population of the Canal Zone consists very largely of those who have been married only recently. One-third of the American employes on the Isthmus are occupying married quarters.

Where Honor Is Due.

The Resident Engineer at La Boca sends the following letter, under date of January 20, to THE CANAL RECORD for publication:

The tug *La Boca* has been engaged for the past week in carrying workmen back and forth from the dredge *Culebra*, which is on the beach at Perico Island. She stops in safe anchorage off the island, and the workmen are conveyed by gasoline boats to the shore.

This morning while the gasoline boat, containing about thirty-two men, was proceeding from the tug to the shore (at about six miles an hour), for some reason the helmsman pushed the rudder hard over, which caused a sharp deflection in the course and threw overboard two men who were sitting on the thwarts. One of them could swim, but the other, Robert Dean, Scotch, a boil-maker, went to the bottom and was rescued only by the heroism of Fitz Wiltshire, colored, Grenadian, who dived and brought Dean to the surface. Robert Mellon, American, a caulker, jumped from the *La Boca* and assisted Wiltshire in putting Dean on the gasoline boat.

Centenary of Lincoln's Birth.

A meeting was held in the Circuit Court room at Empire on January 24, to take preliminary steps for the celebration on the Isthmus of the 100th anniversary of the birth of Abraham Lincoln. The following officers were elected: Col. Geo. W. Goethals, chairman; Judge H. A. Gudger, vice-chairman; E. M. Goolsby, secretary.

Various committees were appointed and the meeting adjourned to reconvene at the same place on Sunday, January 31, at 3 p. m. All persons interested are requested to be present at that time.

Dr. L. W. Munhall, the evangelist from the States, will begin evangelistic meetings at the Commission chapel, Culebra, on Thursday evening, January 28, at 7.45. The meetings are undenominational, and will continue for one week. All persons are cordially invited to attend.

RED CROSS.

Outline of the Work It Proposes to Do—Membership Rolls Open.

The relief work and responsibilities of the American National Red Cross Society have been classified into war relief, emergency relief, and international relief, and study and preparation for each class of work are carried on under the direction of the Central Committee.

The work of the newly organized Canal Zone Branch falls entirely in the department of emergency relief, and in turn may be divided into three classes: First, first aid to the injured; second, relief of special cases of destitution pertaining to the exigencies of the service here; third, general relief work pertaining to disasters such as the accident at Bas Obispo, or conditions that might result from a general conflagration on the Isthmus.

First Aid to the Injured—Inquiry has arisen as to the necessity for such work, owing to the fact that the Sanitation Department of the Isthmian Canal Commission has a complete and effective organization on the Canal Zone. The president of the American National Red Cross is President-elect of the United States, and as such will be Commander-in-chief of the Army and Navy. The executive committee includes Maj.-Gen. Robert M. O'Reilly, ex-Surgeon-General, U. S. A., and Medical Director John C. Wise, U. S. N., and the Board of Consultation also includes the Surgeon-General of the Army and the Surgeon-General of the Navy. The history of military operations and great disasters shows conclusively that the Army, Navy and Red Cross each has its work to perform, and that such work is harmoniously carried on with a complete understanding and cooperation in all departments. This was demonstrated in the earthquake and fire at San Francisco, where 300,000 people were taken care of, principally by the Army and the Red Cross—many Army officers becoming members of the Red Cross, and all working harmoniously to obtain the general end of organized relief.

Maj. Chas. W. Lynch, Medical Corps, U. S. A., has published an American National Red Cross Text-Book—"How to Prevent Accidents and What to Do for Injuries and Emergencies." In the preface to this work, General O'Reilly concludes as follows:

Army conditions emphasize the necessity for the creation of organizations in order that first aid may be given with maximum efficiency, and there are many situations in civil life, such as vast concourses of people, great fires, railroad disasters, etc., which equally demand first aid organizations instead of individuals who, however well taught they may be, must, under such circumstances, work at cross purposes unless they are united into a disciplined body in which the special duties of each are carefully defined.

In view of these facts, it is believed that this book will serve to fill a place of its own in the ever-increasing movement for the relief of human suffering.

The very thorough instructions in this book could be made a subject of study by members of the Police Department, Fire Department, and perhaps others, under the supervision of the district physicians of the Canal Zone. The cooperation of the Chief Sanitary Officer and of the head of the department of Civil Administration will be sought in carrying out this plan.

Relief in Special Cases of Destitution—There has already been presented to the Red Cross a special case in Cristobal, the relief of which has been under consideration by

the Chairman of the Commission and subordinate officers for some months. It has been ascertained that there is no legal way by which monetary relief can be afforded from funds appropriated for the construction of the Canal. Therefore, such cases must be otherwise taken care of. The builders of the Canal form one large local organization, and the community of interests involved precludes that any case of suffering or destitution be allowed to remain unassisted. The case at Cristobal may be followed by others, and the local organization of the Red Cross should be in financial condition to take care of such cases.

General Relief Work Pertaining to Disasters—It is hoped that no general relief on account of a great catastrophe on the Canal Zone will ever be necessary. The history of great undertakings, however, leads to the belief that it is better to be prepared in a measure than to be entirely unprepared. The Red Cross on the Canal Zone should be an effective organization so that if it should ever be called upon it could throw its entire strength into the work that presents itself.

It is especially desired to have all who wish to become members enrolled before the arrival of Mr. Taft. To this end they are requested to send their names with the membership dues, one dollar, to the Treasurer, Mr. H. D. Reed, Ancon, C. Z.

In Defense of the Commissaries.

Largely attended meetings of the employees of the Isthmian Canal Commission and Panama railroad were held at Cristobal, Gatun, Tabernilla, San Pablo, Gorgona, Bas Obispo, Las Cascadas, Empire, Culebra, Paraiso, Pedro Miguel, Corozal, Ancon, and La Boca, on the night of January 20, at which resolutions were adopted requesting the Senate not to ratify the treaty recently concluded between the United States and Panama, because in the opinion of the petitioners, the treaty threatens the commissary system in the Canal Zone. On January 22, the following cablegram was sent:

CRISTOBAL, C. Z., January 22, 1908.

President United States Senate: American citizens, fourteen towns, Canal Zone, in mass meetings, twentieth, protest against Article 3, Treaty proposed between United States and Panama as interfering with commissary privileges. Petitions mailed you. Unanimous opinion Americans cannot live here, and irreparable injury to work if privileges are jeopardized or revoked.

CONNOR, Chairman, Joint Committee.

A cablegram was also sent from Culebra giving the text of the resolutions passed at that place.

The resolutions passed at the Ancon meeting are typical, and are as follows:

WHEREAS, It has come to our attention that a treaty has been proposed between the United States and the Republic of Panama, and that said treaty is now in the hands of the Senate Committee on Foreign Relations; and

WHEREAS, Article III of said treaty recites that all differences that may arise between the Republic of Panama and the United States shall be submitted to a board of arbitration for final decision; and

WHEREAS, We fear the wording of said treaty means that the ends sought to be obtained by the Republic of Panama relate to the curtailment of privileges granted us through Article XIII of the treaty between the two Republics, in which it is allowed that all articles necessary and convenient for the employes and their families may be imported duty free; and

WHEREAS, We contend that we are now sufficiently taxed for our food and wearing apparel, which tax or surcharge embraces the amount necessary for cost of purchase, transportation, storage and distribution; and

WHEREAS, We are only temporarily domiciled on

the Isthmus of Panama and are entitled, under the existing treaty, to receive such articles as may be necessary and convenient for our comfort and welfare without the payment of additional duties, or being curtailed in this privilege in any way; now therefore be it

Resolved, That we urgently protest against the ratification of this, if it does, or any treaty that will take away from us any rights or in any manner jeopardize our welfare or the welfare of the work in which we are engaged; and be it further

Resolved, That we recognize in this proposed treaty the influence set forth in a memorial addressed to the President of the United States by the merchants of Panama under date of December 30, 1908; and be it further

Resolved, That we respectfully petition the Hon. W. H. Taft, who will soon be on the Isthmus and who is to be our next President, to discontinuance and deny any petition, from any source whatever, that may reflect such consequences as may be anticipated if the commissary privileges we now enjoy are in any measure curtailed; and be it further

Resolved, That a text of this protest be cabled to the Senate Committee on Foreign Relations in Washington.

G. M. SHONTZ, W. E. RUSSELL, P. KUEHNING,
Committee.

PROPOSALS FOR BUILDINGS.**Contract Post-Office, Gatun, C. Z.**

Sealed proposals will be received at the office of the Depot Quartermaster, Isthmian Canal Commission, Mount Hope, Canal Zone, until 11 a. m., Saturday, January 30, 1909, when they will be publicly opened, for the erection by contract of a post-office at Gatun, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Depot Quartermaster, Mount Hope. A deposit of \$5 is required to insure their return.

Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$250 conditioned upon the faithful performance of the contract.

The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals.

Approved:

GEO. W. GOETHALS, Chairman.

Contract One-Room Schoolhouse, Tabernilla, C. Z.

Sealed proposals will be received at the office of the Depot Quartermaster, Isthmian Canal Commission, Mount Hope, Canal Zone, until 11 a. m., Saturday, January 30, 1909, when they will be publicly opened, for the erection by contract of a one room schoolhouse at Tabernilla, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Depot Quartermaster, Mount Hope. A deposit of \$5 is required to insure their return.

Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$200 conditioned upon the faithful performance of the contract.

The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals.

Approved:

GEO. W. GOETHALS, Chairman.

Misdirected Letters.

Division of Posts, Customs and Revenues,
Ancon, C. Z., January 27, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Arden, Oliver (letter and pkg.)
Arlington, Mrs. Vivian Caldwell, Richard L. Conner, Lee Cossitt, G. G. (pkg.) Davis, Clarence E. Dean, Thomas A. Desousa, W. Dybbro, F. Gaeb, Harry J. Howe, W. F. Hurley, Walter W. Johnson, M. W. Keenan, Harry Lumby, T. L.

Moore, Bismark Morrissey, R. L. Morse, Mr. (pkg.) Morton, George O'Connell, Timothy Pickeny, Victor H. Rand, Mrs. Joe Rath, Thomas Rhyman, Mrs. R. Robischon, Jno. A. Rothberg, Harry Shoemith, George W. Teran, Oscar von Kesteren, A. G. D. Walling, Earl Wheeler, Wm. P.

CANAL WORK FOR DECEMBER.

Monthly Report of the Chairman to the Secretary of War.

CULEBRA, C. Z., Jan. 13, 1909.

The Honorable the Secretary of War, Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of December, 1908:

Effective December 12, the limits of the Atlantic and Central Divisions were changed as follows:

The Atlantic Division to embrace all territory north of the south end of Gatun Dam.

The Central Division to embrace all territory between the south end of Gatun Dam and Pedro Miguel.

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
<i>Steam Shovel Excavation—</i>					
In prism.....	Cubic yards.....	128,203	1,527,185	133,189	1,788,577
Auxiliary.....	Cubic yards.....	42,334	66,809	.....	109,143
Total.....	Cubic yards.....	170,537	1,593,994	133,189	1,897,720
<i>Dredge Excavation—</i>					
In prism.....	Cubic yards.....	679,604	.....	729,960	1,409,564
Auxiliary.....	Cubic yards.....	8,583	.....	.....	8,583
Total.....	Cubic yards.....	688,187	.....	729,960	1,418,147
Total excavation.....	Cubic yards.....	858,724	1,593,994	863,149	3,315,867
Explosives used.....	Tons (2240 lbs)	37.09	322.49	20.85	380.43
Rock drilling.....	Feet.....	37,838	327,679	31,461	416,978
New track laid.....	Miles.....	1.37	10.3	3.16	14.83
Track removed.....	Miles.....	.....	10.5	.....	10.5
Material placed in dams.....	Cubic yards.....	115,730	5,925	88,818	210,473
Rock crushed.....	Cubic yards.....	.....	5,977	4,437	10,414
Cement used.....	Barrels.....	270	.....	433	703
Concrete placed.....	Cubic yards.....	229	.....	233	462
New roads built.....	Miles.....	.57	.89	1	2.46
Water mains built.....	Feet.....	4,620	685	2,104	7,409
Sewers laid.....	Feet.....	5,830	992	1,059	7,881
Open drains and ditches dug.....	Feet.....	.....	3,477	1,761	5,238
Daily average number of laborers.....	.....	2,784	7,866	3,044	13,694
Rainfall.....	Inches.....	7.94	5.09	10.27	.....

Atlantic Division.
GATUN LOCKS.

Unloading Cableway Dock—The pile driving for this dock is 68 per cent completed, and the docking 22 per cent completed.

Cement Shed Dock—The material along the face of the dock was blasted, preparatory to using the dipper dredge. Pile driving for the foundations of the dock is 77 per cent completed.

Unloading Head Tower Tracks—The pile foundations for the forward tracks of these towers were completed for a distance of 300 feet and are now ready for the rails. The roadbed for the back track was completed to subgrade.

Storage Pile Tunnels—Excavation in the open cuts of these tunnels was continued, 2,764 cubic yards of earth and 80 cubic yards of rock being removed during the month. The framing for the timber work was commenced.

Power House—The excavation for the intake tunnel of the Gatun power house was commenced, and the crossing for this tunnel under the Panama railroad was completed. A portion of the electric machinery has been received.

GATUN DAM.

During the month 115 piles or 269 linear feet of trestle were driven on the south toe of the dam. On the south toe of the dam

73,897 cubic yards of material were dumped, and 41,833 cubic yards on the north toe.

Investigation for material for the dam was started toward the close of the month at a point south of the dam axis.

Dredge No. 82 excavated 26,432 cubic yards of sand and clay for accessory work.

HARBOR AND CHANNEL SECTION.

In the dry excavation below sea-level two 70-ton shovels removed 62,253 cubic yards of material from the Canal prism, and 651,704 cubic yards of material were removed by five dredges. The dredge *Ancon* also removed 27,900 cubic yards of material from below grade. At the close of the month 40 feet of water could be carried from 0 to Mile 2 + 3,800 feet, 30 feet to Mile 3 + 400 feet, 20 feet to Mile 3 + 4,600 feet, and 13 feet to Mile 4 + 4,480 feet, the end of the cut.

PORTO BELLO.

Work was continued on the power plant site and quarry, as well as stripping operations and general preparatory work.

and 1,070,813 cubic yards as rock. Of this quantity 1,596,695 cubic yards were removed by steam shovels and 1,273 cubic yards by hand for tracks at Tabernilla. The quantity of material removed from the Canal prism was 1,527,185 cubic yards, while 66,809 cubic yards were removed from the Obispo Diversion, 1,273 cubic yards for Tabernilla tracks, 2,281 cubic yards for levee work at Matachin, and 420 cubic yards in casting over above grade. The daily number of steam shovels at work during the month was 50.73 as compared with 50.91 for the month of November.

For comparison with the work done during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels	Classification of material.		Av. No. of steam shovels working during month	W'kg days in month	Av. amount excavated per shovel per 8-hour day.
		Rock	Earth			
1907, Dec.	cu. yds. 1,116,895	cu. yds. 489,462	cu. yds. 627,433	48.44	25	cu yds 922
1908, Dec.	1,596,695	1,070,813	525,882	50.73	26	1,210

Rainfall at Empi: 1907, 1.47 ins.; 1908, 5.09 ins.

The above table shows that the average output per shovel day was over 39 per cent greater in December, 1908, than in the corresponding month of the previous year.

During the month 29,611 cubic yards of material excavated from the Cut were transported to the relocation of the Panama railroad in the vicinity of Caimito and dumped as filling in the embankment for the new roadbed; also 30,633 cubic yards for similar work in the vicinity of Gamboa. During the month 5,925 cubic yards of rock from Bas Obispo were transported to Gatun, a distance of 23 miles, and dumped on the toe of the dam.

In building construction work five new buildings were completed during the month, four of which were turned over to the Quartermaster's Department and one to the Mechanical Division. Twenty-seven buildings were rescreened, and seventeen other repair jobs were completed.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

The approach to the storage trestle at Pedro Miguel was finally located. The clearing and stripping for the core of the west dam was continued, and the sump pit at the lower end of the lock site was completed, a 12-inch pump being installed. Excavation of the east gate recess down to elevation +40 was begun, and was well advanced at the close of the month.

At Miraflores the excavation for the upper lock was continued, and tracks were laid for the work of the proposed temporary diversion of the Cocoli River. During the month the orange peel derrick was moved south of the Cocoli River to excavate for the west dam core, where it is proposed to put in a concrete core wall. The grading for the power house and powder magazine was nearly completed. The dredge *Sandpiper* cut through the dike at the south end of the lock site and began the work of excavating in the lock chamber.

At the proposed Ancon quarry the prelim-

NOMBRE DE DIOS.

Work was continued on the dam to provide a water supply. Stripping operations were continued over the area from which sand is to be dredged, and sand can now be supplied by the use of the dipper dredge.

DRY DOCK AND MARINE SHOPS.

The stern-wheel towboat *Exotic* was completed and put in condition, and an old French dredge was dismantled preparatory to its being remodeled into a clam shell dredge for the work at Nombre de Dios.

MUNICIPAL ENGINEERING AND BUILDING CONSTRUCTION

A large amount of grading, road building, construction of sewers and water works was accomplished during the month. The maintenance of municipal improvements was also given the necessary attention. Satisfactory progress was made on all buildings under construction. The Atlantic Division storehouse at Gatun was completed during the month. At the close of the month the forage warehouse at Mount Hope was practically completed, and the office of the Depot Quartermaster was 90 per cent completed.

Central Division.

During the month of December the total amount of material excavated in the Central Division was 1,597,968 cubic yards, of which 527,155 cubic yards were classified as earth

inary work of boring and digging test pits was continued during the month.

DISTRICT NO. 2—DREDGING, AND LA BOCA SHIPWAYS.

Five dredges were in operation during the month, as follows:

Dredge	Type.	Cubic yards.		Remarks.
		In ft'm	Auxil'y	
Culebra	Suction	357,801	.....	Scow measurement
Gopher	Ladder	114,962	.....	Place measurement
Mole...	Ladder	3,560	105,870	Place measurement
No. 14...	Ladder	58,132	.....	Place measurement
Dipper.	Dipper.	51,980	.....
Total.....		536,435	105,870	

The usual work of maintenance and repairs was accomplished at the shipways. During the month the borings to ascertain the nature of the material in the channel between La Boca and Miraflores lock site were completed from the mouth of the Rio Grande to Cardenas Hill. Two gangs were engaged during the month in clearing the Canal prism, the work consisting of blasting stumps and piling, and burning same.

DISTRICT NO. 3.

A large number of items of building and municipal construction and maintenance were accomplished during the month, including the operation of the filtration plant. The La Boca and Rio Grande quarries were operated, and bridge and road work, sanitary ditching and construction of drains and other minor items were accomplished.

Mechanical Division.

The usual work of this Division was performed.

Relocation of Panama Railroad.

During the month 63,478 cubic yards of excavation were accomplished on the relocated line, and 188,724 cubic yards of embankment. At the end of the month a total of 723,307 cubic yards of excavation had been accomplished, and 3,023,694 cubic yards of embankment. The work of constructing trestles for filling, bridges, and culverts was continued. Work on the Miraflores tunnel was resumed, and an 8x10 drift was bored 100 feet into the 250-foot earth section at the south end, which remains to be excavated. During the month 3,820 linear feet of permanent track were laid, making a total at the end of the month of 57,286 feet. The force of laborers during the month averaged 1,095 men daily.

Quartermaster's Department.

During the month very few employments were made of gold men in the United States. While there were the usual number of changes in the personnel, most of the additions consisted of employments or re-employments on the Isthmus.

Practically no laborers have been recruited since August, 1908, nor is there any present necessity for recruitment, the force having reached the stable condition where all demands for labor are easily supplied from laborers already here, or those who have come to the Isthmus of their own accord.

In comparison with present conditions it is interesting to note that from January 1 to December 31, 1907, 8,875 West Indian laborers were recruited, being an average of 739 per month, and the cost of their transportation alone was approximately \$88,750. During the same period there were recruited 7,467 European laborers, or an average of 622 per month. During one period of six months, from December 1, 1906, to May 31,

1907, it was necessary to recruit 14,000 laborers from Europe and the West Indies in order to increase the silver force by 4,500 men. Thus, in a period of six months, when no epidemic prevailed and there was no particularly unfavorable condition on the Isthmus, 9,500 laborers deserted the work.

Subsistence Department.

During the month there was an increase in the number of rations served to Spanish laborers, and likewise an increase in the number of meals served at the hotels. A decrease in the attendance at the kitchens still continues. During the past two months the number of men leaving the kitchens has averaged about 200 per month.

Department of Civil Administration.

COURTS.

The Supreme Court was not in session during the month.

In the Circuit Courts 32 civil and 52 criminal cases were settled, and in the District Courts 55 civil cases and 482 criminal cases were disposed of.

DIVISION OF REVENUES.

The general revenues of the Canal Zone, collected by this Division in December, amounted to \$14,990.74, as compared with \$10,244.15 collected in November.

Twenty-five vessels entered at and 22 cleared from the port of Ancon, and 15 vessels entered at and the same number cleared from the port of Cristobal during the month.

DIVISION OF POLICE AND PRISONS.

The number of arrests during December was 507, as compared with 477 for November. There were 161 prisoners confined in the jails at the close of the month. Nineteen convicts began penitentiary sentences during the month, 12 were discharged at the expiration of their sentences, one died, one was pardoned, and on December 31, there were 122 convicts confined in the penitentiary.

As Coroner of the Canal Zone, the Chief of Police investigated 27 deaths, 6 of which were due to railroad accidents, and 18 to dynamite explosions.

DIVISION OF PUBLIC WORKS.

The usual business of this Division, including the installation of new connections, the issuance of permits for the installation of plumbing, the inspection of plumbing and sewers, the collection of water rents, and the operation of public slaughter houses and markets, was continued during the month. In the city of Panama 28,592,000 gallons of water were used, and in the city of Colon 21,085,125 gallons were used.

DIVISION OF FIRE PROTECTION.

No serious fires occurred during the month, the total estimated damage being only \$40.

DIVISION OF SCHOOLS.

On account of the Christmas holidays, the schools were closed December 18, to reopen January 6. The total enrollment in the white schools was 638, and the average daily attendance was 556. In the colored schools the total enrollment was 1,178, and the average daily attendance 763.

Department of Sanitation.

[The substance of the report of this department was published in THE CANAL RECORD of January 13, 1909.]

Respectfully,

GEO. W. GOETHALS,
Chairman.

EXECUTIVE ORDER.

Railway Safety Appliances Law Extended to the Canal Zone.

Under authority vested in me by law, it is ordered:

1. The requirements of the Act of Congress, relating to the use on trains of certain described and approved driving wheel and train brakes, couplers, handholds, and drawbars of required height for freight cars, approved March 2, 1893 (contained in 27 Statutes at Large, page 531), and known as "An Act to promote the safety of employes and travelers upon railroads by compelling common carriers engaged in interstate commerce to equip their cars with automatic couplers and continuous brakes and their locomotives with driving-wheel brakes, and for other purposes," as amended by an Act approved April 1, 1896 (contained in 29 Statutes at Large, page 85), and as amended by an Act approved March 2, 1903 (contained in 32 Statutes at Large, page 943), shall be extended to apply to that zone in the Republic of Panama mentioned and described in section 2 of the Act of Congress, dated June 28, 1902, and entitled "An Act to provide for the construction of a canal connecting the waters of the Atlantic and Pacific oceans," and commonly known as the "Canal Zone."

2. The various appliances for the protection of trainmen on freight train cars, with reference to running boards, ladders, sill steps, roof handholds, and the position of brake shafts, as designated in the existing standards of the Master Car Builders' Association in the United States, shall be used by all carriers in the aforementioned Canal Zone.

3. The equipment and appliances required to be used in sections 1 and 2 of this order shall be constantly and at all times maintained in good and working order, by any and all railroads engaged in the business of a common carrier and operating in the aforementioned Canal Zone.

4. In particular, sections 1, 2, and 3 of this order shall be carefully observed and obeyed by the Panama railroad, a carrier operating in the said Canal Zone.

5. All railroads operated and cars used by the Government of the United States within navy yards, arsenals, military reservations, government wharves, and any and all other territories under the jurisdiction of the United States, shall be equipped with the safety appliances required in the Safety Appliance Acts mentioned and described in section 1 of this order; and in the codes of rules mentioned and described in section 2 of this order; and said equipment and appliances shall at all times be maintained in good and working order.

6. This order shall take effect not later than six months from the date of the promulgation thereof.

THEODORE ROOSEVELT.

THE WHITE HOUSE, January 6, 1909.

[No. 1002.]

The gross earnings of the Panama Railroad Company in the fiscal year 1908 were \$5,999,992.07, as compared with \$5,199,810.69 in 1907. The operating expenses were \$4,469,507.71, as compared with \$3,610,874.30 in 1907. Earnings over operating expenses in 1908 were \$1,530,484.36, a decrease of \$58,452.03 from 1907.

SOCIAL LIFE OF THE ZONE.

Library at Ancon—Women's Clubs Meetings.

The important business of the meeting of the Ancon Woman's Club on January 20, was the announcement that the papers pertaining to the proposed Ancon Library Association had been returned to the club for such action as it thought proper, as the time did not seem suitable for taking further action outside the organization. The members took the matter up for discussion and it was voted that the money already pledged for the library should be given to the purchase of new books and the further development of the club library. For the benefit of the community, especially of the bachelors, the club will open this library to non-members on subscription of \$3 a year. This will enable the committee to hold in hand a library fund and furnish a small number of magazines and suitable reading matter for the tables.

The program was in the hands of the home department. Mr. H. F. Schultz, read a paper on "The Cultivation and Economic Uses of Casava." As illustrations Mr. Schultz had a well grown casava tree in the club rooms and specimens of the roots and starch were also shown. Tea was served.

The rooms assigned the Ancon Woman's Club, above the office of the District Quartermaster at Ancon, have been decorated. The windows are fitted with dark green curtains, dark rugs have been placed on the floors, and the book shelves are already in place. China and linen have been purchased, and a number of gifts have been presented, notably plants, vases and linens.

The business meeting of the Cristobal Woman's Club was held on Wednesday, January 20. The art and literature department was entertained January 25, at the home of Mrs. A. O. Herman, a paper on "Shylock" being read by Mrs. H. J. Slifer. The club year books have been received and distributed among the members. On January 27, at 3 o'clock, the club will give a reception in the club house, in honor of Mrs. Philip North Moore and Mrs. John Dickinson Sherman, president and vice-president of the General Federation of Women's Clubs. An invitation is extended to the members of the clubs in the Zone for the occasion.

An innovation in the regular meetings of the Las Cascadas Woman's Club was made on January 21, when the members adjourned in a body to Empire to meet at the residence of the founder and former president of the club, Mrs. O. G. Randall.

There was an unusually large attendance at the business meeting of the Pedro Miguel Woman's Club on January 20. Arrangements were completed for the entertainment to be given by Mr. J. W. Holland, on February 12. Tickets may be purchased from the club members, the price of admission having been placed at 50 cents for adults and 25 cents for children. A special train will be run from Paraiso for the occasion. Announcement was made that the Social and Recreative Club is arranging to give an evening of tableaux in February. At the close of the business meeting refreshments were served, the president being hostess for the day.

The following program has been issued by the Empire Woman's Club for the meet-

ings covering the next four weeks: January 21, "History of Panama," Mrs. H. C. Ball, music; February 4, "Government of Panama," Mrs. A. Hillerman; February 18, the home department, and Washington's Birthday program refreshments; March 4, "Fruits of the Isthmus," Mr. H. F. Schultz; March 16, "Native Panamanian Needlework," Mrs. R. W. Fenn, special feature, loan exhibit of native articles by the members.

The Gorgona Dramatic Club gave a performance of "The Doctor" before a full house at the Empire clubhouse on Tuesday evening, January 19.

The business session of the Federation of Women's Clubs will be held in the Ancon Woman's Club rooms, over the office of the District Quartermaster, instead of at Hotel Tivoli, as previously arranged. Meetings of Federation committees may be held in the club rooms between the hours of 8 and 10 o'clock, the hour of the morning session having been placed at 10 o'clock.

The Gatun Woman's Club held its regular meeting on January 22, at the home of Mrs. E. G. Bath. The afternoon was devoted to home topics, including "Home duties" and "Cookery," followed with a discussion of the suffrage question. Mrs. E. S. Waid, former president of the Paraiso Woman's Club, was elected to membership.

The Paraiso Woman's Club had a short business session on Thursday, January 21, followed by a social hour. Several new members were admitted.

A meeting of the Canal Zone Humane Society has been arranged to take place on Friday afternoon, January 29, at the residence of Archdeacon Bryan, Ancon.

PERSONAL.

Mrs. George W. Goethals, Mrs. H. F. Hodges, and Mrs. S. B. Williamson were passengers on the *Prinz Joachim*, which arrived at Colon on January 24.

Col. W. C. Gorgas of the Isthmian Canal Commission, accompanied by Mrs. Gorgas, Miss Gorgas, Miss Laura Carter, Miss Keene and Judge Evans, returned to the Isthmus on the P. S. N. Co's. steamship *Limari* on January 26, from Santiago, Chili.

Justice Owen, of the Second Judicial District, wishes to have it known that he has opened an office in the Court-house at Empire, and will be in it from 7 a. m. to 6 p. m. each day.

Missing Man.

Information is wanted in regard to Jose Garcia, who was employed as fireman on the dredge *Culebra* at La Boca, from March 1 to April 22, 1908. His relatives have not heard from him since the date of his discharge.

Any one having knowledge concerning him is requested to communicate with M. B. De Patron, Assistant to the Chairman, Culebra.

Mr. Howard B. Delaigne, concerning whom information was requested in THE CANAL RECORD of December 30, 1908, writes from Washington, D. C., that he is now a telegraph editor on the Washington Post.

Vacations in Jamaica.

Employees of the Commission, who desire information concerning Jamaica as a health and holiday resort may procure it at the British Legation, Panama.

LETTERS FROM THE LINE.

(Communications to this column must be signed in each instance with the name and address of the writer.)

To Attend Inauguration.

CULEBRA, C. Z., January 24, 1909.
THE CANAL RECORD:

Arrangements are nearing completion for the representatives of the Isthmian Canal Commission and the Panama Railroad Company to participate in the inaugural ceremonies in Washington on March 4. While a large number of applications are on file it is the desire of the committee to hear from at least 100 more men who have vacations due on or about that time, and who can be granted leave at that time without it interfering with their work.

The entire matter will be submitted to President-elect Taft on his arrival in the Zone. Colonel Goethals has consented to ask the proper authorities for free transportation for the detachment, on a naval vessel, as soon as the list of men to go has been approved by the heads of departments concerned, and Mr. Taft has approved the plans in detail. The inaugural committee will be asked to defray expenses during the stay in Washington.

Those who wish to go should communicate with P. T. Sealey, Culebra, stating position they hold, department, date next leave is due, and whether or not they have had military service.

PERCY T. SEALEY, G. C. BRADFORD,
Committee.

Isthmian Baseball League.

EMPIRE, C. Z., Jan. 19, 1909.
THE CANAL RECORD:

The executive committee of the Isthmian Baseball League, at its meeting on Sunday last, instructed the secretary of the League to notify the president of each association and staff of umpires as follows:

The Isthmian Baseball League is playing under the rules of the National League. The umpire has charge of and is responsible for the proper conduct of the game to which he is assigned, and will be expected to rigidly enforce discipline with a view to having an orderly, sportsmanlike game promptly played. An infraction of the rule in the way of a player (other than captain of a team) addressing an umpire in regard to a decision, or obscene or profane language by any player, will meet with prompt benching of the player at fault and the facts will be reported promptly, in writing, by the umpire to the secretary of the League, and by him placed before the executive committee for such further action, if any, as it may deem necessary. Any additional discipline found necessary will be administered at the discretion of the committee by benching the offender anywhere from two to ten additional games.

The cooperation of each and every person connected with the national game is requested toward securing square, manly and clean sport, otherwise the game will deservedly fall into disrepute and cease to be the means of wholesome recreation now afforded the Americans on the Isthmus.

W. M. WOOD,
Secretary Isthmian Baseball League.

Resolutions of Sympathy.

At a recent meeting of Incas Tribe No. 6, I. O. R. M. of Gatun, the following resolutions were adopted:

WHEREAS, The Great Spirit in His infinite wisdom and power, has on the 1st day of January, 1909, called from the hunting grounds of his brothers, to the happy hunting grounds of the Beautiful Beyond, our beloved and esteemed brother, Bert Gamble,

Resolved, That we have lost an honest and faithful chief whom to know was to love and respect.

Resolved, That we, his brother Red Men, hereby express our sense of bereavement and extend our heartfelt sympathy to his relatives and friends.

Resolved, That a copy of these resolutions be spread on the minutes of Incas Tribe, a copy sent to his nearest relatives, and a copy sent to THE CANAL RECORD and the Red Men's official journal for publication.

R. G. HENNING, H. M. McDONALD,
Committee.

OFFICIAL CIRCULARS.

Only Qualified Crews on Main P. R. R. Line.

CULEBRA, C. Z., January 22, 1909.
 Maj. D. D. Gaillard, Division Engineer, Cent al Division, Empire, C. Z.
 Maj. Wm. L. Sibel, Division Engineer, Atlantic Division, Gatun, C. Z.
 Mr. S. B. Williamson, Division Engineer, Pacific Division, Corozal, C. Z.
 Mr. H. J. Stifer, General Manager, Panama Railroad Company, Colon, R. P.

Sirs: To correct a misunderstanding which seems to have arisen, it is hereby directed that no train engine shall be operated on the main line of the Panama railroad, either within or outside of yard limits, unless handled by a qualified crew.

Respectfully,

GEO. W. GOETHALS,
 Chairman Isthmian Canal Commission,
 and President Panama Railroad Company.

Lost or Destroyed Property.

CULEBRA, C. Z., January 12, 1909.

TO ALL CONCERNED:

Attached is a sample copy of Form 197-ACE and 197-BCE (insert sheets), which should be used for survey on lost or destroyed property. These forms supersede Form A 179, and any supply of the latter you may have on hand should be destroyed. Forms 197-ACE and 197-BCE (insert sheets) can be secured from the Stationer and Printer on requisition.

GEO. W. GOETHALS, Chairman.

Wage Classification of Silver Employees.

CULEBRA, C. Z., January 20, 1909.

CIRCULAR NO. 229B.

The following additions to Circular No. 229, Pay Schedule for Employees on the "Silver" Roll, are hereby approved:

Engineers, claret—	Monthly rate, silver.
Chief Engineer, day.....	\$150.00
Chief Engineer, night.....	160.00
Second Engineer, day.....	125.00
Second Engineer, night.....	135.00
Carpenter.....	100.00
Splicer, cable.....	160.00

The above rates are only for employes on work connected with clapets and dredges whose hours are longer than the regular hours for artisans.

GEO. W. GOETHALS,
 Chairman and Chief Engineer.

Transportation from Cristobal to New York.

CULEBRA, C. Z., January 23, 1909.

CIRCULAR NO. 175A.

Transportation from Cristobal to New York on steamers of the Panama Railroad Company will be granted hereafter to employes upon the termination of their service, as follows:

FREE TRANSPORTATION.

To employes appointed in the United States who resign or are discharged after two years' continuous service; to employes appointed in the United States whose employment is terminated by the Commission after less than two years' service for any reason other than inefficiency or misconduct; and to American employes appointed on the Isthmus who are discharged at the recommendation of a medical examining board.

TWENTY-DOLLAR RATE.

To employes appointed in the United States prior to January 1 1909, who resign after serving more than six months but less than two years, and to employes appointed on the Isthmus prior to January 1, 1909, who resign or are discharged after two years' continuous service, or whose services are terminated by the Commission after less than two years' service for any reason other than inefficiency or misconduct.

THIRTY-DOLLAR RATE.

To employes appointed after December 31, 1908, separated from the service under circumstances identical with those described in the preceding paragraph.

FORTY-FIVE-DOLLAR RATE.

To employes appointed on the Isthmus who resign or are discharged after serving more than six months but less than two years.

TEN-DOLLAR STEERAGE RATE.

To all employes who may apply for it.

Employes entitled to free transportation to New York may be granted instead free transportation to

New Orleans, if they so desire, or free transportation to San Francisco, provided they originally sailed from that port.

Employes originally appointed in the United States who resign or are discharged and are subsequently re-employed on the Isthmus will be granted transportation privileges other than those accorded employes originally appointed on the Isthmus.

No special rates will be granted employes who fail to apply for transportation within thirty days after the termination of their employment.

GEO. W. GOETHALS, Chairman.

Applications for Family Quarters.

CULEBRA, C. Z., January 18, 1909.

DISTRICT QUARTERMASTERS: A number of instances have recently been noted of applications for family quarters having been filed at points at which early assignments would be made, without the intention of permanently occupying the quarters, but with a view to securing, by transfer after assignment, precedence at the legitimate stations.

In the future you will carefully consider all applications filed with you, or transferred to you, and if you have reason to believe any application is made for the purpose referred to, you will forward same to this office with statement of the facts, for decision as to its acceptance. This applies also to any application already on file, regarding which you have doubt.

C. A. DEVOL, Chief Quartermaster.

Quartermaster's Department Changes.

CULEBRA, C. Z., January 20, 1909.

TO ALL CONCERNED:

Effective February 1, the following transfers of District Quartermasters are announced:

C. E. Heisey, from Porto Bello to Bas Obispo.

M. R. Currie, from Bas Obispo to Porto Bello.

C. A. DEVOL, Chief Quartermaster.

New Style Brass Check for Contract Laborers.

DEPARTMENT OF EXAMINATION OF ACCOUNTS,
 EMPIRE, C. Z., January 19, 1909.

CIRCULAR NO. 8.

To all Timekeepers—During January a new style brass check will be substituted for the star contract checks now in use, and each contract laborer will receive a new check of the same number as the star check he now holds.

In order that the exchange may be made without confusion you will furnish this office with a list of all contract laborers, showing their names and check numbers, separated by gangs, giving the gang number and the foreman's name in every instance. Time inspectors will be assigned to assist you in making up these lists, and blanks for compiling this information are enclosed herewith.

Lists must be made on January 20 from the odd day time books, and only contract laborers who are timed for the 19th should be included thereon. This will avoid the possibility of having two divisions ask for the same check. The lists of names and numbers must be made up with the utmost care and forwarded to this office not later than January 21.

New checks will be sorted in accordance with the lists furnished and sent to the proper time office. Timekeepers, accompanied by Time Inspectors, will deliver the new checks to, and take up the star contract checks from, every contract laborer who is at work on January 25, using great care to see that the number of the new check corresponds to the number of the one taken up. If it is impossible to cover the entire work on the 25th the gangs not visited on the 25th will be reached on the 26th. Every effort must be made to reach all gangs within the two days.

After every gang has been visited and contract checks exchanged, the star contract checks taken up, together with the undelivered new checks, will be forwarded to this office with the lists of names and numbers, which lists must be checked off by the Time Inspector as delivery is made.

All star checks (contract) appearing on the work after the first delivery of the new series will be exchanged by a representative of this office, after the laborer has been properly identified.

W. W. WARWICK, Examiner of Accounts.

Approved:

GEO. W. GOETHALS,
 Chairman and Chief Engineer.

The following steamers have recently arrived at La Boca: January 17, *Ecuador*, from Buenaventura; January 19, *Panama*, from Valparaiso; January 20, *City of Panama* from Central American ports; January 22, *Newport*, from San Francisco. Departures were: January 20, French Cruiser *Catinal*, for Southern ports; January 21, *Aysen*, for Valparaiso; January 22, *Peru*, for San Francisco.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

Twelve thousand feet of moving picture films have been purchased by the Y. M. C. A. for use in the Commission clubhouses and at other towns in the Zone where suitable rooms can be secured. Some of the films have been successfully shown at Gatun and Camp Elliott, and arrangements are being made for exhibitions at other towns where there are no clubhouses. A nominal charge for admission will be made in order to defray the actual cost of each entertainment.

CULEBRA.

The Prochaska orchestra gave a concert at the clubhouse on Monday evening, January 18.

The Gorgona Dramatic Club gave a performance of "The Doctor" at the Culebra clubhouse on Tuesday evening, January 19, which was enjoyed by a large audience.

The standing in the local "duck pin" tournament which closed last week was as follows: Fusner, first; Palmer, second, and highest score; Oliver third, and highest average. So much interest was manifested in this tournament that one for two-men teams from the different departments at Culebra is being arranged.

Sale of Public Animals.

Notice is hereby given that there will be sold at public auction, at Gatun Police Station, at 2 p. m., on February 4, 1909, the following described public animals:

One Gray Native Stallion, No. 34.

One Buckskin Native Gelding, No. 37.

These animals may be seen at the Gatun Police Station. Further particulars may be obtained from the Chief of Police, Ancon, C. Z.

GEO. R. SHANTON, Chief of Police.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, January 23, 1909:

	STATIONS					
	Vigita.	Albajuela.	Gamboua.	Bohio.	Gatun (Canal).	Gatun (W. Diversion)
Height of low water above mean sea level, feet.....	129	92	46	1	0	0
Maximum height above low water, feet.						
Sunday, Jan. 17....	0.7	1.6	2.6	4.1	1.8	1.6
Monday, Jan. 18....	0.5	1.4	2.3	3.6	1.5	1.4
Tuesday, Jan. 19....	0.1	1.4	2.2	3.3	1.5	1.4
Wednesday, Jan. 20....	0.1	1.3	2.2	3.4	1.8	1.6
Thursday, Jan. 21....	0.6	1.6	2.5	3.5	1.6	1.6
Friday, Jan. 22....	0.5	1.4	2.3	3.5	2.0	1.5
Saturday, Jan. 23....	0.2	1.2	2.1	3.1	1.8	1.6

Rainfall, January 1 to 23, 1909, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations	Maximum in one day	Total for period.
<i>Atlantic Division</i> —		
Cristobal.....	.62	3.75
Brazos Brook.....	.62	3.51
Gatun.....	.62	2.78
Bohio.....	.72	3.29
<i>Central Division</i> —		
Taberuela.....	.62	2.34
San Pablo.....	.35	2.05
Bas Obispo.....	.72	1.86
Gamboua.....	.40	1.85
Empire.....	.28	.90
Camacho.....	.33	1.59
Culebra.....	.49	1.49
<i>Pacific Division</i> —		
Rio Grande.....	.57	1.69
Pedro Miguel.....	.67	1.43
La Boca.....	.22	.45
Ancon.....	.39	1.56
<i>Atlantic Coast</i> —		
Porto Bello. (to 5 p. m. Jan. 23)....	.74	5.28
<i>Upper Chagres.</i>		
El Vigia.....	.37	1.42
Albajuela.....	.39	1.46

LOST—A gold chain and B. L. E. watch charm on P. R. R. track between Pedro Miguel and Paraiso. Finder will please return to general foreman at Pedro Miguel shops or to the postmaster at Paraiso.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Lieut.-Col. Geo. W. Goethals, U. S. A.,
Chairman, Culebra.
Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
Maj. D. D. Gaillard, U. S. A., Empire.
Maj. Wm. L. Sibert, U. S. A., Gatun.
Civil Engineer H. H. Rousseau, U. S. N.,
Culebra.
Mr. Jo C. S. Blackburn, Ancon.
Col. W. C. Gorgas, U. S. A., Ancon.
Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.
Lieut.-Col. Geo. W. Goethals, Chairman
and Chief Engineer.
W. H. May, Secretary to the Chairman.
M. B. DePutron, Assistant to the Chairman.
C. A. McIlvaine, Chief Clerk.
H. S. Farish, Surveying Officer.
Caleb M. Saville, Assistant Engineer.
Lieut.-Col. H. F. Hodges, Assistant Chief
Engineer.
C. O. Carlson, Secretary.
Edward Schülthauer, Electrical and Mechanical
Engineer.
Henry Goldmark, L. D. Cornish, H. F. Tucker
and T. B. Mönliche, Designing Engineers.

Civil Engineer H. H. Rousseau, Assistant
to the Chief Engineer.
J. C. Parsons, Secretary.
A. B. Nichols, Office Engineer.
P. O. Wright, Jr., Architect.

Central Division.

Headquarters, Empire.
Maj. D. D. Gaillard, Division Engineer.
A. E. Bronk, Chief Clerk.
Louis K. Rourke, Assistant Division Engineer.
A. S. Zinn, Resident Engineer.
Mark W. Tenny, Assistant Engineer.
R. W. Hebard, Assistant Engineer.
W. L. Thompson, Assistant Engineer.
Geo. H. Ruzales, Assistant Engineer.
Edgar K. Wilson, Assistant Engineer.

Atlantic Division.

Headquarters, Gatun.
Maj. Wm. L. Sibert, Division Engineer.
R. M. Sanders, Chief Clerk.
Maj. Chester Harding, U. S. A., Assistant Divi-
sion Engineer.
Maj. Edgar Judwin, U. S. A., Resident Engineer.
Maj. J. P. Jervey, U. S. A., Resident Engineer.
Capt. G. M. Hoffman, U. S. A., Assistant En-
gineer.
Capt. Horton W. Stickle, U. S. A., Assistant En-
gineer.
I. G. Thom, Assistant Engineer.
F. C. Stanton, Assistant Engineer.
R. B. Smith, Superintendent of Dredging.

Pacific Division.

Headquarters, Corozal.
S. B. Williamson, Division Engineer.
E. A. LeMay, Chief Clerk.
W. G. Comber, Resident Engineer.
G. B. Strickler, Resident Engineer.
H. O. Cole, Assistant Engineer, (Office).
Wm. F. M. Acheson, Assistant Engineer.
James MacFarlane, Superintendent of Dredging.

Mechanical Division.

Headquarters, Culebra.
Geo. D. Brooke, Superintendent of Motive
Power and Machinery.
F. W. Doty, Chief Clerk.
Earle J. Banta, Mechanical Engineer.
A. L. Robinson, Electrical Engineer.

Subsistence.

Headquarters, Cristobal.
Maj. Eugene T. Wilson, U. S. A., Subsistence
Officer.
W. F. Shipley, Chief Clerk.
Lieut. Frank O. Whitlock, U. S. A., Assistant
Subsistence Officer.

Quartermaster's.

Headquarters, Culebra.
Maj. C. A. Devoil, U. S. A., Chief Quarter-
master.
C. B. Mann, Chief Clerk.

Lieut. R. E. Wood, U. S. A., Assistant Chief
Quartermaster
Capt. Courtland Nixon, U. S. A., Depot Quar-
termaster, Mount Hope.
C. I. Parker, C. C. McColley, Inspectors

District Quartermasters.

B. C. Poole, Ancon and La Boca.
C. E. Heisey, Bas Obispo.
A. R. Bennett, Corozal.
Ira A. Giles, Cristobal.
J. B. Jeffries, Culebra.
C. P. Allen, Empire.
R. M. Gamble (acting), Gatun
R. C. Shady, Gorgona.
J. M. King, Las Casandas.
Harry Dundas (acting), Paraiso.
Otto Mastrand, Pedro Miguel.
M. R. Currie, Porto Bello.
J. H. Humphreys, San Pablo and Tabernilla.
R. R. Watson, unassigned.

Civil Administration.

Headquarters, Ancon.
Jo C. S. Blackburn, Head of the Department.
H. D. Reed, Executive Secretary.
G. A. Ninas, Chief Clerk.
Tom M. Cooke, Chief, Division of Posts, Cus-
toms and Revenues, Ancon.
Herman A. Gudger, Deputy Collector, Ancon.
E. Lewis Baker, Deputy Collector, Cristobal.
George M. Shontz, Prosecuting Attorney, Ancon.
George R. Shanton, Chief of Police, Ancon.
D. F. McDonald, Chief Clerk.
C. E. Weidman, Fire Chief, Cristobal.
Geo. L. Campen, Supt. of Public Works, Ancon.
C. R. Sargent, Chief Clerk.
J. J. Reedy, Asst. Supt. Public Works, Cristobal.
H. L. Smith, Superintendent of Schools, Ancon
Edgar P. Beck, Treasurer of Canal Zone, Empire

Canal Zone Judiciary.

Headquarters, Ancon.
Supreme Court—H. A. Gudger, Chief Justice.
Walter Emery, Clerk, Ancon.
Lorin C. Collins, Associate Justice, Cristobal.
Wesley M. Owen, Associate Justice, Empire.
Circuit Court, First Circuit—H. A. Gudger,
Judge, Ancon.
Walter Emery, Clerk.
Circuit Court, Second Circuit—Wesley M. Owen,
Judge, Empire.
Elbert M. Goolsby, Clerk.
Circuit Court, Third Circuit—Lorin C. Collins,
Judge, Cristobal.
Nelson R. Johnson, Clerk.
M. C. Redell, Senior District Judge, Cristobal.
S. F. Blackburn, District Judge, Ancon.
Edgar S. Garrison, District Judge, Empire.
J. B. March, District Judge, Gorgona.
Thomas E. Brown, Jr., District Judge, Cristobal.

Law.

Headquarters, Washington, D. C.,
Richard Reid Rogers, General Counsel,
Washington, D. C.
George M. Shontz, Attorney for Isthmian Canal
Commission and Panama Railroad Company,
Ancon.
George H. Bartholomew, Assistant Attorney.

Sanitation.

Headquarters, Ancon.
Col. W. C. Gorgas, Chief Sanitary Officer.
Capt. Robert E. Noble, U. S. A., Executive Officer.
Harry E. Bovay, Chief Clerk.
H. R. Carter, Director of Hospitals, Ancon.
Surgeon, J. C. Perry, P. H. and M. H. S., Chief
Quarantine Officer, Ancon.
Lieut.-Col. John L. Phillips, U. S. A., Superin-
tendent Ancon Hospital, Ancon.
Capt. Alexander Murray, U. S. A., Assistant to
Superintendent.
Maj. C. C. McCulloch, jr., U. S. A., General In-
spector, Ancon.
J. F. Leys, U. S. N., Superintendent Colon
Hospital, Cristobal.
Surgeon Claude C. Pierce, P. H. and M. H. S.
Quarantine Officer, Colon.
Dr. Fleetwood Gruver, P. H. and M. H. S., Quar-
antine Officer, Panama.
Dr. A. E. Mayner, Acting Health Officer, Pan-
ama.
Dr. M. E. Connor, Health Officer, Colon.
Joseph A. LePrince, Chief Sanitary Inspector,
Ancon.

Disbursements.

Headquarters, Empire.
Edward J. Williams, Disbursing Officer.
Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.
W. W. Warwick, Examiner of Accounts.
Thomas L. Clear, Chief Clerk.

Purchasing Department.

Headquarters, Washington, D. C.
Capt. F. C. Boggys, U. S. A., General Pur-
chasing Officer.
C. E. Dols, Chief Clerk.
Capt. Courtland Nixon, Purchasing Agent on
the Isthmus.
Maj. Wendell L. Simpson, U. S. A., Purchas-
ing Agent, 24 State Street, New York City.
F. C. Nordsiek, Assistant Purchasing Agent, 24
State Street, New York City.
S. E. Redfern, Assistant Purchasing Agent,
Custom House, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
(New York office, 24 State Street.)
H. J. Slifer, Assistant to the President, and
General Manager, Colon.
G. E. Geer, Assistant to the General Manager.
R. Budd, Chief Engineer.
J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Pan-
ama Railroad Steamship Company, of the Royal
Mail Steam Packet Company, of the Hamburg-
American Line, and of the United Fruit Company's
Line, the Panama Railroad Company's dates being
subject to change:

NEW YORK TO COLON.

Magdalena	R-M	Saturday	Jan. 23
Colon	P. R. R.	Tuesday	Jan. 26
Prinz Aug. Wilhelm	H-A	Saturday	Jan. 30
Panama	P. R. R.	Monday	Feb. 1
Advance	P. R. R.	Saturday	Feb. 6
Orinoco	R-M	Saturday	Feb. 6
Allianca	P. R. R.	Saturday	Feb. 13
Prinz Joachim	H-A	Saturday	Feb. 13
Colon	P. R. R.	Friday	Feb. 19
Atrato	R-M	Saturday	Feb. 20
Panama	P. R. R.	Thursday	Feb. 25
Prinz Aug. Wilhelm	H-A	Saturday	Feb. 27
Trent	R-M	Saturday	Mar. 6

All the steamers of the Hamburg-American and
Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Advance	P. R. R.	Tuesday	Jan. 26
Orinoco	R-M	Tuesday	Jan. 26
Allianca	P. R. R.	Monday	Feb. 1
Prinz Joachim	H-A	Tuesday	Feb. 2
Colon	P. R. R.	Sunday	Feb. 7
Atrato	R-M	Tuesday	Feb. 9
Panama	P. R. R.	Saturday	Feb. 13
Prinz Aug. Wilhelm	H-A	Tuesday	Feb. 16
Advance	P. R. R.	Friday	Feb. 19
Trent	R-M	Tuesday	Feb. 23
Allianca	P. R. R.	Thursday	Feb. 25
Prinz Joachim	H-A	Tuesday	Mar. 2
Tagus	R-M	Tuesday	Mar. 9
Prinz Aug. Wilhelm	H-A	Tuesday	Mar. 16

NEW ORLEANS TO COLON.

Heredia	U.F.C.	Saturday	Jan. 30
Ellis	U.F.C.	Saturday	Feb. 6
Parismina	U.F.C.	Saturday	Feb. 13
Heredia	U.F.C.	Saturday	Feb. 20
Ellis	U.F.C.	Saturday	Feb. 27
Parismina	U.F.C.	Saturday	Mar. 6
Heredia	U.F.C.	Saturday	Mar. 13
Ellis	U.F.C.	Saturday	Mar. 20

COLON TO NEW ORLEANS.

Parismina	U.F.C.	Tuesday	Feb. 2
Heredia	U.F.C.	Tuesday	Feb. 9
Ellis	U.F.C.	Tuesday	Feb. 16
Parismina	U.F.C.	Tuesday	Feb. 23
Heredia	U.F.C.	Tuesday	Mar. 2
Ellis	U.F.C.	Tuesday	Mar. 9
Parismina	U.F.C.	Tuesday	Mar. 16
Heredia	U.F.C.	Tuesday	Mar. 23
Ellis	U.F.C.	Tuesday	Mar. 30

COLON TO BARBADOS, CALLING AT TRINIDAD.

Magdalena	R-M	Tuesday	Feb. 2
Orinoco	R-M	Tuesday	Feb. 16
Atrato	R-M	Tuesday	Mar. 2
Trent	R-M	Tuesday	Mar. 16

The steamers of the United Fruit Company's line
sail from New Orleans at 10 a. m. for Colon, calling
at Puerto Barrios, and from Colon at 1.30 p. m., via
Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Générale Trans
atlantique) for Venezuelan ports, Martinique and
Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line for New
Orleans via Kingston, Ja., will be the steamship
Median on or about February 2. The *Tampican* has
been ordered to proceed to Galveston instead of New
Orleans.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, FEBRUARY 3, 1909.

No. 23.

The Canal Record

Published weekly under the authority and supervision of the
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Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Heavy January Rainfall.

The rainfall last month was heavier than for any January since American occupation. The average at fifteen stations along the line of the Canal was 4.37 inches. In 1908, in the same territory, it was 1.19; in 1907 it was 0.87, and in 1906 it was 1.04. The general January average for the same territory since records have been kept was 2.32. It was heaviest at Cristobal, where it reached 10.61 inches. This has been exceeded at Cristobal only twice since the rain gauge was established in 1871. In that year the January fall was 15.42 inches, and in 1902 it was 19.20 inches. At Gatun this year it was 7.17 inches, and at Bohio 7.29 inches.

January Excavation.

The grand total of excavation during the month of January was 2,924,551 cubic yards. All of this amount except 154,919 cubic yards was taken from the Canal prism. It is 391,316 cubic yards less than the December output. There were 25 working days in January, one less than in December. Of the grand total for January, 1,815,874 cubic yards were taken out by steam shovels and 1,108,677 by dredges. The mean rainfall for January in the territory in which excavation was in progress was 4.39 inches, as compared with 5.93 inches in December, and was the heaviest January rainfall since American occupation.

In the Atlantic Division the total excavation was 751,965 cubic yards, which is 106,759 cubic yards less than that of December. Of this amount 133,872 cubic yards were taken out by steam shovels and 618,093 cubic yards by dredges.

The total excavation in the Central Division was 1,539,648 cubic yards, which is 54,346 cubic yards less than the December output. Of this amount 1,257,945 cubic

yards were taken from the Culebra Cut, 195,008 cubic yards from the Canal prism elsewhere than in the Cut, and 86,695 cubic yards from the Obispo Diversion which is outside the Canal prism.

In the Pacific Division the total excavation was 632,938 cubic yards, which is 230,211 cubic yards less than that for December. The decrease in this division was caused by the dredge *Culebra* being out of commission for 18 working days, while being overhauled. Of the 632,938 cubic yards, 142,354 cubic yards were taken out by steam shovels and 490,584 cubic yards by dredges. The detailed statement of excavation in the three divisions follows:

ATLANTIC DIVISION.

Locality.	From Canal Prism	Outside Canal Prism	Total excavation
<i>Dry excavation—</i>	<i>cu. yds.</i>	<i>cu. yds.</i>	<i>cu. yds.</i>
Gatun spillway.....	17,809	17,809	17,809
Gatun Locks.....	69,001	1,398	70,399
Mindi.....	45,664	.....	45,664
Total.....	114,665	19,207	133,872
<i>Wet excavation—</i>			
Colon dredging.....	521,050	.....	521,050
Gatun Locks.....	52,271	44,772	97,043
Total.....	573,321	44,772	618,093
Total wet and dry excavation.....	687,986	63,979	751,965

CENTRAL DIVISION.

<i>All dry excavation—</i>			
Chagres section.....	195,008	.....	195,008
Culebra section.....	1,257,945	86,695	1,344,640
Total.....	1,452,953	86,695	1,539,648

PACIFIC DIVISION.

<i>Dry excavation—</i>			
Miraflores Locks.....	54,383	4,245	58,628
Pedro Miguel Locks....	53,726	.....	53,726
Total.....	108,109	4,245	112,354
<i>Wet excavation—</i>			
Pacific entrance.....	469,529	.....	469,529
Miraflores Locks.....	21,055	.....	21,055
Total.....	490,584	.....	490,584
Total wet and dry excavation.....	628,694	4,245	632,938

TOTAL EXCAVATION, ENTIRE CANAL.

Dry excavation.....	1,708,727	110,147	1,818,874
Wet excavation.....	1,063,905	44,772	1,108,677
Total.....	2,772,632	154,919	2,927,551

Mean rainfall along Canal (eleven stations). 4.39 inches.

High Water Interferes with Canal Work.

The recent freshets in the Chagres River caused a temporary disturbance of the work on that portion of the Central Division between Bas Obispo and Matachin. At 6.30 a. m., on the morning of January 29, notice was received at the office of the Division Engineer that an excessive rise could be expected in the Chagres River, and at 11 p. m., the same day the river reached its maximum height of 66 feet above sea-level at the Gamboa bridge. This is one foot

above the natural barrier which protects the work from the waters of the river, and the back water in the Bas Obispo River, caused by the freshet, put four steam shovels in the cut at Bas Obispo temporarily out of commission.

The Chagres River north of Bas Obispo follows a course like the letter "S." The Canal prism crosses the peninsulas formed by the bends of the river, known respectively as Point No. 1 and Point No. 2. In the excavation of the Canal prism, barriers of earth had been left on each bank of the river at each crossing in order to protect the work, and had been left at a sufficient height to guard against an ordinary freshet. At Santa Cruz (Point No. 1), the barrier at the north end of the excavation gave way at 3.20 p. m., and the cut was flooded. There were three steam shovels at elevation 40, which had been taken out before the barrier gave way, but four others were temporarily put out of commission. By working until 12 o'clock on the night of January 29 both barriers at Matachin (Point No. 2) were saved and the work was not hindered with the exception of one steam shovel, which at the maximum rise was under 19 feet of water. If the north barrier at Santa Cruz had not given way, thus relieving the pressure of the river against the south barrier at Matachin, it is very doubtful if that barrier could have been saved.

At Matachin the river flowed through the cut temporarily putting out of commission four steam shovels, but these were at work again at noon on January 30. Of the shovels mentioned as having been put out of commission all but three went to work on Monday, February 1.

Unusual Freshet in Chagres River.

During January the water in the Chagres River reached a higher level than it had touched at any time during the previous year. This very unusual freshet began at 2 a. m. on January 27, at Vigia, and continued until noon on January 30, when the crest passed Gatun. It was divided into three distinct waves. The depressions between the three crests, or highest points of the rises, are plainly visible on the freshet curves drawn for Vigia, Alhajueta, and Gamboa, but at Bohio and Gatun there was practically no fall of the river between the rises, and on the curve for these points it appears as one continuous freshet.

The following table gives the history of this freshet, and comparisons between it and those of the past wet season, as well as those of record in January of past years. It will be noted, from this table, that seven freshets exceeding 56 feet above mean sea-level at Gamboa have occurred in January during the last twenty-six years; that the last one exceeded all previous January freshets, and also that, coming as it did in the so-called dry

NOTES OF PROGRESS.

(Continued.)

season, it yet exceeded all freshets of the 1908 rainy season.

Summary of rises at Gamboa exceeding 19 feet above low water since May 1, 1908:

Date.	Length of time above 56.0 feet. Hours.	Maximum height above low water. Feet.
1908—		
May 19.....	5	12.6
June 19.....	4	11.7
July 15-16.....	7	12.5
August 17.....	7	13.4
October 9.....	5	11.2
October 26-27.....	3	10.7
October 28.....	3	10.5
October 30.....	5	10.1
November 7.....	4	11.0
November 11-12.....	6	13.0
November 17-18.....	10	14.6
November 18-19.....	17	13.5
November 20-21.....	35	14.8
November 23.....	1	10.1
November 30.....	10	13.6
December 27-28.....	3	13.2
1909—		
January 27.....	7	13.3
January 28-29.....	10	12.4
January 29-30.....	23	20.7

Low water—46.0 feet above sea-level.

Table showing January rises at Gamboa, exceeding 10 feet above low water (46.0 feet above sea-level), 1883, to January 1, 1909, inclusive:

Year.	No. of rises.	Max. height above low water. Feet.	Length of time above 56.0 feet. Hours.
1894.....	2	18.0	25
1895.....	1	10.4	2
1895.....	2	17.1	22
1899.....	2	14.3	29
1902.....	3	16.5	57
1904.....	1	14.1	7
1909.....	*3	20.7	48

*January 27-30.

Visit of Mr. Taft and Engineers

Mr. Taft, President-elect, with Mrs. Taft and the seven civil engineers who came to the Isthmus to investigate the Canal work, arrived at Colon about 10 o'clock on Friday morning, January 29. They were met in the harbor by Colonel Goethals and the Isthmian Canal Commission and were taken on a special train to Culebra.

On arriving at Culebra Mr. and Mrs. Taft were greeted by the American Minister, Mr. Squiers, and Mrs. Squiers and members of President Obaldia's cabinet.

On Saturday morning Mr. Taft took a special train to Panama and made a call upon President Obaldia. He returned to the Hotel Tivoli for luncheon, and in the afternoon attended a meeting of the Canal Zone Federation of Women's Clubs, delivering a brief address. On Sunday Mr. and Mrs. Taft were "at home" in the afternoon at the residence of Colonel Goethals in Culebra, and received a large number of callers from all parts of the Zone. On Monday morning Mr. and Mrs. Taft, accompanied by the visiting engineers, Colonel and Mrs. Goethals, members of the Isthmian Canal Commission, and a few guests, were taken by a special train over the line of the Canal, passing through the Culebra Cut. In the afternoon Mr. Taft went by special train to Panama and called upon ex-President Amador. On Tuesday morning, accompanied by Mrs. Taft, Colonel Goethals and the visiting engineers, Mr. Taft went to Gatun and spent the morning inspecting the lock

and dam sites, and in the afternoon on their way back from Gatun the party visited the dumps at Tabernilla, witnessing the operation of the Lidgerwood car unloaders, track shifters and spreaders. In the evening he attended a dinner given in his honor at the American Legation in Panama.

The visiting engineers spent Saturday morning in examining the lock and dam sites at Miraflores, going in the afternoon to La Boca, where they inspected the Pacific entrance to the Canal. On Sunday they spent the entire day at Gatun, going over the lock and dam sites, the spillway and the other phases of the work. After accompanying Mr. Taft through the Cut in the forenoon of Monday, the engineers spent the afternoon in examining the slides at Cncaracha, Paraiso, and Culebra.

Grievances of Conductors.

The Special Board, appointed by the Chairman of the Isthmian Canal Commission, to investigate certain grievances of railway conductors, will hold its next hearing at the Administration Building, Ancon, on Sunday, February 7, at 9.30 a. m. All conductors in the Isthmian Canal Commission and Panama railroad service, who have grievances of any kind or who desire to give testimony, and who have not yet testified before the Board, are requested to be present at that time. A round-trip pass over the Panama railroad will be sent to those who desire to attend and who forward their addresses to the Chairman of the Board, Joseph Bucklin Bishop, Ancon.

Lincoln Centennial League.

An adjourned meeting of the Lincoln Centennial League was held at the court house at Empire on Sunday at 3 p. m. for the purpose of making further arrangements for the celebration of the hundredth anniversary of the birth of Abraham Lincoln.

It was determined to have the celebration at Empire on Sunday, the 14th instant, commencing at 11 a. m. The committee expect to arrange for special trains from Panama and Colon to transport free of charge persons attending the celebration. Ladies are specially invited.

A feature of the day will be a basket lunch, and families are requested to bring with them a sufficient amount not only for themselves but enough for a few extra persons. Bands have been engaged, the marines will be present under arms, all the societies of the Zone have been invited, and there will be a grand parade from 11 a. m. to 12 m. From 12 to 1.15 p. m. there will be addresses by persons to be selected by the committee composed of Major Devol, and Messrs. E. M. Robinson and Louis K. Rourke.

For the purpose of defraying expenses a committee composed of Mr. Edward J. Williams as chairman has been appointed. There will be another meeting of the League

at 3 p. m. on Sunday, the 7th instant, in the court house at Empire, to which all persons interested are invited.

Orator for the Lincoln Centenary.

EMPIRE, C. Z., January 30, 1909.

THE CANAL RECORD:

Will you allow me to suggest through the columns of THE CANAL RECORD that the most suitable orator at the proposed celebration of the one hundredth anniversary of the birth of Abraham Lincoln is the Hon. Wesley M. Owen, the newly appointed Supreme Court Justice in the Canal Zone. Judge Owen comes from Illinois, which was Lincoln's state, and it is quite fitting, therefore, that he be selected as the orator of the day. Furthermore, he is a newcomer on the Isthmus and is said to possess unusual oratorical gifts, and it will be a good opportunity for the people of the Zone to hear him.

ILLINOISAN.

Hotel Tivoli Rule for Employees.

The manager of the Hotel Tivoli wishes to call the attention of all Isthmian Canal Commission and Panama railroad employes to the following rule, which became effective January 1, 1908, and is still in force at the Hotel Tivoli:

"Open accounts will not be permitted. Guests are required to pay their bills upon leaving.

"Accounts of transient employes unpaid at the time of leaving will be made up at the nonemployes' transient rate and sent immediately to the Disbursing Officer."

Vacations in Jamaica.

Employes of the Commission, who desire information concerning Jamaica as a health and holiday resort may procure it by calling at the British Legation, Panama, between 9 and 11 a. m. and 2 and 4 p. m.

Brotherhood of Locomotive Engineers.

The regular meeting of Division No. 756, Brotherhood of Locomotive Engineers, will be held at Pedro Miguel, C. Z., on Sunday, February 7, at 1 p. m.

January Rainfall for Three Years.

Stations.	1907.	1908.	1909.	Average since of station rainy estab'd. days.	No.
<i>Atlantic Division</i>					
Nombre de Dios.....	.....	.....	15.26	.....	25
Porto Bello.....	.....	.....	20.90	.....	30
Cristobal.....	2.47	3.84	10.61	3.99	25
Brazos Brook.....	2.06	4.30	9.10	3.18	26
Gatun.....	3.29	3.18	7.17	4.13	28
Gatuncillo.....	.....	2.79	.....	.....	.....
Triunfada.....	.....	2.72	7.58	.....	28
Bohio.....	1.06	1.59	7.29	6.49	29
<i>Central Division</i>					
Tabernilla.....	.....	.92	4.58	.....	20
San Pablo.....	.....	.80	4.09	.....	22
Gamboa.....	.28	.19	2.77	1.98	16
Bas Obispo.....	.35	.20	2.59	1.08	22
Empire.....	.08	.75	2.28	.70	18
Camacho.....	.10	1.70	3.29	.90	23
Culebra.....	.09	.91	2.96	1.89	20
Rio Grande.....	.02	.75	3.85	1.30	18
<i>Pacific Division</i>					
Pedro Miguel.....	.....	.01	3.08	.....	15
La Boca.....	.31	.21	1.45	1.30	11
Ancon.....	.29	.12	2.90	.93	23
<i>Upper Chagres</i>					
El Vigia.....	.....	.....	3.91	.....	23
Albajucla.....	.09	1.02	2.72	1.12	22

WEATHER CONDITIONS, CANAL ZONE, JANUARY, 1909.

Stations.	Press're (reduced to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.			
		Mean.	Maximum.	Date.	Minimum.	Date.		Total.	Number of rainy days.	Station average per month.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Date.
Cristobal.....	29.87	77.5	83	13	70	24	88	10.61	25	3.99	8,767	N.	32	28
Bas Obispo.....	29.88	76.8	87	20	67	17	94	2.59	22	1.08	3,336	N.W.	26	9
Ancon.....	29.85	79.4	90	14	68	14	89	2.90	23	.93	7,118	N.W.	24	8

GATUN TO BAS OBISPO.

Excavation to Be Done in the Area of the Great Lake.

The Central Division has begun work on the section of the Canal between San Pablo and Gatun, which up to this time has been touched only in the course of surveys and investigations. Work is now in actual progress on every part of the Canal in which excavating is to be done.

In the territory between Gatun and the beginning of the Cut at Bas Obispo (Miles 9 to 31.5, where Gatun Lake will be), there remained to be excavated on January 1 only 7,146,970 cubic yards of material, located as follows:

Location.	Cu. Yds.
Between Gatun and Tabernilla.....	687,800
Tabernilla (estimated, San Pablo to Chagrecito).....	1,001,136
San Pablo.....	178,710
Caimito.....	907,092
Between Caimito and Point 2 at Gorgona....	2,989,164
Matachin.....	573,931
Santa Cruz.....	809,137
Total.....	7,146,970

GATUN TO TABERNILLA.

Between Gatun and Tabernilla the work consists of excavating a number of small knolls that rise above the bottom of the Canal (40 feet above sea-level), and clearing a 1000-foot ship channel. The clearing is done principally by native laborers using the machete, and the material cut will be burned. The work at Gatun is in such condition that it is planned to have 10 feet of water in Gatun Lake next rainy season, which will begin in May. In anticipation of this an anchorage basin at Gatun, of about 2½ square miles, and also the 1000-foot channel, will be cleared and grubbed. The 1000-foot channel will be cleared below elevation 15 feet above sea-level, amounting to about 600 acres, this dry season. In addition, there are 900 acres to clear above elevation 15, between San Pablo and Gatun for a 1000-foot channel.

The excavation work in this section consists of a number of small "hand jobs" near Bohio, amounting in all to about 175,000 cubic yards, and 412,000 cubic yards at Buena Vista, which will be taken out by steam shovels. Excavation and clearing have been started at Bohio, where a gang of about 200 men are working. The old French canal is partly excavated up to this place, 17 miles from deep water (-45 feet) in Limon Bay. Two old cranes are standing in the channel, and near them are the buckets in which material was lifted from the channel to the dump cars. A large amount of old rail and dozens of 5-yard and Decanville dump cars complete the equipment with which, it is apparent, the old French company carried on the work. Two ledges of rock rise above the 40-foot level, and between these the spoil from the French canal was dumped. These ledges and a few feet off the top of the old dump constitute the excavation on which work is in progress. A few hundred feet east of the old canal is a diversion channel, and into this channel and the canal the rock and earth that rise above grade 40 are dumped. The old Decanville equipment is used, and the longest haul is about 300 feet. It is expected that the hand excavation will be completed this year.

TABERNILLA, SAN PABLO AND CAIMITO.

From Tabernilla to Mile 27.5, between Mamei and Juan Grande, the channel is to

be 800 feet wide, and from that point to Bas Obispo, near the beginning of Culebra Cut, it will be 500 feet wide. During the first week of the new year the steam shovels were taken from the excavation at San Pablo and set at work at Cano River, about opposite Tabernilla. The material to be taken out at this point by steam shovels amounts to about 500,000 cubic yards. The remainder will probably be dredged. One steam shovel is making a cut along the edge of the river and casting over into the stream, and another is making a pioneer cut through the center of the ridge. The equipment includes that formerly in use at San Pablo, including three steam shovels, three American locomotives, and a sufficient number of 10-yard Oliver dump cars.

When work was begun at San Pablo in August, 1907, two hills stood in the prism of the Canal, and the amount of material to be excavated was 1,379,639 cubic yards. Along the foot of the hills the French had taken out a large amount of earth in working on the channel for their canal. This excavation is used in the 800-foot channel of the present Canal. The work at San Pablo was finished at the end of 1908, up to the point where further excavating would infringe on the roadbed of the Panama railroad. There remains to be excavated 178,810 cubic yards, but this work cannot be done until the railroad track is shifted.

At Caimito the character of the work is similar to that at San Pablo, which is only a few hundred yards east, across the Chagres. One hill, 150 feet high, stood in the prism, and it was necessary to excavate the side of another hill. Here, too, the French had done some work, but the channel of their canal falls outside the present prism, and a considerable quantity of material wasted by them from their excavation is now being thrown back into the old channel. The French canal at this point afforded a convenient dumping place, with a short haul. When the work was begun here in September, 1907, the amount of material to be excavated was 2,078,569 cubic yards, and there remained to be excavated on January 1, 1909, only 907,092 cubic yards, practically all of which will be used to fill the Panama railroad trestles. Four steam shovels are on this work, and grade has been reached in several places.

The work at San Pablo and Caimito was begun in August, 1907, and 2,381,670 cubic yards have been removed since that time. On January 1, 1909, there remained to be excavated 178,710 cubic yards at San Pablo and 907,092 cubic yards at Caimito.

CAIMITO TO BAS OBISPO.

No excavation or clearing has been done between Caimito and Matachin peninsula, known as "Point 2." In this territory the excavation consists principally of cutting through eight peninsulas formed by the sinuous course of the Chagres River. The material is chiefly earth. At "Point 3" there are about 830,000 cubic yards, of which only about 7,500 yards are rock, and this probably will be taken out by steam shovels as soon as the work at "Point 2" is finished. When the Chagres is diverted through the completed channel at "Point 2," a low trestle will be driven across the original channel of the river, just east of the prism, to connect "Point 3" with "Point 2," so

that the material from "Point 3" can be hauled south over this bridge and wasted along the old abandoned channel east of "Point 2." This will make a short haul for all material from "Point 3." A large amount of excavation done by the French is utilized here also, as the Canal follows the line of the French canal. It is likely that a suction dredge will be used on the remainder of the excavation in this section, and that no attempt will be made to remove the material until the water in Gatun Lake is at an elevation of about 55 feet.

Shovels are working in the bottom of the Canal (40 feet above sea-level) at Matachin peninsula "Point 2." Several shovel cuts have been made at grade, and it is expected that the work will be finished by the beginning of the next rainy season, about May 1. Originally the excavation to be done in this part of the work was 1,717,657 cubic yards, and of that amount there remained 573,931 cubic yards on January 1. The equipment consists of two model-91 Marion steam shovels, one 95-ton Bucyrus steam shovel, two 70-ton Bucyrus steam shovels, eight American locomotives, two Belgian locomotives, one old Panama railroad locomotive, 141 Oliver 10-yard dump cars, one spreader, and one track shifter.

In carrying on the excavation at Matachin, and likewise at Santa Cruz, it was necessary to build a dyke across either end of the channel to keep out the water of the Chagres River, which in flood rises as high as 35 feet above low water at this point. Surface and seepage water is pumped out. A steam shovel is now removing the dyke at the north end of the cut. At the beginning of the next rainy season the dyke at the south end of the cut will have been removed and the river will then be turned through the completed channel. The grade of the Canal is lower than that of the river at its low water stage.

The Santa Cruz work "Point 1" is similar to that at Matachin. The excavation at grade is below the low-water level of the river, and the channel is kept dry by dykes at either end of the cut and by pumping. The amount to be excavated here was originally 1,247,652 cubic yards, and on January 1, 1909, there remained 809,137 cubic yards. It is expected that the channel at this point will be finished by the 1st of August, 1909, when the river will be turned through the cut. The equipment at Santa Cruz consists of: Four 70-ton Bucyrus shovels, three American locomotives, two Rogers' locomotives, seven Belgian locomotives, seventy-nine Oliver 12-yard dump cars, one spreader, one track shifter, and one pile driver.

The work at Matachin was begun in December, 1907, and at Santa Cruz in January, 1908, and since then 1,583,243 cubic yards have been removed at these points. On January 1, 1909, there remained to be excavated 573,931 cubic yards at Matachin, and 809,137 cubic yards at Santa Cruz.

The ships owned by the Panama Railroad Steamship Company made 32 round trips, and the ships chartered by the company made 36 between Cristobal and New York in the year 1908, a total of 68, as compared with 74 in 1907. In 1908, 13,816 passengers were carried at an average fare of \$26.28, as compared with 14,158 passengers carried in 1907 at an average fare of \$28.01.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION. MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for From Canal Prism, Outside Canal Prism, and Total. Includes monthly data from January to December and a Totals row.

Total to February 1, 1909—809,470 cubic yards.

* No work done outside of Canal Prism.

COLON—DREDGES.

Table with columns for Months (1907, 1908, 1909) and sub-columns for From Canal Prism, Outside Canal Prism, and Total. Includes monthly data from January to December and a Totals row.

Total to February 1, 1909—11,313,425 cubic yards.

In this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906. There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for From Canal Prism, Outside Canal Prism, and Total. Includes monthly data from January to December and a Totals row.

Total to February 1, 1909—4,213,900 cubic yards.

In this total are included 26,628 cubic yards excavated from the Canal prism October to December 1906. In addition there were 105,626 cubic yards removed by dredges from Gatun locks in December, 1908, and January, 1909.

CENTRAL DIVISION.

CULFEBRA SECTION—STEAM SHOVELS.

Table with columns for Months (1904, 1905, 1906, 1907, 1908, 1909) and sub-columns for From Canal Prism, Outside Canal Prism, and Total. Includes monthly data from January to December and a Totals row.

Total to February 1, 1909—28,294,940 cubic yards.

CHAGRFS SECTION—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for From Canal Prism, Outside Canal Prism, and Total. Includes monthly data from January to December and a Totals row.

Total to February 1, 1909—4,175,769 cubic yards.

*No work done outside Canal prism.

CANAL EXCAVATION TO DATE.

Summary table for Canal Excavation to Date, listing By French Companies, By Americans, and Dredges, with a Total of 81,548,000 cu. yds.

EXCAVATION IN TERRITORY OF PRESENT DIVISIONS

May 4, 1904, to January 31, 1909.

Summary table for Excavation in Territory of Present Divisions, listing Atlantic, Central, and Pacific divisions, and a Grand total of 62,751,924 cubic yards.

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Table with columns for Months (1908, 1909) and sub-columns for From Canal Prism, Outside Canal Prism, and Total. Includes monthly data from January to December and a Totals row.

Total to February 1, 1909—340,506 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY.

Table with columns for Months (1908, 1909) and sub-columns for From Canal Prism, Outside Canal Prism, and Total. Includes monthly data from January to December and a Totals row.

Total to February 1, 1909—875,376 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at La Boca locks in 1907; 139,298 cubic yards at Cardenas Hill March to December, 1908, and 21,055 cubic yards by dredges at Miraflores locks in January, 1909.

LA BOCA—DREDGES.

Table with columns for Months (1905, 1906, 1907, 1908, 1909) and sub-columns for From Canal Prism, Outside Canal Prism, and Total. Includes monthly data from January to December and a Totals row.

Total to February 1, 1909—12,345,729 cubic yards.

There were also 172 cubic yards removed by steam shovels outside of the prism during October, 1908.

CANAL ZONE FEDERATION.

Fourth Convention of Women's Clubs—Mr. Taft's Speech.

The Canal Zone Federation of Women's Clubs held its fourth convention at Ancon on Saturday, January 30, the business session being held in the morning in the rooms of the Ancon Woman's Club, and the reception at Hotel Tivoli in the afternoon at 2.30 o'clock in the ball room, which had been especially decorated and arranged for the occasion.

On the platform at the afternoon session were the President-elect and Mrs. Taft, Mrs. George W. Goethals, the president and vice-president of the General Federation of Women's Clubs, the president and officers of the Canal Zone Federation and Mrs. Squiers, wife of the American minister to Panama.

Introduced by the president of the Canal Zone Federation as the patron and friend of the Women's Clubs in the Zone and the one who made their organization possible, Mr. Taft made the following speech:

"Ladies of the Women's Clubs on the Isthmus—I know you do not expect any lengthy remarks from me, and if you do you will certainly be disappointed.

"It is a great pleasure for me to be here with Mrs. Taft, to express the sympathy that we both feel in Women's Clubs everywhere, but especially on the Isthmus and in the Zone. The problem of the construction of the Canal involves the presence of a great many people who while here are to be away from home, and in order to make it possible to secure the presence of those persons necessary in the construction it is the duty of the Government to make life here as bearable and tolerable as possible. Now, the Americans, who are largely to construct the Canal, are a gregarious people. They are a people who believe in society and association, and a people who without association and without society are not apt to enjoy life, who are apt to become morbid, and those who are morbid and lonely and do not enjoy life never accomplish much in life, and certainly do not make the best agents for such a great work as the construction of the Canal. For that reason the organization of clubs, the construction of this hotel, the building of churches, and everything that the Government may possibly do to make life enjoyable here, and to bring people together, the Government has a right to do and has a duty to do. Americans do not lack initiative. American women do not lack initiative. I am able to say that from first hand—close association with the sex; and the organization of clubs of course is one of the first instruments by which society and intelligent association can be promoted.

"The objects of Woman's Clubs are various, but the first object is that women should get together and talk. I know that there is a good deal of jocose, clumsy humor directed against the gossip of Women's Clubs by men. My experience with men is that they are just about as gossipy as women, only that they are a little more careful to conceal their like of it. That is all. What the woman learns at the Club or at the Federation or at the tea is all extracted from her by her husband when she comes home, and as possibly it does not lose in the telling, the husbands have the advantage in what they hear.

"Ladies, I wish for your association all the

good fortune possible—all the prosperity possible. I congratulate you on having developed to such an important stage as to call for a visit from the representatives of Women's Clubs in the United States. I congratulate you on their coming, and I hope that this particular meeting will be productive of good. I congratulate you as citizens of the United States resident on the Isthmus, upon the very great progress which is being made on the Canal, and the fact that we can now look forward with some definiteness to a completion of the great work; and when it is completed, every one who has had any connection with it may take to himself or herself a great deal of credit in having participated in the great constructive work of the nineteenth and twentieth centuries."

The address was received with enthusiasm. The remainder of the afternoon program consisted of selections by the Cecelian choros of the Cristobal Club, with Mrs. Frank Ullrich at the piano, songs by Mrs. E. Lewis Baker and Miss Harriet Cooke, and addresses by Mrs. Phillip North Moore and Mrs. John Dickinson Sherman, respectively president and vice-president of the General Federation of Women's Clubs.

At the close of the addresses a reception to the visiting women was held, refreshments being served by the Ancon club. About 250 women were present.

Mrs. Moore and Mrs. Sherman will remain on the Isthmus for a short time in order to visit the local clubs, and thus acquaint themselves better with conditions here.

The business meeting in the morning was preceded by a meeting of the Federation Board, when unfinished and financial business was disposed of. There were about 80 women present. Each club had a full representation of delegates, besides a large number of club women. The address of welcome made by the president of the Ancon Woman's Club was warmly received. The occasion was one of peculiar gratification to the club, as it was able to throw open the well appointed club rooms to its guests. The reports of the Federation officers followed the reading of the minutes. The corresponding secretary read letters of greeting from the Texas Federation and from Miss Helen Varick Boswell, organizer of the Zone clubs.

The reports of the presidents of the Woman's Clubs at Ancon, Pedro Miguel, Paraiso, Culebra, Empire, Las Cascadas, Gorgona, Gatun, and Cristobal, were especially interesting and were followed with close attention.

The Canal Zone Federation is divided into four committees, education, home, art, and literature. Owing to changes in the personnel and other circumstances the work of these committees has not been as effective as could be desired, but it is hoped that this difficulty will be obviated and that the Federation committees will become as strong and united as those of the individual clubs. The strongest committee is the philanthropic which, in operation with the clubs, has done splendid work, under the chairmanship of Mrs. Thomas W. Brown, jr.

The reciprocity committee has circulated year books and Club calendars, assisted in arranging programs and outlining work and furnishes a list of speakers and lecturers available for the Club. Much good work has been done by this committee, but it is thought that its usefulness can be increased

by correspondence with similar committees with Women's Clubs in the States. Interest in the study of native birds will be aroused by a list of publications on the birds of Panama, sent by Mr. John F. Ferry, of the Field Columbian Museum, Chicago.

The educational question was taken up when a resolution was presented to make an effort to have instruction given in the public schools of the Zone on the poisonous nature and evil effects of alcohol and cigarettes. The resolution was unanimously adopted.

During the session the president of the General Federation took part in the discussions, dwelling with special interest on the educational question, the cooperation of the home and school, and in the library. Mrs. Sherman also took part, and followed the proceedings with much interest. The formation of an active committee for library extension was effected, the chairman of the educational department of each club to be members of the committee. Traveling libraries were suggested, and traveling art galleries were also spoken of as possible additions.

The formation of a committee for the study of plant life on the Isthmus was one of the important acts of the meeting. This committee will have in its work the cooperation of Dr. Charles F. Millspaugh, curator of botany in the Field Museum, who will take charge of the specimens sent to him, and have them classified and written up. Each club will have representation. The committee will work under the title "The Botanical Committee of the Canal Zone Federation."

Thanks were extended to the Chairman of the Isthmian Canal Commission, the General Manager of the Panama railroad, for courtesies, and to the Ancon Woman's Club for entertainment. An invitation for the Federation to meet at Cristobal in April was accepted. Before the close of the business session the Ancon Woman's Club presented special souvenir copies of their Year Book to the guests and to the president of the Federation.

PERSONAL.

Dr. J. C. Perry, Chief Quarantine Officer, returned to the Isthmus, February 2, on the *Colon*, after a six weeks' leave of absence in the States.

Missing Man.

Information was wanted in regard to Edward H. O'Neill, who is thought to be on the Isthmus. Anyone having knowledge concerning him is requested to communicate with his daughter, Miss Belle A. O'Neill, 3176 Almond street, Philadelphia, Pa.

Resolution of Sympathy.

WHEREAS, It has pleased Almighty God to remove from our midst Brother C. A. Cristy, of Barton, Ohio, formerly of Empire, C. Z., on December 8, 1908, in whom we have lost a worthy brother and the bereaved family a kind husband and a loving father; therefore, he is

Resolved, That we, his brothers of Empire Lodge, No. 2, K. of P., desire to express our sympathy to his loved ones in this their hour of affliction; and furthermore he is

Resolved, That our charter be draped in mourning for thirty days and a copy of these resolutions be spread on our minutes, one copy sent to the bereaved family, and one copy to THE CANAL RECORD for publication.

P. F. MAHER, S. A. BENNINGER, W. T. KIMBERLEY,
Committee.

PORT OF LA BOCA.

Handling Facilities and Extent of the Trade.

La Boca is the Pacific terminal of the Panama railroad, the point where the Rio Grande flows into Panama Bay, where the French began the Pacific terminal for the Panama Canal, and where the present Canal is to end. It is the only port on the Pacific side between Callao and Salina Cruz in which deep draught vessels can unload at a wharf. In the fiscal year 1908 there were handled at the Panama railroad docks at La Boca 387,618 tons of merchandise carried in 181 vessels.

When it went into the hands of a receiver in 1889 the old French company had already done a great amount of work on a channel from deep water in Panama Bay to Corozal. Several Scotch ladder dredges had been employed, three of which are still in use. To keep the dredging fleet in repair a machine shop was built at the mouth of the Rio Grande and docks were erected. La Boca (the mouth) is the village that grew up around the shops and docks. It had a population of 1,544 on June 23, 1903. The harbor in front of the city of Panama is so shallow that the rocks near the shoals are bare at low tide, and vessels must discharge their cargo onto lighters, so that practically all the imports and exports on the Pacific side are handled at La Boca, which is about two miles distant from the city.

In the concessionary contract made between the United States of Colombia and the Panama Railroad Company in 1864, the company bound itself "to extend the railroad on the Pacific side to the islands of Naos, Culebra, Perico, and Flamingo, or other places in the bay where there may exist a permanent depth of water for large vessels." By another contract entered into in 1880 the company agreed to pay \$10,000 a year during thirty years, in lieu of the extension, or until the extension was made. In order to do away with the expense and inconvenience of lighterage, as well as to fulfill the spirit of its contract, the railroad company entered into a contract with the new French company in 1896 to build a pier at La Boca, alongside the deep-water channel which the French were dredging. In his annual report for 1898 the president of the railroad spoke of the work as follows:

Continued progress was made during the year in completing the new terminal port and pier at La Boca, in the Bay of Panama, which, as now almost finished, consist of a magnificent pier, 1,000 feet long, 50 feet wide, constructed of 24 solid cement piers founded on bedrock, shedded its entire length, with five large steam hoisting cranes and one 15-ton derrick crane, with which to discharge or load three large ships at one time.

Basins have been excavated alongside the pier of sufficient size to allow a free movement of vessels of 3,000-ton capacity, and to allow such vessels to be safely berthed there at all stages of a tide, which has an average rise and fall of 21 feet. Cargo will be rapidly transferred directly to and from cars on the pier, which is connected by branch road with the main line. On the pier and main line adjoining there have been newly constructed and installed an ample train yard, water plant for pier and ships, electric light plant, treasure vault, telephone and telegraph lines, truck scale and engine shed, and office building.

The pier was first used in 1899. In the same year the harbor was charted, and the Colombian Government, on the payment of \$200,000, in addition to \$200,000 already paid, accepted La Boca as the place referred to in the contract of 1867, "where there

exists a permanent depth of water for large vessels." On October 15, 1900, the railroad company assumed charge of the excavation in the basin of evolution, and in the same year leased the machine shop from the new French company. On January 1, 1901, all the work had been completed and the port was declared open to commerce.

A contract was entered into with the French Canal Company in 1901 for the use of La Boca as a terminal of the railroad until 1955, and also for the use of the dredges, clapsnets, and other materials. In short the village and its properties passed from the hands of the Panama Canal Company to those of the Panama Railroad Company. Contracts were made in 1902 with the Pacific Mail Steamship Company for a monopoly of the trade north of Panama, and with the Pacific Steam Navigation Company and the Cia Sud Americana de Vapores for the monopoly of the trade south of Panama.

These were the principal factors in the growth of La Boca up to the time of the American occupation in 1904. Since then the dredging in the harbor has been continued, the docks and machine shops have been enlarged, a new electric and air compressing plant has been installed, and the storage and pumping plant of the Union Oil Company has been erected.

Two years ago the docks at La Boca were enlarged, and at present they are 2,000 feet long and 80 feet wide in platform space, in addition to two railroad tracks. All the merchandise dock is under cover. The least depth of water alongside at low tide is 24 feet 6 inches. Five ships of from 3,000 to 5,000 tons can tie up at the docks at one time, and there are lighterage facilities for unloading additional ships in the harbor. At the extreme end of the docks is a 16-ton crane and along the front of the wharf are ten 1½ ton and eight 4-ton movable cranes, all run by electricity. The small cranes were designed by a French engineer and are peculiarly adapted to this port where there is a difference of 21 feet between high and low water. The lumber dock is large enough to make it practicable to unload 150,000 feet a day, but ships at La Boca should be prepared to handle lumber or piling with their own gear, as the cranes on the docks will not handle them to advantage. Coal chutes, with a capacity of 1,000 tons a day, are located alongside the lumber dock. The Panama Railroad Company has 10 cargo lighters, with a total capacity of 3,000 tons, four coal lighters of 200 tons capacity each, and a tug boat in the La Boca port service. The company has under consideration the construction of a 1000-foot extension to the dock. In a few months the old channel made by the French will be closed and the new American channel will be in use.

The trade through La Boca, and therefore from the west coast of North and South America, across the Isthmus of Panama, is confined almost exclusively to ships of the Pacific Mail Steamship Company, an American line; the Pacific Steam Navigation Company, a British line; and the Cia Sud Americana de Vapores, a Chilean company. The contracts by which these companies gained a practical monopoly of the west coast trade were annulled in June, 1905. The Pacific Mail Company has a ship in and out of La Boca every nine days, which takes

from 26 to 30 days to make its voyage between San Francisco and Panama, making calls en route at nine ports in Central America and four in Mexico. It has nine ships in the regular service, and in the coffee season three more are added.

The ships of the Chilean company and the Pacific Steam Navigation Company arrive at and leave La Boca on alternate weeks. They make the round trip in about 72 days, and en route call at ten ports in Chile, nine in Peru, and one in Ecuador. Each company has nine boats in the service. Two vessels of the Pacific Steam Navigation Company are kept in a two-weekly coasting service as far south as Guayaquil. One steamer sailing every ten days serves the ports of the Republic of Panama west of La Boca. Its principal freight is cattle, which are put overboard close to the beach at Panama. The merchandise is discharged onto lighters. The Kosmos line boats (German) call at La Boca, but have no regular schedule. The longest boat ever entering the port, a ship 460 feet long, was one of this line.

La Boca is known officially as the port of Ancon. Under Executive Order of June 24, 1904, the ports of Ancon and Cristobal were declared open to the commerce of the world. This executive order provided for duties on importations into the Canal Zone to be levied in conformity with such duties as Congress imposed upon foreign merchandise imported into the United States. This order, however, was never put into effect in so far as the collection of duties was concerned. Under dates of December 3 and 6, 1904, Executive Orders known as the "Taft Agreement," were issued, which define the ports of the Canal Zone. From July, 1904, up to the present time vessels have freely entered and cleared at the ports of the Canal Zone under the jurisdiction of the Canal Zone customs authorities, and in accordance with the "Taft Agreement" all duties have been paid to the authorities of the Republic of Panama.

The following is a statement of the vessels entering and clearing at the port of Ancon, C. Z., from July 1, 1904, to June 30, 1908:

Nationality.	Class.	No. entering.	Tonnage.	No. clearing.	Tonnage.
American.....	Steam..	246	502,673	247	505,221
American.....	Sail....	2	1,927	2	1,927
British.....	Steam..	198	290,465	196	287,366
Chilean.....	Steam..	104	174,017	104	173,904
German.....	Steam..	39	105,263	39	106,263
Norwegian....	Steam..	4	9,894	4	9,894
Italian.....	Steam..	1	2,700	1	2,700
Total.....		594	1,087,939	593	1,087,275

Vessels in port from 1907.....	4
Tonnage in port from 1907.....	7,747
Vessels remaining in port June 30, 1908.....	5
Tonnage remaining in port June 30, 1908.....	7,653

The movement of passengers and cargo between July 1, 1904, and June 30, 1908, was as follows:

Tons of cargo arriving, in transit.....	447,948
Tons of cargo departing, in transit.....	690,678
Tons of cargo arriving, local.....	48,882
Tons of cargo departing, local.....	1,686
Passengers arriving, cabin.....	10,698
Passengers arriving, steerage.....	11,526
Passengers departing, cabin.....	10,266
Passengers departing, steerage.....	9,363

The number of vessels handled at the Panama railroad docks at La Boca and Panama in the fiscal year 1908 was 181, which is 21 more than in the preceding fiscal year.

The tonnage of merchandise handled in the years 1907 and 1908 was as follows:

Years.	TONS.		
	Received.	Despatched.	Total
1908.....	183,430	204,188	387,618
1907.....	126,033	193,344	319,377
Inc. over 1907.	57,397	10,844	68,241

The amount of merchandise handled through the port, in 1907 and 1908, showing the origin and destination, is as follows:

Year.	SAN FRANCISCO.		MEXICO.	
	To.	From.	To.	From.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1908.....	23,070	15,785	11,820	3,891
1907.....	30,609	16,155	15,904	2,945

Year.	CENTRAL AMERICA.		SOUTH PACIFIC.	
	To.	From.	To.	From.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
1908.....	54,329	57,522	119,809	72,210
1907.....	59,714	40,286	95,209	66,741

The total of cargoes received and despatched in 1890, 1895, 1900, 1905, and 1908 is shown in the following table:

Years.	TONS.			Total.
	Received.	Despatched.	Total.	
1890.....	77,782	118,865	196,647	
1895.....	116,745	132,994	249,739	
1900.....	195,889	115,423	311,312	
1905.....	125,639	175,138	300,768	
1908.....	183,430	204,188	387,618	

The principal articles handled through the port of La Boca are coffee from Central America, hides and skins from South America, sugar from Peru, ore and bar copper from Peru, wine and treasure. A large lumber trade has been built up with Puget Sound since the beginning of construction work on the Canal by the Americans.

Repairs to the Culebra.

The sea-going suction dredge *Culebra*, which was beached at Perico Island on January 7, was put in service again on January 28, having lost in the meantime eighteen working days. As this dredge has been excavating over 350,000 cubic yards of material from the Pacific entrance to the Canal each month, the dredging record of the Pacific Division in January has been greatly reduced by the time lost by the *Culebra*. The hull has been patched, the machinery repaired, and the vessel has undergone a general overhauling.

Knights of Pythias.

A meeting for the nomination of officers for Ancon lodge, Knights of Pythias, will be held in their lodge room on Thursday night, February 4, at 7.30 p. m. All interested are requested to be present at the meeting.

Improved Order of Red Men.

Incas Tribe No. 6, I. O. R. M., of Gatun, will meet in council on February 6, 1909, at which important business will be transacted. There will be an entertainment after the meeting. All members are earnestly requested to attend.

The outing to Fort Lorenzo which was planned for Saturday, January 31, for the junior members of the four Young Men's Christian Associations on the Isthmus was postponed until Saturday, February 13, because of the high water in the Chagres River.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

EMPIRE.

The Gorgona Dramatic Club presented "The Doctor," Monday, January 25, to a crowded house.

The date for the performance to be given by the Y. M. C. A. minstrel troupe is February 25.

A duck pin contest was bowled on the Empire alleys on Wednesday, January 27, between Culebra and Empire. The score was Empire, 3; Culebra, 0.

A class in beginners' Spanish was organized on Thursday, January 28, to be opened for both men and women. The course will consist of twenty-five lessons, two lessons to be given each week.

An Isthmian championship bowling match on Thursday, January 28, was rolled at the clubhouse between the Empire Y. M. C. A., 1908 champion team, and a picked team from Panama and along the Line. The Y. M. C. A. team captured the match by taking three straight games from the visitors.

The Isthmian duck pin tournament began at Empire on Saturday, January 30, when the Empire team beat the Gorgona team two out of three games.

CRISTOBAL.

The entertainment on Saturday night by the Gorgona Dramatic Club was the first amateur theatrical performance that has been presented here.

A new map of Costa Rica, issued by the Bureau of American Republics, has been put up in the game room of the clubhouse.

Isthmian Baseball League.

Scores, January 31, 1909.

At Empire Park—Empire, 5; Gorgona, 1.				
At Ancon Park—M. P. & M., 2; Ancon, 0.				
Standing of the League, February 1, 1909.				
Played. Won. Lost. Per Cent.				
Empire.....	6	6	0	1000
M. P. & M.....	7	5	2	.714
Gorgona.....	7	2	5	.286
Ancon.....	6	0	6	.000

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., February 3, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Barker, Cecil	Hadley, William
Blackman, Donald	Harrison, S. H.
Brady, Lorry	Kendall, Mrs. Charles
Brook, Frederick (pkg.)	Lawton, James
Brown, John	Park, Lerroy
Cannings, Joseph	Raeder, John M.
Golden, J. P.	Rivanaugh, Lancelot
Groves, Mrs. Richard	Van Dine, Paul Biddle
	Westberg, Mrs. J. E.

Coal Consumed by Steam Shovels.

In the year, ended June 30, 1908, the following amounts of coal were supplied to steam shovels on the Canal work:

	Pounds.
Colon Division.....	1,848,925
Gatun Locks.....	8,983,060
Gatun Dam and Spillway.....	4,097,999
Chagres Division.....	10,633,669
Culebra Division.....	75,922,000
Pedro Miguel Locks (one month)...	71,769
Miraflores Locks (six months).....	2,636,827

Entertainment at Empire.

Mr. Thomas Elmore Rucey, humorist, will give an entertainment at Kangaroo Hall, Empire, on Thursday evening, February 11, for the benefit of St. Mary's Protestant Episcopal Church at Empire. The admission will be fifty cents gold. Every one is cordially invited to attend.

South Carolina Club.

COROZAL, C. Z., January 25, 1909,

THE CANAL RECORD:

All South Carolinians on the Isthmus are requested to send their names and addresses to either one of the undersigned, as steps are being taken to organize the "South Carolina Club." Should a sufficient number of names come in a meeting will be called in the near future at Hotel Tivoli, for the purpose of organization.

W. E. RUSSELL, Ancon, C. Z.
H. C. DEW, Gorgona, C. Z.

OFFICIAL CIRCULARS.

Vacation Leave.

CULEBRA, C. Z., January 25, 1909.

CIRCULAR No 225 (Revised.)

Circular 275 is hereby cancelled and the following is issued in its stead:

Before an employe is granted vacation leave in any service year, he will be required to complete ten months' actual service exclusive of authorized leave of absence without pay, or absence on account of suspension from duty.

Heads of Departments or Divisions may permit an employe to absent himself from his duties for not more than one day, and such absence need not be reported to this office, but any authorized absence for two or more consecutive days should be reported to this office and covered by special order as leave without pay. Absence without permission for two or more consecutive days, unless subsequently covered by a sick certificate, or satisfactorily explained and covered by special order as leave without pay, should be punished by suspension or discharge.

GEO. W. GOETHALS, Chairman.

First Lieutenant, Canal Zone Police.

CULEBRA, C. Z., January 23, 1909.

CIRCULAR No. 231.

First Lieut. Charles W. Barber, 2d Infantry, having reported for duty in accordance with S. O. No. 297, War Department, Washington, December 22, 1908, is hereby assigned to duty as First Lieutenant, Canal Zone Police, relieving First Lieut. John B. Barnes, 5th Infantry.

GEO. W. GOETHALS, Chairman.

Baggage Allowance.

CULEBRA, C. Z., February 2, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

I give below a table showing the baggage allowance on I. C. C. forms of transportation:

Form.	Allowance	Per lb. Excess.
First-class half-rate.....	250	1 cent
Second-class half-rate.....	None	
First-class official business trip.....	250	1 cent
Second-class official business trip.....	None	
Sixty-trip ticket.....	250	1 cent
Employees' 24-trip ticket.....	250	1 cent

By direction of the Chairman.

M. B. DEPUTRON, Assistant to the Chairman.

Requisitions for Coupon Books.

ISTHMIAN CANAL COMMISSION,
DEPARTMENT OF DISBURSEMENTS,
EMPIRE, C. Z., January 30, 1909.

TO ALL CONCERNED:

On account of the delay in making requisitions for commissary and hotel coupon books and meal tickets until the first part of each month unnecessary congestion of orders with attendant delay for all concerned is caused.

In future, all persons responsible for the issuance of coupon books or meal tickets are requested to send in their requisitions to the Disbursing Officer (through the Examiner of Accounts) on or about the 25th of each month to cover their requirements for the next month. These requisitions will be filed but not sent out from the Disbursing Office until the first of each month, thus overcoming the necessity for taking up and caring for a large stock when the offices at interest may be illly equipped therefor, as well as assuring the receipt of the necessary books and tickets prior to the 5th of the month, when they should be ready for issuance to employes.

Compliance with the above request will, it is believed, be found to the advantage of all concerned.

EDWARD J. WILLIAMS, Disbursing Officer.

Ancon Laundry Baskets.

ANCON, C. Z., January 26, 1909.

TO ALL CONCERNED:

In order to locate missing laundry baskets belonging to the Ancon Hospital laundry, it is requested that you return at once any you may have, marking same "Superintendent Ancon Hospital, Ancon, C. Z."

JOHN L. PHILLIPS, Superintendent.

Sale of Public Animals.

Notice is hereby given that there will be sold at public auction, at Gatun Police Station, at 2 p. m., on February 4, 1909, the following described public animals:

One Gray Native Stallion, No. 34.
One Buckskin Native Gelding, No. 37.

These animals may be seen at the Gatun Police Station. Further particulars may be obtained from the Chief of Police, Ancon, C. Z.

GEO. R. SHANTON, Chief of Police.

COMMISSARY DEPARTMENT.

ADVANCE PAYMENTS FOR ICE.

CRISTOBAL, C. Z., January 20, 1909.

TO ALL CONCERNED:

The notice published in THE CANAL RECORD, issue of December 26, relative to advance payments for ice is being misconstrued by a number of the employes.

This notice did not contemplate the settling in advance for ice, in cash, by any persons but those having authorized personal charge accounts.

Persons who have not authority for charge accounts, and who have heretofore secured ice only by deposits of coupons in advance will continue to secure their ice from the Commissary Department in the same manner. It is not intended that such employes will settle in any other way than by the remittance of coupons.

JOHN BURKE, *Manager.*

Approved:

EUGENE T. WILSON, *Subsistence Officer.*

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning February 1:

FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	7
Shoulder, neck trimmed off, (4 pounds and over).....per lb	10
Entire forequarter (not trim- med), 10 pounds and over.....per lb	9
Leg (8 to 10 pounds).....per lb	19
Steak.....per lb	21
Short-cut chops.....per lb	22
Veal—Stewing.....per lb	10
Shoulder for roasting (not under 4 lbs).....per lb	15
Loin for roasting.....per lb	21
Chops.....per lb	22
Cutlets.....per lb	26
Beef—Bones for soup.....per lb	3
Suet.....per lb	4
Soup.....per lb	7
Stew.....per lb	11
Corned.....per lb, 12, 14, 16	
Pot roast (from sirloin but).....per lb	16
Rib-roast, second cut (not under 3 pounds).....per lb	18
Rib-roast, first cut (not under 3 pounds).....per lb	20
Rib-roast short cut (not under 3½ pounds).....per lb	23
Sirloin roast.....per lb	27
Rump roast.....per lb	27
Porterhouse roast.....per lb	27
Steak, round.....per lb	20
Rib.....per lb	24
Sirloin.....per lb	27
Porterhouse.....per lb	27
Rump.....per lb	27

MISCELLANEOUS.

Livers—Beef.....per lb	11½
Calf.....each	65
Sausage—Fork.....per lb	17
Bologna.....per lb	17
Leherwurst.....per lb	17
Sweet bread—Veal.....each	1.20
Sweet bread—Beef.....per lb	30
Ox tongues.....each	1.00
Pigs' feet, pickled.....per lb	14
tongues, pickled.....per lb	16
Eggs, fresh.....dozen	45
Oysters, ½-gallon kegs.....keg	80

POULTRY AND GAME.

Chickens—Fancy Roasting.....1.15 and 1.35	
Fowls.....each 75, 90, 1.00	
Ducks, fatted.....each	1.22
Broilers.....each	75
Turkeys.....per lb	28
Squabs.....each	45
Capons.....each	2.40

CURED AND PICKLED MEATS.

Bacon—Breakfast, whole piece.....per lb	23
Breakfast, sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Hocks.....per lb	8
Sugar cured.....per lb	20
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	45
Cheese—Roquefort.....per lb	45
Young America.....per lb	22
Swiss.....per lb	31
Edam.....each	1.05
Camembert.....per lb	28
McLaren's.....jar	15
Gouda.....per lb	34
French cheese in tins—Camembert, Roque- fort, Brie, Neufchatel.....tin	20
Buttermilk.....quart	15

VEGETABLES AND FRUITS.

Parships.....per lb	7
Lettuce.....per lb	12
Celery.....head	10
White potatoes.....per lb	3½
Sweet potatoes.....per lb	2½
Cabbage.....per lb	5
Onions.....per lb	4
Yams.....per lb	3½
Turnips.....per lb	3½
Carrots.....per lb	4
Beets.....per lb	5
Lemons.....dozen	24
Oranges.....dozen	12
Grapes.....per lb	20
Grapefruit.....each	3½
Tangerines.....each	1½
Limes.....hundred	60
Cranberries.....per lb	17

§ Sold only from cold-storage and not from Commissaries.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, January 30, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatum (Canal).	Gatum (W. Diver'n.
Height of low water above mean sea level, feet.....	129	92	46	1	0	0
Maximum height above low water, feet:						
Sunday, Jan. 24.....	0.2	1.2	2.0	2.9	1.4	1.3
Monday, Jan. 25.....	0.9	1.6	2.3	2.8	1.4	1.3
Tuesday, Jan. 26.....	1.6	2.2	3.3	4.0	1.8	1.6
Wednesday, Jan. 27.....	12.4	9.5	13.3	12.8	6.3	4.9
Thursday, Jan. 28.....	9.2	7.4	12.1	13.6	7.3	5.9
Friday, Jan. 29.....	20.8	14.6	20.7	19.2	10.5	8.7
Saturday, Jan. 30.....	5.3	5.4	9.0	21.0	11.6	10.2

Rainfall, January 1 to 31, 1909, Inclusive

Stations	(MIDNIGHT TO MIDNIGHT.)	
	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	3.42	10.61
Brazos Brook.....	1.69	9.10
Gatum.....	2.01	7.17
Bohio.....	2.97	7.29
<i>Central Division—</i>		
Tabernilla.....	1.67	4.58
San Pablo.....	1.32	4.09
Bas Obispo.....	.72	2.59
Gamboa.....	.40	2.77
Empire.....	.66	2.28
Camacho.....	.70	3.29
Culebra.....	.49	2.96
<i>Pacific Division—</i>		
Rio Grande.....	.63	3.85
Pedro Miguel.....	.67	3.08
La Boca.....	.80	1.45
Ancon.....	1.03	2.90
<i>Atlantic Coast—</i>		
Porto Bello.....	4.37	20.90
Nombra de Dios, (6th to 31st).....	4.60	15.26
<i>Upper Chagres.</i>		
El Vigia.....	1.35	3.91
Alhajuela.....	.77	2.72

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Prinz Aug. Wilhelm.....H-A.....Saturday	Jan. 30
Panama.....P. R. R. Monday	Feb. 1
Advance.....P. R. R. Saturday	Feb. 6
Orinoco.....R-M.....Saturday	Feb. 6
Allianca.....P. R. R. Saturday	Feb. 13
Prinz Joachim.....H-A.....Saturday	Feb. 13
Colon.....P. R. R. Friday	Feb. 19
Atrato.....R-M.....Saturday	Feb. 20
Panama.....P. R. R. Thursday	Feb. 25
Prinz Aug. Wilhelm.....H-A.....Saturday	Feb. 27
Trent.....R-M.....Saturday	Mar. 6

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca.....P. R. R. Monday	Feb. 1
Prinz Joachim.....H-A.....Tuesday	Feb. 2
Colon.....P. R. R. Sunday	Feb. 7
Atrato.....R-M.....Tuesday	Feb. 9
Panama.....P. R. R. Saturday	Feb. 13
Prinz Aug. Wilhelm.....H-A.....Tuesday	Feb. 13
Advance.....P. R. R. Friday	Feb. 19
Trent.....R-M.....Tuesday	Feb. 23
Allianca.....P. R. R. Thursday	Feb. 25
Prinz Joachim.....H-A.....Tuesday	Mar. 2
Tagus.....R-M.....Tuesday	Mar. 9
Prinz Aug. Wilhelm.....H-A.....Tuesday	Mar. 16

NEW ORLEANS TO COLON.

Ellis.....U.F.C. Saturday	Feb. 6
Parismina.....U.F.C. Saturday	Feb. 13
Heredia.....U.F.C. Saturday	Feb. 20
Ellis.....U.F.C. Saturday	Feb. 27
Parismina.....U.F.C. Saturday	Mar. 6
Heredia.....U.F.C. Saturday	Mar. 13
Ellis.....U.F.C. Saturday	Mar. 20

COLON TO NEW ORLEANS.

Parismina.....U.F.C. Tuesday	Feb. 2
Heredia.....U.F.C. Tuesday	Feb. 9
Ellis.....U.F.C. Tuesday	Feb. 16
Parismina.....U.F.C. Tuesday	Feb. 23
Heredia.....U.F.C. Tuesday	Mar. 2
Ellis.....U.F.C. Tuesday	Mar. 9
Parismina.....U.F.C. Tuesday	Mar. 16
Heredia.....U.F.C. Tuesday	Mar. 23
Ellis.....U.F.C. Tuesday	Mar. 30

COLON TO BARBADOS, CALLING AT TRINIDAD.

Magdalena.....R-M.....Tuesday	Feb. 2
Orinoco.....R-M.....Tuesday	Feb. 16
Atrato.....R-M.....Tuesday	Mar. 2
Trent.....R-M.....Tuesday	Mar. 16

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Porto Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Générale Trans atlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line for New Orleans via Kingston, Ja., will be the steamship *Median* on or about February 2. The *Tampico* has been ordered to proceed to Galveston instead of New Orleans.

Concert by the I. C. C. Band.

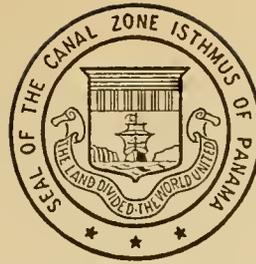
HOTEL TIVOLI, ANCON, C. Z.,
Sunday, February 7, 1909, at 7.30 p. m.

PROGRAM

1 March—Our Director.....	Bigelow
2 Selection—A Knight for a Day.....	Hubbell
3 A Two Step—Hoop-e-Kack.....	Allen
4 Characteristic—John Chinaman.....	Fessler
5 Air et Varié—Austrian Hymn.....	Godfrey
6 Dixie.....	Clement
7 Reminiscences of Scotland.....	Godfrey
8 Descriptive—The Forge in the Forest.....	Michaelis
9 Adagio, Night; Adagio lento, Morning; Allegro, v- vace, By the Brook; Adagio, Morning Prayer; Alle- gretto, At Work at the Forge.	
10 Overture—Raymond.....	Thomas
11 Patrol—March Turque.....	Eilenberg
12 March—Old Faithful.....	Holzman

CHAS. E. JENNINGS, *Musical Director.*
The next concert will be given at Bas Obispo, C. Z., Sunday, February 14, 1909.

The following steamers have recently arrived at La Boca: January 25, *Aclec* from Central America; January 26, *Limari*, from Valparaiso; January 29, *Quito*, from Buenaventura.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Widening the Cut.

The Chairman of the Isthmian Canal Commission has received the following authorization:

THE WHITE HOUSE,
WASHINGTON, October 23, 1908.

Memorandum to the Secretary of War:

With reference to our conversation concerning the widening of the Panama Canal through Culebra Cut so as to make the minimum width three hundred feet at the bottom, I confirm my verbal statement and authorize the widening of four and one-half miles of Culebra Cut from 200 to 300 feet at the bottom. THEODORE ROOSEVELT.

This change will make the entire Canal through the nine miles of the Culebra Cut, from Bas Obispo to Pedro Miguel Locks, 300 feet wide at the bottom. It calls for an additional excavation of 12,997,000 cubic yards, and an additional expense of about \$14,000,000.

The new excavation will not materially change the line of the Canal, the additional amount being removed about equally from each side of the former center line except at two points: Between Las Cascadas and Empire the increased excavation will nearly all be taken from the west side in order to avoid interference with the Obispo Diversion; from Enterprise to Paraiso it will nearly all be taken from the east side, cutting out a small angle in the old line opposite Cucaracha. An average cross-section shows that the Canal will be 300 feet wide at the bottom with nearly perpendicular sides to an elevation of 95 feet above sea-level, at which elevation a berm 40 feet wide will be excavated on each side of the Canal and the slope above that elevation will be suitable to the material through which the excavation runs.

Under the original plan the width of the Canal from Bas Obispo to a point opposite the south end of Las Cascadas was to be

300 feet at the bottom. From that point to Paraiso it was to be 200 feet at the bottom. It is the latter section which is to be widened to 300 feet. This makes 300 feet at the bottom the minimum width at any point throughout the Canal. The Atlantic and Pacific entrances are to be 500 feet in width at the bottom and through Gatun Lake, and the small lake at Miraflores, the width of the channel will vary from 500 to 1,000 feet.

Canal Work and Cost.

Final estimates have been prepared of the amount of work that will have to be done to complete the Canal. These show that when Americans took possession there was required for the construction of the canal as at present planned, a total excavation of 174,666,595 cubic yards. Of this amount, there had been excavated at the end of January last, 62,751,924 cubic yards, or a little more than one-third, leaving 111,904,671 cubic yards still to be removed.

The estimate of total excavation made by the minority members of the International Board of Consulting Engineers, authors of the lock canal under construction, was 103,795,000 cubic yards. The increase over this estimate is due in part to changes in details of the plan which call for a larger excavation.

There will also be required under the present plan, 29,387,000 cubic yards of filling for locks and dams, which is about 7,000,000 cubic yards less than the amount estimated by the minority members. There will also be required 5,015,400 cubic yards of concrete, an excess of 2,000,000 cubic yards over the estimate of the minority members.

The total cost of the Canal, excluding the \$40,000,000 paid to the French company and the \$10,000,000 paid to the Republic of Panama, is estimated at \$297,766,000.

A detailed analysis of the distribution of the excavation and other work throughout the various divisions will be published in a subsequent issue of THE CANAL RECORD.

Highest Daily Record of Excavation.

The best daily record of excavation for steam shovels since American occupation was made on Friday, February 5, when 56 shovels in the Central Division removed 73,442 cubic yards, an average of 1,311 cubic yards per shovel. Of this amount 17 shovels in the Empire District excavated 26,004 cubic yards, an average of 1,530 cubic yards.

This is the highest daily record that has been made, the highest previous daily record was made on December 18, when 50 steam shovels in the Central Division excavated 70,087 cubic yards, an average of 1,402 cubic yards per shovel. These shovels are under steam for eight hours per day, but are not actually at work during the entire period, time being lost by the necessity of moving

the shovels forward, blasting stone too big for the shovel to handle, keeping the shovels supplied with cars, etc.

Mr. Taft and the Engineers.

Mr. Taft, accompanied by the visiting engineers went to La Boca on Wednesday morning, February 3, and inspected the Canal entrance, machine shops and shipways at that point, practically completing their inspection of Canal work. On Friday evening they attended a ball in the new National Theater in Panama, given in honor of Mr. and Mrs. Taft by the Government of the Republic of Panama. On Sunday afternoon they sailed for New Orleans accompanied by Lieut.-Col. Goethals.

Canal Medals.

One thousand pounds of old French scrap have been forwarded to the Director of the United States Mint at Philadelphia by the Chief Quartermaster of the Isthmian Canal Commission to be used in making Canal Medals. Up to January 1, 1909, about 2,400 medals have been earned, and it is estimated that the number of medals to be earned in the future will aggregate about 500 per annum. A partial list of Isthmian Canal Commission employes who are entitled to Medals is published on another page of this issue of THE CANAL RECORD. The continuation of this list, together with a list of Panama railroad employes, will be published in subsequent issues.

In the distribution of the medals the following method will probably be observed: Medals which have been earned by persons no longer connected with the Commission or Panama Railroad Company will be distributed from the Washington office of the Commission; medals earned by employes who have died subsequently will be delivered to their heirs, and medals earned by present employes will be distributed from Culebra.

Highway from Empire to Las Cascadas.

A highway has been authorized from Empire to Las Cascadas. When finally completed it will run from the railroad station at Empire, about 30 feet from and on the west side of the Panama railroad until it passes Whitehouse where a detour will be made, back from the railroad, in order to cross the hills in that vicinity until it joins the road already built near the corral at Las Cascadas. In order to avoid moving a number of houses in the native town at Empire that are near the Panama railroad, a temporary road will be built on an offset that will follow the street of the native town to the north end of the village, making the total length of the road 12,160 feet. It will be built entirely by convict labor, and about 100 convicts are now at work upon it.

It is estimated that it will be necessary to make 14,300 cubic yards of embankment,

NOTES OF PROGRESS.

(Continued.)

and 8,670 cubic yards of material will have to be excavated; 5,600 feet B. M. of lumber will be used in the construction of bridges; and 300 linear feet of 18-inch pipe will be used for culverts. The maximum grade on the road will be 5 per cent, and the macadam portion will be 14 feet wide, 3,152 cubic yards of crushed rock being used for that purpose.

Ancon-La Boca Road Closed.

The portion of the Ancon-La Boca highway between Ancon cemetery and East La Boca will be closed to the public on and after Friday, February 12. The quarry from which stone for the locks at Pedro Miguel and Miraflores will be taken is located adjacent to the road, and work at the quarry has reached the point where it is necessary to close the road to avoid accidents to passers-by.

Record of January Rainfall.

The appended table shows the mean, maximum, and minimum rainfall for the month of January on the Isthmus of Panama during period stations have been in operation:

Stations.	Length of records, years.	Mean. Inches.	Maximum. Yr. Ins.	Minimum. Yr. Ins.	Amount, 1909.
Cristobal...	39	4.16	1902.19.20	1888....63	10.61
B. Brook...	3	5.15	1909. 9.10	1907...2.06	9.10
Gatun.....	5	4.74	1905. 8.63	1906. 1.42	7.17
Bohio.....	14	6.55	1892.22.32	1906....88	7.29
Tabernilla	2	2.75	1909. 4.58	1908....92	4.58
San Pablo.	2	2.44	1909. 4.9	1908....80	4.09
B. Obispo..	15	1.18	1890. 4.53	1888....16	2.89
Gamboa....	24	2.02	1902.13.40	1888....12	2.77
Empire....	4	1.10	1909. 2.28	1907....08	2.28
Camacho..	3	1.70	1909. 3.29	1907....10	3.29
Culebra...	19	1.95	1902. 8.60	1895....00	2.96
R. Grande.	5	1.81	1909. 3.85	1907....02	3.85
P. Miguel.	2	1.54	1909. 3.08	1908....01	3.08
La Boca...	10	1.31	1902. 5.19	1905....00	1.45
Ancon....	11	1.11	1899. 5.61	1882....00	2.90
Alhajuela.	10	1.28	1904. 2.99	1907....09	2.72
P. Bello....	2	11.83	1909.20.90	1906...2.76	20.90

January Police Report

The January report of the Chief of the Division of Police and Prisons shows that 524 persons, representing 43 nationalities, were arrested in the Canal Zone during the month. This is an increase of 17 for the month, there having been 507 arrests in December. Of the 524 persons arrested, 461 were men and 63 were women, and they were charged with 52 different offenses. They were divided among the towns of the Zone as follows: Ancon, 24; Las Sabanas, 5; La Boca, 29; Corozal, 7; Miraflores, 19; Pedro Miguel, 22; Paraiso, 16; Culebra, 39; Empire, 77; Las Cascadas, 6; Bas Obispo, 24; Gorgona, 69; San Pablo, 10; Tabernilla, 30; Bohio, 8; Gatun, 71; and Cristobal, 68. The total effective police force on January 1 was 188, and the pay roll amounted to \$20,886.16.

One hundred and nineteen cases were tried in the Circuit Courts, 18 of which were dismissed, 81 continued, 18 in which convictions were secured, and 2 cases in which bail was forfeited. Of the 18 persons convicted, 4 were fined, 2 received a jail sentence, 2 received a jail sentence and a fine, 9 were sentenced to the penitentiary, and 1 case in which sentence was suspended. Seven convicts were discharged from the penitentiary during the month, leaving a

total of 124 in the penitentiary on January 31. The number of district prisoners on the same date was 138, a decrease of 23 for the month. The value of work performed by the convicts on roads, etc., amounted to \$1,890.60. There were 10 deaths by violence requiring action by the coroner in January. Three of these deaths were caused by dynamite explosions, two by railroad accidents, and two by drowning.

January Record for Track Shifters.

The seven track shifting machines in the Central Division moved a total of 527,171 feet, or 99.8 miles of track during January. In the Tabernilla District track shifter No. 5 moved 116,800 feet, or 22.1 miles. At San Pablo and Caimito, shifter No. 6 moved 67,340 feet, or 12.7 miles. At Gorgona and Matachin, No. 7 moved 65,282 feet, or 12.3 miles, and No. 9 also moved at Matachin

46,885 feet, or 8.9 miles. At Santa Cruz, No. 1 moved 88,006 feet, or 16.7 miles. At Miraflores No. 8 moved 53,299 feet, or 10.1 miles, and at La Boca, shifter No. 2 moved 89,559 feet, or 17 miles.

The dredge *Mindi* has been brought from the Atlantic entrance of the Canal at Mindi to Gatun, where it is excavating a slip at the handling plant dock for the barges that will bring cement, rock and sand for the locks. It is estimated that about 90,000 cubic yards will have to be removed at this point.

The plan for representatives of the Isthmian Canal Commission and Panama Railroad to attend the inauguration of Mr. Taft has been abandoned as arrangements for transporting the party to Washington and caring for them while there could not be made.

LABOR FORCE FOR DECEMBER.

The report of the Chief Quartermaster for the month of December shows that the number of Isthmian Canal Commission employes actually at work on December 31, was 24,417, of whom 4,275 were "gold" employes, and the remainder were on the "silver" or labor roll. The Panama railroad force was 5,342, and the Panama railroad commissary force numbered 749. Thus the total number of persons at work on the Canal and railroad on the last day of December was 30,508. During the month 166 people were added to the "gold" roll and there were 228 separations, the net decrease in the force being 62. No laborers were imported, as

the supply on the Isthmus is in excess of the demand.

The number of family quarters occupied by "gold" employes was 1,417, and the occupants numbered 4,272; bachelor quarters by "gold" employes, 2,093, and the occupants numbered 3,289. The family quarters occupied by West Indians numbered 956, and the occupants 3,056; bachelor quarters, 242; number of occupants, 4,870. The family quarters occupied by European laborers numbered 304, and the occupants 1,047; bachelor quarters, 131; number of occupants 5,466.

A statement of the force actually at work on December 31, 1908, follows:

DEPARTMENT.	Gold Men.	SILVER MEN.						Total Gold and Silver Men.		
		Monthly.	Artisans.	European Laborers.		West Ind'n Laborers.			Total Silver.	
			32c. & over.	26c.	40c.	32c.	26c.	20c.		
Construction and Engineering.....	3,124	1,964	3,773	1,053	4,328	185	1,639	2,861	15,803	18,927
Department of Civil Administration.....	310	143	23						166	476
Department of Sanitation.....	380	632	87		3		12	181	915	1,295
Quartermaster's Department.....	259	1,029	257		286	3	359	640	2,574	2,833
Subsistence Department.....	65	667	2						669	734
Disbursements.....	25	9							9	34
Examiner of Accounts.....	112	6							6	118
Totals.....	4,275	4,450	4,142	1,053	4,617	188	2,010	3,682	20,142	24,417

Panama railroad force, 5,342; Panama railroad commissary force, 749.

STATEMENT OF CLASSIFIED EXPENDITURES TO OCTOBER 31, 1908.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1907. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Civil Administration.	Sanitation.	Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.....	\$1,446,706.01	\$4,642,891.37	\$13,427,622.65	\$4,296,728.36	\$19,283,286.52	\$43,097,234.91
July.....	51,183.84	149,270.94	962,477.19	146,131.93	580,562.68	1,889,626.58
August.....	67,548.53	214,018.03	1,196,803.45	192,227.75	767,183.24	2,437,751.00
September.....	63,239.62	253,108.77	1,194,304.85	107,840.85	1,068,300.58	2,686,794.67
October.....	53,227.97	189,196.33	1,372,311.81	123,939.88	1,131,450.91	2,870,126.95
November.....	54,529.02	166,381.82	1,217,120.31	115,625.44	1,105,590.16	2,659,246.75
December.....	64,903.04	213,725.16	1,369,822.79	125,420.96	591,298.02	2,365,169.97
1908—						
January.....	66,802.92	221,866.30	1,468,021.44	156,956.22	1,584,821.98	3,498,468.86
February.....	72,514.14	174,076.77	1,523,011.72	100,700.40	889,408.82	2,759,708.85
March.....	63,653.60	165,311.77	1,460,229.91	110,232.15	1,307,321.82	3,106,749.25
April.....	74,046.55	178,041.65	1,580,416.19	138,115.21	797,137.63	2,767,757.23
May.....	73,340.26	184,381.35	1,580,369.11	69,824.83	955,405.12	2,863,320.67
June.....	379.34	200,833.07	1,755,771.69	107,940.79	905,767.19	2,969,933.40
July.....	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August.....	77,019.80	145,875.37	1,539,556.90	60,798.76	517,046.09	2,400,291.92
September.....	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
October.....	59,612.51	135,676.68	1,448,614.64	67,696.17	727,544.14	2,459,144.14
Total.....	\$2,442,713.65	\$7,582,338.90	\$36,245,416.70	\$6,064,890.07	\$33,459,808.22	\$85,795,157.54

RULES GOVERNING AWARD OF CANAL MEDALS.

List of Employees of the Isthmian Canal Commission Who Are Entitled to Receive Medals.

A partial list of employes of the Isthmian Canal Commission and of the Panama Railroad Company, arranged in chronological order, who have earned the Canal Medal by completing two years' continuous service on the Isthmus, is published herewith, and the names of the others will follow in subsequent issues of THE CANAL RECORD, in order that any errors which may have occurred in the compilation of the list may be detected and corrected before the medals are distributed.

The fundamental rules governing the award of the Medal are contained in a resolution adopted by the Commission at its 143d meeting, and are in substance as follows:

1. American citizens alone shall be eligible for medals, and for naturalized aliens medal service shall be reckoned from the date on which citizenship was acquired.
2. Employes of the Isthmian Canal Commission and of the Panama Railroad Company shall be equally eligible for the medal, but service prior to May 4, 1904, the date of the American occupation of the Canal Zone, shall not be considered.
3. Medals shall be numbered consecutively, in the order in which they were earned.
4. Continuous service on the Isthmus alone shall count for medal longevity.
5. Service shall have been satisfactory.
6. For each two years' additional service a bar will be awarded, to be attached to the Medal.

These rules have been interpreted and applied as follows:

1. In numbering the Medals the order of precedence of employes whose medal service began on the same date shall be determined by lot.
2. Service on the silver roll shall count equally with service on the gold roll.
3. Authorized leave will be considered equivalent to service.
4. For employes appointed in the United States medal service shall be reckoned from the date of arrival on the Isthmus.
5. It will be considered that any person retained in the employ of the Commission or the railroad for two consecutive years has rendered satisfactory service during that period, although he may have been discharged subsequently for misconduct or incompetency.

All communications relating to corrections in the medal list should be addressed to the Assistant to the Chairman, Culebra, Canal Zone.

Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	
1904.										
Harper, Austin C.	May 4	Emery, Walter	July 19	Glaw, Robert W.	Oct. 19	King, Ella B.	Jan 4	Butterfield, Laverne	Feb. 15	
Reed, Harry D.	May 4	Lyster, Theodore C.	July 19	Moore, Frank E.	Oct. 21	Loulan, Frank	Jan. 4	Hagemann, C. F.	Feb. 15	
Shanton, George R.	May 17	Smith, Eleanor J.	July 19	Provo, Alfred W.	Oct. 22	Melvaue, Cloyd A.	Jan. 4	Lipsett, Luther M.	Feb. 15	
Stockelberg, Charles L.	May 17	Thom, Leslie G.	July 19	Humphrey, Mary H.	Oct. 25	Prescott, Edward H.	Jan. 4	Morrison, George	Feb. 15	
Paterson, Edmund T.	May 24	Turner, Anna R.	July 19	Krom, Louise M.	Oct. 25	Andrews, Charles G.	Jan. 8	Van Zant, C. I.	Feb. 15	
Ferguson, Howard	May 30	Allen, Charles	July 20	Torbett, William A.	Oct. 25	Frank, Gus.	Jan. 10	Huff, Jr., James B.	Feb. 21	
Boltz, Thomas F.	May 31	Richards, Roy	July 22	Cotton, Frank	Oct. 26	Anger, George F.	Jan. 11	Miracle, Frank W.	Feb. 21	
Davis, Cleon L.	May 31	Rocks, James	July 22	Walsh, Thomas J.	Oct. 26	Cummings, Edgar C.	Jan. 11	Acheson, William F. M.	Feb. 23	
Griffith, William F. R.	May 31	Galyon, Charles L.	July 24	Arden, Bernard	Nov. 1	Follman, M. A.	Jan. 11	Deibert, George S.	Feb. 23	
Nichols, Auriu B.	May 31	Barril, G. Victor	July 26	Cuvillier, Charles M.	Nov. 1	Holcomb, William	Jan. 11	De la Vergue, John C.	Feb. 23	
McMorrow, J. Walter	June 1	Beattie, Charles W.	July 26	Donahue, Daniel F.	Nov. 1	Mackereth, Adelaide P.	Jan. 11	Ducklin, John	Feb. 23	
Tenny, Mark W.	June 2	Bower, Louise	July 26	McFarland, Earle C.	Nov. 1	Thompson, Edgar P.	Jan. 11	Jeffers, Paul M.	Feb. 23	
Dose, Henry F.	June 7	Butters, Charles M.	July 26	Parker, Charles C.	Nov. 1	Warren, Rudolph G.	Jan. 11	Millen, Clark	Feb. 23	
Smith, Elmer C.	June 7	Cooke, Tom M.	July 26	Shean, David	Nov. 1	Rowe, Hartley	Jan. 12	Gudger, Hezekiah A.	Feb. 24	
Baldwin, Ralph P.	June 8	Heath, George A.	July 26	Sinclair, Joseph M.	Nov. 1	Waldrop, John P.	Jan. 12	Cotter, J. H.	Feb. 27	
Carpenter, Charles L.	June 8	Linnell, Herbert P.	July 26	Uffendell, William G.	Nov. 1	Randall, James P.	Jan. 13	Willson, Lewis E.	Feb. 27	
Clark, Howard R.	June 8	Murphy, William J.	July 26	Morgan, James	Nov. 2	McCall, B. F.	Jan. 16	Wilson, Richard W.	Feb. 27	
Geraty, Ralph D.	June 8	Quest, George F.	July 26	Carmick, Edward S.	Nov. 8	Reid, Howard M.	Jan. 16	Blake, Allen H.	Feb. 28	
Hayes, John	June 8	Reidy, John J.	July 26	Johnson, Hunter L.	Nov. 8	Baker, Charles H.	Jan. 17	Crafts, Charles P.	Feb. 28	
Hortelustine, James W.	June 8	Taylor, Percy I.	July 26	Prial, Mary	Nov. 8	Bucknell, William S.	Jan. 17	Darling, Samuel T.	Feb. 28	
Johnson, Natt M.	June 8	Ames, Jr., Fred W.	July 28	Sweeton, Gertrude	Nov. 8	Caraher, James	Jan. 17	Eason, John J.	Feb. 28	
Luck, Charles A.	June 8	Caldwell, George A.	July 28	Barton, Fred R.	Nov. 16	Chapin, Clarence L.	Jan. 17	Forman, Jacob C.	Feb. 28	
Manter, Ralph B.	June 8	Nolau, John L.	Aug. 1	Crowell, Gustavus B.	Nov. 16	Corrigan, Joseph A.	Jan. 17	Fox, William	Feb. 28	
McGee, Thomas V.	June 8	Smith, William Fawcett	Aug. 1	DePutron, Maurice B.	Nov. 16	King, John M.	Jan. 17	Lumby, George W.	Feb. 28	
McGee, William E.	June 8	Boyd, Oscar S.	Aug. 9	Gillick, Margaret	Nov. 16	Russell, Genevieve	Jan. 17	Palmer, George W. A.	Feb. 28	
Miller, A. McLeod	June 8	Fink, Fletcher W.	Aug. 9	Larned, Lucy G.	Nov. 16	Pilzer, Max M.	Jan. 17	Thompson, William G.	Feb. 28	
Phelan, Edward	June 8	Keedy, James M.	Aug. 9	Little, John L.	Nov. 16	Watson, William S.	Jan. 21	Gallagher, William P.	Mar. 1	
Wells, George M.	June 8	Rerdell, Montfort C.	Aug. 9	Mason, Albert P.	Nov. 25	Lohman, Charles H.	Jan. 23	Jones, Oliver	Mar. 1	
Wright, Daniel E.	June 8	Ruggles, William B.	Aug. 10	Taylor, Jue T.	Nov. 25	Gleason, Mary	Jan. 25	Martin, Vinton R.	Mar. 1	
Gorgas, William C.	June 20	Craig, Robert F.	Aug. 13	Van Sciver, Augustus	Nov. 25	Kyte, John P.	Jan. 25	Mulverhill, John F.	Mar. 1	
Coyne, John F.	June 21	Malone, Jr., Rosser A.	Aug. 13	Wright, Jr., Parker O.	Nov. 25	Tucker, Allen B.	Jan. 27	Brackett, Wilbur F.	Mar. 6	
Carter, Henry R.	June 23	Maguire, James M.	Aug. 15	Wutke, Paul	Nov. 25	Sliney, Jeremiah	Jan. 30	Rumberger, Charles H.	Mar. 6	
Lyon, Frederic W.	June 23	DuBois, Louis E.	Aug. 16	Brooke, George D.	Dec. 1	Atterbury, Thomas C.	Feb. 2	Darby, Taylor E.	Mar. 7	
Perry, James C.	June 27	Lindsay, William W.	Aug. 16	Dennis, Durward W.	Dec. 1	Cody, Harry F.	Feb. 2	Eppelsheimer, I. Peter N.	Mar. 7	
Pierce, Claude C.	June 27	Barbour, John H.	Aug. 17	Hoar, Leon E.	Dec. 1	Hathaway, Milton S.	Feb. 2	Fairchild, Charles H.	Mar. 7	
Burson, William B.	June 28	Kiernan, John C.	Aug. 29	La Rock, John	Dec. 1	Heater, H. Harrison	Feb. 2	Hatton, William W.	Mar. 7	
Hall, William H.	June 28	Huleu, Emile S.	Sept. 9	Maher, Edward	Dec. 1	Keegan, Charles S.	Feb. 2	McLean, John H.	Mar. 7	
Hurd, Walter G.	June 28	Hummer, Charles D.	Sept. 10	Padgett, Monroe L.	Dec. 1	Long, Henry	Feb. 2	Stevens, Fletcher	Mar. 7	
LePrince, Joseph A.	June 28	Parker, Charles	Sept. 12	Osborne, Herbert	Dec. 4	McCutcheon, Louis	Feb. 2	Tully, John W.	Mar. 7	
Lucas, Harvey A.	June 28	Johnson, George	Sept. 13	Barrett, Abraham	Dec. 5	Newbold, Jr., William R.	Feb. 2	Venou, Joseph A.	Mar. 7	
Smith, Elias C.	June 28	Alexander Jr., Egidio E.	Sept. 14	Connor, Michael E.	Dec. 5	Shady, Raymond C.	Feb. 2	Von Baumgarten, Carl	Mar. 8	
Waldron, Frederick E.	June 28	Meech, Marietta L.	Sept. 14	Bates, Phil E.	Dec. 6	Smith, Jr., John H.	Feb. 2	Davis, Charles	Mar. 10	
Hibbard, Mary E.	June 29	Stewart, Robert A.	Sept. 16	Bates, William H.	Dec. 6	Thornton, Edward W.	Feb. 2	Henry, William D.	Mar. 13	
Keenly, Patrick	June 29	Ruggles, George H.	Sept. 20	Patchell, William J.	Dec. 6	Young, Julius C.	Feb. 2	Borz, Hemke	Mar. 14	
Schwan, Leonard	July 1	Smith, Rudgyard I.	Sept. 20	Grant, William D.	Dec. 9	Bowdry, James	Feb. 6	Ergezinger, William J.	Mar. 14	
Davidson, Silas	July 5	Bates, John P.	Sept. 27	Krugel, William	Dec. 12	Ash, Eugene H.	Feb. 7	Johenson, James L.	Mar. 14	
Davies, William H.	July 5	Herz, Max	Sept. 27	Daly, Henry E.	Dec. 20	Austin, Alfred L.	Feb. 7	Matts, Minnie M.	Mar. 14	
Haskin, William C.	July 5	Blum, Robert	Sept. 30	Kirk, Joseph S.	Dec. 20	Beck, Edgar P.	Feb. 7	Monegan, Jr., Albert J.	Mar. 14	
Wheeler, Ernest H.	July 5	Banta, Earle J.	Oct. 1	Meehan, John J.	Dec. 20	Carty, Clinton G.	Feb. 7	Pritchard, Ida A.	Mar. 14	
Wood, William M.	July 5	Dodd, William P.	Oct. 1	Bodette, William	Dec. 27	Cooper, John M.	Feb. 7	Bovay, Harry E.	Mar. 15	
Richardson, Gibbon O.	July 9	Robichaux, Emile J.	Oct. 1	Buchan, George	Dec. 27	Ducey, Charles W.	Feb. 7	Holmes, Amy B.	Mar. 15	
Lorentz, Upton	July 11	Halleck, Harry G.	Oct. 3	Purvis, Edwin N.	Dec. 27	Greene, Frank E.	Feb. 7	Vannath, Lorenzo C.	Mar. 15	
Power, William L.	July 12	Shoecraft, Ezra C.	Oct. 4	Ritter, Warren A.	Dec. 27	Guderian, Frederick	Feb. 7	Olsen, Louis	Mar. 16	
Beverly, Edward P.	July 13	Taylor, John O.	Oct. 4	Todd, Amy E.	Dec. 29	Honey, William B.	Feb. 7	Bell, Florence	Mar. 21	
Herrick, Alfred B.	July 13	Fountain, John H.	Oct. 5	1905.					Carrington, Harley	Mar. 21
Kendall, Arthur I.	July 13	Summersgill, Harry T.	Oct. 11	Rich, Maurice P.	Jan. 1	Johnson, Julius R.	Feb. 7	Powell, Frederic H.	Mar. 21	
McDonald, Donald E.	July 13	Dinzy, Richard B.	Oct. 13	Taylor, Julius W.	Jan. 1	Keys, James C.	Feb. 7	Willson, Fred D.	Mar. 21	
Pinckney, Victor H.	July 13	Speir, Foster H.	Oct. 15	Fruirow, Peter	Jan. 2	Lightner, Herbert W.	Feb. 7	Bidwell, Louise C.	Mar. 22	
Noland, Lloyd	July 14	Weidmann, Albert	Oct. 15	Stewart, Edward E.	Jan. 3	Trachler, Gustav	Feb. 7	Connor, Edward B.	Mar. 22	
Lundishef, Alexander A.	July 15	Pascoe, Frank S.	Oct. 16	Freeman, Theodore C.	Jan. 4	Williams, Burton	Feb. 7	Edholm, Karl	Mar. 22	
Baucus, William I.	July 19	Curl, Holton C.	Oct. 17	Hudson, Hood	Jan. 4	Arbuckle, Eustace M.	Feb. 8	Forgerty, John E.	Mar. 22	
Durham, Henry W.	July 19	Harrington, Edward C.	Oct. 17			Klauber, Samuel C.	Feb. 11	Griffin, Patrick J.	Mar. 22	
		Leonard, Harry	Oct. 17			Rigney, Edward E.	Feb. 11	Lauer, Julian Q.	Mar. 22	

SPEECH OF MR. TAFT.

His Views on Red Cross, Y. M. C. A., and Canal Work.

The Canal Zone Branch of the American National Red Cross gave a reception in honor of Mr. Taft, National President of the organization, and Mrs. Taft at the Commission clubhouse, in Culebra, on Wednesday evening, February 3. The large attendance made it necessary to arrange a temporary auditorium in the open space before the clubhouse, where more than twelve hundred persons from all points in the Canal Zone were seated. On the platform were the guests of honor, Lieut.-Col. and Mrs. Geo. W. Goethals, Mrs. H. F. Hodges, Mrs. C. A. Devol, and the president and officers of the Red Cross. Just back of the official party a group of young girls in Red Cross uniform were stationed. Mr. Taft delivered his address from the steps of the clubhouse, devoting the larger portion of it to the Red Cross work. He then spoke briefly in commendation of the work of the Y. M. C. A. on the Isthmus, and closed with a strong approval of the Canal work in general. The full address is appended:

RED CROSS.

Ladies and Gentlemen—I did not come here exactly to organize a Red Cross, or to make an out-of-door speech. I have been engaged in that business for about three months, and I thought I had served such an apprenticeship that I might be excused. But when you are dealing with the head of the Quartermaster's Department, you have to be careful, because he has a good deal of power, and you do not know what he may lead you into. I was told that it would be gratifying to a few people if I would come to a meeting of the Red Cross. I had assumed that the Red Cross here embraced possibly a committee of twenty or thirty people whom it would be delightful to meet and association with whom would not require a speech, but, instead of that, I come before this formidable audience to say something on behalf of the Red Cross, or rather to explain to you why you are members of the Red Cross. It reminds me very forcibly of another meeting which I had the honor of addressing in what is called the Marble Chamber in Ayuntamiento or Government building at Manila. There, too, was organized a very important branch of the Red Cross, and it was a very short time after its organization that it began to be useful, in the sensible and economical expenditure of money to aid persons in misfortune.

You doubtless know the origin of the association. It probably grew out of the suggestion of the Sanitary Commission in the Civil War, but it was organized by a Swiss gentleman, and began its life in Switzerland. In our country it has had a somewhat checkered career. Within the last four years, however, it has been reorganized, and under the inspiration of the enthusiasm of the clear-headed executive ability of Miss Mabel Boardman of Washington, the society has assumed its useful functions, has become very much larger than ever before, and is now a most useful instrument in the distribution of a nation's charity in the way in which charitable funds should be distributed.

Other countries are able to maintain a Red Cross in a way which it seems impossible

for the people of the United States to maintain it. In Japan the Red Cross has a membership of over 2,000,000 persons. In Russia I think the membership exceeds a million and a half; in Italy the membership runs up into millions; so in France and so in Germany; and each association has a large permanent fund arising from the annual payment of dues by this large membership. But in America the humdrum way of contributing 50 cents or a dollar apiece does not appeal to the millions, and membership with us in the States is comparatively limited; and yet there is not a population anywhere in the world that responds as quickly and as generously to a call to aid our fellowman as the American people. Therefore, we need to have a city shaken-down or burned down in order to help along the Red Cross. It was not until San Francisco was nearly wiped off the map that we understood how much charity, how much generosity there was in the heart of the American people that could respond to a call in behalf of those in sorrow and misfortune. We raised through the Red Cross alone upwards of \$4,000,000—Major Devol could give you the figures more nearly than I—in order to help out that stricken city.

The difficulty we got into in San Francisco was this: That the money came in in such quantities that we had more than we needed, but we were not very old in the business, and we had not provided with reference to those contributions that if the object for which the contributions were made was satisfied by less than the total of the contributions, we might appropriate what remained to other similar objects; because if we had done so we should have had upwards of \$1,000,000 for our permanent foundation, or what we call our "emergency fund," upon which to call the minute that the cable or the telegraph says that somebody is in trouble and needs immediate assistance. Now we know better, and we have passed a by-law, of which we advised the public, and which will permit us to appropriate to other similar purposes what is left from sums called out from the American public through the Red Cross to aid a stricken people, so that we can appropriate what is left.

Now, the immediate object of the Red Cross was really not for purposes of aiding the unfortunate in times of peace. It was to ameliorate, to mitigate the dreadful sorrows and misfortunes that follow war, and that is why I suppose the War Department has been called upon to play so prominent a part in the present organization. Miss Boardman assured me that she wanted the Secretary of War as a figurehead and she hoped therefore that I would act as President. I am fairly good as a figurehead, and so I accepted, and then San Francisco was shaken and burned down, and I found that there are some things more than a mere figurehead involved in the presidency of the association; but it did conduce to satisfactory operation to have the War Department and the Red Cross united. It did so, because we were able to avail ourselves of the services of such a man as Major Devol. Now, Major Devol does not deserve this—I mean by his treatment of me, but I am going to tell you the truth about it. I am not going to revile him, but I am going to heap coals of fire on his head, by saying

that no man could have done the work he did to organize the charitable forces called upon to save San Francisco, no man except with his experience and with his ability could have done what he did, and when he summoned me here to speak in behalf of the Red Cross, in view of the request of a man who had done so much in the cause of humanity, I did not have the heart to refuse.

What we are particularly concerned about, as you may suppose from what I have said, is the organization of the getting together of a large permanent fund. "He gives twice who gives quickly," and if we have a million dollars out of which we can send to a stricken city \$100,000 by cable, with an agency there to distribute it, we can do a great deal more than with a million dollars two weeks later.

We have had some difficulty with our San Francisco friends. I suppose it is natural. I presume any people stricken as they have been would be anxious to have as large a fund as possible devoted to the restoration of their city. These funds, however, were given really to aid them in an emergency. They were not given to build up their charitable institutions anew, because they naturally would be built out of the taxable resources of the city; but they are inclined to hold us to turn over all the funds to establish an old ladies' home and other institutions, of a character most noteworthy, but that do not come within the range of ordinary Red Cross contributions. We have assumed, therefore, to transfer from that fund upwards of \$50,000 to aid the Italian sufferers in the late earthquake, and some question has been raised as to our legal right to do so; but I am inclined to think that our friends in California will agree that the nature of the crisis and emergency in Italy was so like that in California that to devote it to aiding the people in southern Italy, under the circumstances, was a better satisfaction of the purpose for which the funds were really given than to aid in the construction of permanent charities, like orphan asylums and old ladies' homes, and that sort of thing, in San Francisco—not that they are not excellent institutions, but I do not think they come quite within the intent of the people who made the contributions.

It is possible that in the Zone you do not need a Red Cross association quite as much as in other parts of the United States, for I like to call this a part of the United States, because you have a very complete hospital system and a very complete sanitary system. We are trying, so far as those of us who are at all responsible for appropriations, to make them large enough to keep down all the mosquitoes and keep everybody in health, and save you from any disaster. Of course you have such dreadful disasters as that which occurred a short time ago through an explosion, but necessarily it is the business of the Government to look after those who suffer in that kind of a way, and I trust—indeed I know—that everything was done at that time that could have been done to relieve the sufferers. The question as to compensation for loss of life is one that addresses itself to Congress, and on which I have already expressed myself in a recommendation to the President and two Congresses, and I shall say nothing more on that subject, because I am not here to discuss this except to say that ultimately I believe the Government will come to the view that it ought to be just

as much responsible for the loss of life through negligence or other cause which may make a private employer responsible—just as much responsible as the private employer and to the same extent.

I am glad to know that your membership is so large—900 members as I am told. I believe that that is as large as the membership of a number of States in the Union, showing not only the enterprise but I may say, the well-to-do character of the residents of the Zone. I hope that your society will organize with a set purpose to do good, that you will provide nurses and that you will hold yourself as an active, useful branch of the Red Cross. The object is one, the importance of which cannot be exaggerated, because everyone knows the feeling of helplessness that you have when you hear of a heartrending disaster, whether it be in China, in Spain, in Italy, in Germany or at home—the helplessness that you feel with reference to doing anything that shall aid those who have your deep sympathy and profound commiseration. Now, the Red Cross is for the purpose of enabling you to help every one the world round who is entitled to your sympathy, and who may call upon you, simply on the ground of humanity. Mrs. Taft told me that I could not talk more than ten minutes about Red Cross matters, and that it was not fair to ask a number of people to come out this evening only to hear a ten minutes' talk. I suggested to her that probably that they would rather hear a man talk ten minutes than longer, but I said to her that if the Red Cross did not furnish the subject, I could, perhaps, enlarge it by discussing either politics or the Canal Zone, the construction of the Canal or the Young Men's Christian Association; and now that I have got you here, and there is no other speaker, and you have deliberately come into this trap, I am going to talk about all those subjects.

WORK OF Y. M. C. A.

First, the Young Men's Christian Association. You have, I think, four clubs, and you need four more. This place and every place where I have gone in the Zone convinces me that there is nothing better adapted to carrying out the legitimate purposes of the Government in this Zone, in the construction of the Canal, to bring it about by contented people, than the establishment of clubs like this under whose eaves we now stand, and if I can have any influence in the next administration, I am going to see to it that four clubs on the Isthmus are added. I know something about the usefulness of an institution that presents these characteristics of a Christian home, a place where one can pursue rational amusements in the Tropics, a place which without such an organization generally offers no amusements of a rational character in our quiet and leisure hours. We know it in Manila; we know the value of such a club, because there the poor American merchants, and they are very poor, raised a fund of some \$60,000 in ten days in order to meet the conditions of a contribution of a somewhat larger amount in order to attract a Young Men's Christian Association there. The opportunity offered to the young men and women, to the families and children, to come under this roof every night of the week, and here read the newspapers, play games of all sorts, is an

opportunity that elevates a community, or to put it in a different way, that prevents many a poor fellow who wants to do right, from going down the pathway to degradation. We have had it save many a young man in the Philippines, and I have no doubt that here it accomplishes even a wider purpose in reconciling to the conditions of the Isthmus a great many persons, who might not become morally degraded, but who would become so dissatisfied and who would get into such condition of mind with reference to the whole affair that they would cease to be useful citizens of the community and certainly cease to be useful as employees of the Government working on this great constructive work of the century. So much for the Young Men's Christian Association, which I cannot pass without approval every time I have an opportunity to speak of it.

CANAL WORK.

And now I want to come to the work of the Canal itself, and to speak of one or two features that doubtless have impressed themselves on you, certainly they have impressed themselves on me, being one of those responsible in the past and likely to be in the future for the conduct of the work. Where you have a work in which the public is intensely interested, situated two thousand miles from the Bowery, the opportunity for sensational stories, for imaginative misrepresentation, for plain common lying without being found out, is very great indeed, and offers a temptation to those who would sell their wares to the newspapers, to convey a great many erroneous impressions to the public of the United States; but I beg you to believe that as this work has gone on, that opportunity has grown less and less and the public of the United States are much less easily hoodwinked to-day than they ever were before as to the conditions that prevail in the Zone and the carrying on of the work; and I want to impress upon you, my friends, not to get excited when you get cablegrams.

Do not get excited over statements that may come to you here that there is excitement in the United States that is going to lead to a change of policy and to a withholding of appropriations, to investigations into mares' nests of huge proportion, and to the turning down of the entire Canal project. That, to speak shortly, is not possible. The people of the United States are determined to have this Canal built. They are willing to spend the money to build it. They believe in the men who are engaged in building it. They have had (here a man in the crowd said "Give us more of that, Mr. President). There used to be a judge in my early day in Cincinnati who said to a man who was arguing a case: "You have stated that argument twice. Now, do not go on a third time." The man said, "Your honor, I want to make myself clear." The judge said, "Down in my country they say that if you have a good judge you can state a proposition to him so that he can take it in in one statement. If he is a little dull it may take two, but when you state it three times to a judge in my country he takes it as an intimation that he is a damned fool."

Therefore, I am only going to repeat this twice, that the people of the United States are not excited by the communications to the newspapers and headlines in the newspapers

with reference to the falling down of the Gatun Dam, or the complete subsidence of the Canal out of sight, or anything of that sort. Congress knows the temper of the people. Congress is willing and is going to appropriate the money as rapidly as it can be expended here economically, and this work is going on with all the energy possible, and with confidence on the part of the people of the United States that on January 1, 1915, if not before, the battleships of the American fleet can pass through this Canal from one ocean to the other. This has been my fifth visit here, one each year, and it has been a source of the utmost satisfaction to come here and find this work so well organized, going on with so much enthusiasm on the part of everyone no matter how humble the position he fills, and with the confidence that if you will only let him alone and give him the right support, this work will go on to successful completion. That is the spirit that I like to find, and I do find it here. The engineers who have come with me all have been impressed with the volume of the work that is being done, and with the fact that the whole Isthmus is instinct with something like electricity that is carrying on the work, and I want to congratulate you all on being instruments for the completion of the greatest constructive work of two centuries and of being instruments of the greatest country of the globe in carrying on this great work.

At the close of Mr. Taft's speech a call was made for Colonel Goethals, and the Chief Engineer responded with a reiteration of the emphatic assertion made by Mr. Taft, that on January 1, 1915, the ships would be going through the Panama Canal, which was received with enthusiastic applause.

The reception followed in the hall of the building, the president of the Canal Zone Branch presenting the members. Refreshments were served by a corps of young women in Red Cross uniform. The clubhouse was brilliantly lighted and decorated for the occasion with palms and flags, among which the emblem of the Red Cross showed conspicuously.

Wednesday, February 10, will be observed throughout the Zone towns, where local committees are organized, as Red Cross Day. Each committee is expected to organize an entertainment or sale for the purpose of raising money for the emergency fund.

Sojourners' Lodge Anniversary Dance.

COLON, R. P., February 5, 1909.

THE CANAL RECORD:

In celebration of the eleventh anniversary of the founding of the lodge, the members of Sojourners' Lodge, No. 874, A. F. and A. M., will give a dance, Saturday evening, February 13, 1909, at Lincoln House, Colon, R. P., and fraternally invite masters, craftsmen and apprentices, in good standing, to attend with their wives, daughters, sisters or sweethearts.

A special train will be run to Panama after the dance, leaving Colon at 1 o'clock a. m. Sunday, February 14, on which transportation will not be required. Extra coaches will be provided on train from Panama Saturday evening, in which, however, regular forms of transportation must be provided by the passengers.

G. G. DEDGE, P. M., Secretary.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features

The regular meeting of the Ancon Woman's Club was held in the club rooms on Wednesday February 3, the guest of honor being Mrs. Philip North Moore, president of the General Federation, who gave an informal address on club work and local conditions. She urged the members to come into closer touch with the work of the General Federation, through its bureaus and committees. An open discussion followed in which all the members present took part. Several guests from the line were present, including the president of the Empire Woman's Club. Refreshments were served at the close of the meeting.

The Ancon Club is arranging to give a subscription dance before the end of the month. The president of the Club has received notification of her election, by the board of managers, to the office of third vice-president of the Zone Federation.

The resignation of the president of the Pedro Miguel Woman's Club was acted on at the regular meeting, February 4, and Mrs. W. P. Piper was elected to fill the vacancy.

The Gatun Woman's Club held a special meeting at the home of the president, February 2, the meeting having been called for the purpose of electing officers for the next three months. The following were elected: President, Mrs. E. L. Bandy, re-elected; vice-president, Mrs. O. L. Brownell, re-elected; secretary, Mrs. A. P. McCulloch; treasurer, Mrs. Lorin A. Clark, re-elected. The following chairmen of committees were appointed: Music and literature, Mrs. C. D. Corp; educational, Mrs. H. K. Higgins; philanthropy, Mrs. C. G. Carty; refreshments, Mrs. E. G. Bath. Mrs. William L. Sibert, Mrs. Charles Stoddard, and Mrs. H. A. Carcend were elected to membership, and Mrs. Chester Harding, the first president of the Club, was made an honorary member. The president of the General Federation paid a visit to the Club on Friday, February 5, the meeting being held at the home of Mrs. W. L. Sibert. Mrs. John Dickinson Sherman, vice-president of the General Federation, was also present. In accordance with the desire of the president the regular business of the Club was transacted. The question of club rooms and of a public library for the town, were taken up for discussion. Reports of the committees in their work during the past few months were also given by request. Mrs. Sherman made an address on parliamentary law, which was followed by a practical drill, all the members and guests taking part.

The members of the Sunshine Club had been invited to meet the Club after the business meeting, and the president of the General Federation reserved her address until the arrival of the guests. The president spoke on club work in the States and elsewhere. Mrs. Moore is acquainting herself with the conditions that prevail among the Clubs in the Zone, and her visits are regarded as a special privilege, the members feeling that they are thus brought into closer relations with the General Federation in the States.

The Las Cascadas Woman's Club held its regular business meeting February 4 in the lodge hall. Mrs. H. H. Boylau, Mrs. W. D.

Drysdale, Mrs. W. D. Stanton, and Mrs. J. P. Doyle were appointed the refreshment committee for the month, and Mrs. C. W. Decker, and Mrs. W. G. Thompson, the visiting committee. The report of the Federation meeting in Ancon was read by the delegate. The Club has accepted an invitation to join with the Gorgona Woman's Club in the reception in honor of the national president on February 11.

The regular literary meeting of the Cristobal Woman's Club was held on February 3, the president in the chair. Mrs. John Keefe read a paper on the "Evolution of the Kitchen." Mrs. Charles Owens entertained the home department on Monday, February 8. The art and literary department will meet on February 28, with Mrs. C. C. Pierce, and a paper on "Julius Caesar" will be read. On February 10 the regular meeting of the Club will take place. Mrs. John Dickinson Sherman will talk on Club work in the United States, and the parliamentary laws governing the Clubs belonging to the General Federation. The executive board will meet February 10, before the regular meeting, when a recording secretary will be elected to fill the vacancy left by the resignation of the present officer. A dramatic club has been formed in the art and literary department under the direction of Mrs. C. C. Pierce.

The Woman's Guild of St. Luke's Church, Ancon, will hold its meetings during the Lenten season every Monday, instead of twice a month. These meetings will be held at the residence of the chaplain from three to five o'clock. The work will consist of sewing for specific charities. The next meeting will be held at the residence of Mrs. H. D. Reed, Ancon, on Monday, February 15, at the usual hour, 3.30 p. m.

A dance was given Saturday evening, February 6, at Lincoln House, Colon, by the Washington Reading Room Club. There were over 200 people in attendance, among whom were a number of officers and men from the cruisers *Montana* and *North Carolina*.

Pythian Sisters.

Canal Zone Temple, No 1, Pythian Sisters holds its regular meetings on the first and third Wednesday of each month at 7.30 o'clock in the evening. Pythian sisters on the Isthmus are cordially invited to attend, and those wishing further particulars should address the Mistress of Records and Correspondence Mrs. Anna Maher, Empire, C. Z.

Pacific Masonic Club.

A regular meeting of the Pacific Masonic Club will be held on Saturday night, February 13. It is desired that all members be present as final arrangements will be made for the club to participate in the Lincoln centenary celebration. The entertainment committee have an important announcement to make in regard to a picnic to be held soon at Ft. Lorenzo. C. C. JACKSON,
Secretary.

Cristobal Dramatic Club.

The Cristobal Dramatic Club has been organized with the following officers: Honorary president, Mrs. Lorin C. Collins; honorary vice-presidents, Mrs. Hiram J. Slifer, Mrs. Thomas E. Brown, Jr., Mrs. John Burke, Mrs. Courtland Nixon, Mrs. J. A. Smith.

President, H. de L. McKinley; vice-presi-

dent, C. S. McCollum; secretary and treasurer, M. J. Stickel; director, W. N. Chandler.

Executive committee to consist, in addition to the above officers, of Mrs. Garnet Mitchell, Miss Edith Slifer, Mrs. James Burke, Mr. J. G. Barber, Mr. Thomas Olliphant.

The club will present Gillett's play, "All the Comforts of Home" in the near future. It will be given in behalf of the Red Cross.

Musicales at Culebra.

The Union Christian League of Culebra will give a musicale on Tuesday evening, February 16, in the Commission Chapel. The program will consist of readings, orchestra selections, flute, vocal and piano solos, and duets. The Culebra public is cordially invited, and an invitation has also been extended to the Union Christian League of Empire.

Lincoln Centenary.

The committee on the celebration of the one hundredth anniversary of the birth of Abraham Lincoln met at Empire on Sunday afternoon last, and arranged for the celebration to occur on the 14th instant, and adopted the following program:

11 A. M.—Grand parade, headed by the Marine Band and 100 marines under arms, together with the various societies on the Isthmus and individual citizens.

12 M.—Addresses by Hon. Jo. C. S. Blackburn, Chief Justice H. A. Gudger and Judge Thomas E. Brown, Jr.

A basket lunch will be served at 1.30 p. m., and ladies are especially urged to furnish lunch for the occasion.

The court house and Y. M. C. A. rooms and the clubhouse will be open for the use of visitors. The court room is assigned specially for the benefit of the ladies who attend the exercises.

Hotel Tivoli Rule for Employees.

The manager of the Hotel Tivoli wishes to call the attention of all Isthmian Canal Commission and Panama railroad employes to the following rule, which became effective January 1, 1908, and is still in force at the Hotel Tivoli:

"Open accounts will not be permitted. Guests are required to pay their bills upon leaving.

"Accounts of transient employes unpaid at the time of leaving will be made up at the nonemployes' transient rate and sent immediately to the Disbursing Officer."

Tivoli Club Dance.

The Tivoli Club will give its next dance at Hotel Tivoli on Saturday evening, February 13.

Tug Service Porto Bello and Nombre de Dios.

Effective, August 6, 1908: The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Cristobal 6.30 p. m. for Porto Bello only; returning same day.

Monday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Tuesday: Leave Cristobal after Train 2 without tow. for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.

Wednesday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Friday: Leave Cristobal after Train 2 for Porto Bello and Nombre de Dios; returning same day.

Saturday: Leave Cristobal after Train 2 for Porto Bello only; returning, leave Porto Bello 5.30 p. m.

LETTERS FROM THE LINE.

(Communications to this column must be signed in each instance with the name and address of the writer.)

Are Bachelors Worth Less?

EMPIRE, C. Z., January 25, 1909.

THE CANAL RECORD:

Will you give me space in THE CANAL RECORD to call attention to a serious lack in the article "Bachelors Cost Less" that appeared in the issue of December 23. The article should have stated "Bachelors cost less, but are also worth less." One of the indispensable features of a competent working force is stability, and that can be procured only by having a colony on the Isthmus, in which there is a generous sprinkling of families. Bachelors having no ties to keep them here can pack their tooth brush and a clean collar any week and go back to the States or where they will. It was the knowledge of this that made the Government provide so generously for its married employes. In such a big organization as we have on the Isthmus it is necessary to have men capable of assuming great responsibilities. Can such men be found among a class that has so far neglected their responsibilities as to remain bachelors? For minor clerical work or as laborers bachelors are good enough, especially when they are directed by responsible married men. But only married men are competent to direct work or to undertake work requiring force of character and the steadiness that comes from broad responsibility.

No, Mr. Editor, the statement of the Quartermaster does not tell the whole truth. Base metals cost less than gold. Fortunately there are opportunities in the Canal Zone for bachelors to be transmuted. If they are wise they will get out of the class whose greatest recommendation is that "it costs less."

ANTONIO FALVO.

Vacations.

THE CANAL RECORD:

As the subject of vacations must always be more or less interesting to Canal workers, perhaps the writer will be pardoned for submitting a word in this connection. As your correspondent understands it ten months of satisfactory service must be to an employe's credit before he is entitled to leave with pay, which leave must be taken within the ensuing four calendar months. Thus, if an employe has received an appointment in mid-winter his leave becomes available and must be taken within a period that always spells inclement weather in nearly every State in the Union. And this arrangement applies not only to his first leave, but to every subsequent leave that may be granted.

Perhaps a radical change of climate does not militate against an employe's physical well-being, but it surely does against his bank account. Duck trousers and Panama hats are very unfashionable in many States during the months of November, December, January, and February. Family and friends at home expect those up from the Isthmus to be attired in a manner that will not provoke ridicule or call for apology, and the result is that those on leave must purchase a complete and expensive wardrobe that cannot possibly be of use for more than a very short period. To men with families this is a serious matter. To all who are desirous of making even a little accumulative progress it is at least interesting.

If we had eight optional months to choose

from, or if in deference to seniority of one year, for instance, an employe was allowed more optional months in choosing the time for his second vacation, the problem would be solved. There may be substantial reasons why the Commission could not acquiesce in such an arrangement as this, but if it could be brought about the writer thinks it would be an innovation devoutly to be wished.

X. Y. Z.

[The opinion that the Winter is the most undesirable season for a vacation in the United States, is shared by nearly all Americans on the Isthmus. If there were no restrictions, probably 90 per cent of all American employes would elect to take their annual leave in the six months from May to October, inclusive. This would result in a serious depletion of working forces during those months and a corresponding surplus during the Winter. To carry on the work with economy, and without interruption, it is necessary that approximately the same force be maintained from month to month. This can only be effected by distributing vacations evenly throughout the entire year.]

Vacation Pay.

EMPIRE, C. Z., February 1, 1909.

THE CANAL RECORD:

Will you please tell me in THE CANAL RECORD if or how an American on the gold roll who is hired on the Isthmus can resign and draw his pay in the States?

Does he have to work the entire two years or including vacation?

Can he resign in the States while on vacation or should he resign before his vacation is taken, saying he wishes to resign at end of vacation, at time of making application for vacation?

J. B. RICHARDS.

[An employe may be paid in the United States for the period of his final vacation, minus seven days, if he has served two years including this and previous vacation periods. His resignation may be submitted either before he enters on his leave or later, as may be most convenient.]

OFFICIAL CIRCULARS.

Acting Chairman and Chief Engineer.

CULEBRA, C. Z., February 5, 1909.

CIRCULAR NO. 232.

During my absence from the Isthmus, Lieut.-Col. H. F. Hodges will be in charge of the work as Acting Chairman and Chief Engineer, effective February 7, 1909.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Pay Rolls in U. S. Currency.

CULEBRA, C. Z., February 6, 1909.

CIRCULAR NO. 233.

The following resolution was adopted at the meeting of the Isthmian Canal Commission held January 27, 1909:

"Resolved, That, effective April 1, 1909, the amounts on all pay rolls and accounts of the Isthmian Canal Commission shall be stated in United States currency, but nothing herein shall in any way affect the payment of laborers and others in the currency of the Republic of Panama, as heretofore."

All time books, pay rolls, pay receipts and accounts, and papers pertaining thereto, for any month prior to April, 1909, will be stated as heretofore—that is, in gold or silver.

All time books, pay rolls, pay receipts and accounts, and papers pertaining thereto, for the month of April, 1909, and subsequent months, will be stated according to the gold standard.

Subsequent to the effective date of this circular, separate time and pay rolls will be made up as heretofore for "gold employes" and "silver employes."

Until new pay receipts are provided for employes on silver rolls, the present silver pay receipts will be used in payment of employes on such rolls, but pay receipts which relate to pay rolls stated according to

the gold standard will have printed across the face the words, "Amount stated in United States currency." The stock of silver pay receipts on hand will be so marked and be ready for issue on requisition on April 15, 1909.

Time vouchers issued to employes or the silver rolls for services rendered on and after April 1, 1909, will have printed or stamped across the face, "Amount stated in United States currency."

Rate cards with new table for computing the wages of hourly men have been prepared and will be furnished on requisition made upon the Depot Quartermaster at Mount Hope.

Circular 229 will be construed by taking one-half of the rates therein stated, and disregarding the word "silver" at the top of the money columns and wherever it is used to denote a currency other than that of the United States.

Heads of Departments and Divisions will provide all forms and make all arrangements for the necessary changes in their respective Departments and Divisions.

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Acting Chief of Police.

ANCON, C. Z., February 5, 1909.

CIRCULAR NO. 83.

Grosvenor A. Porter is, effective February 6, 1909 assigned to duty as Acting Chief of Police of the Canal Zone.

JO. C. S. BLACKBURN,

Head of Department of Civil Administration.

Accounts of Third Division, Chief Engineer's Office.

DEPARTMENT OF EXAMINATION OF ACCOUNTS,

EMPIRE, C. Z., February 4, 1909.

CIRCULAR NO. 9.

The following accounts are hereby created to cover expenses of the Third Division, Chief Engineer's Office, formerly the Division of Meteorology and River Hydraulics:

541—HYDROGRAPHY.

To this account will be charged all expenses for salaries and wages and material and supplies incurred in direct connection with hydrographic work; one-fifth of the salaries of the Assistant Engineer and his clerical force, and one-fifth of his office expenses.

542—METEOROLOGY.

To this account will be charged all expenses for salaries and wages and material and supplies incurred in direct connection with meteorological work; one-fifth of the salaries of the Assistant Engineer and his clerical force, and one-fifth of his office expenses.

543—CHAGRES RIVER SURVEY.

To this account will be charged all expenses for salaries and wages and material and supplies incurred in direct connection with the Chagres River Survey; one-fifth of the salaries of the Assistant Engineer and his clerical force, and one-fifth of his office expenses.

544—TESTS AND EXPERIMENTS.

To this account will be charged all expenses for salaries and wages and material and supplies incurred in direct connection with tests and experiments; one-fifth of the salaries of the Assistant Engineer and his clerical force, and one-fifth of his office expenses.

545—EXPLORATIONS AND SPECIAL INVESTIGATIONS.

To this account will be charged all expenses for salaries and wages and material and supplies incurred in direct connection with explorations and special investigations; one-fifth of the salaries of the Assistant Engineer and his clerical force, and one-fifth of his office expenses.

W. W. WARWICK, *Examiner of Accounts.*

Approved:

GEO. W. GOETHALS,

Chairman and Chief Engineer.

Isthmian Baseball League.

Scores, February 7, 1909.

At Gorgona Park—Empire, 2; Gorgona, 1.

At Ancon Park—M. P. & M., 6; Ancon, 4.

Standing of the League, February 8, 1909.

	Played.	Won.	Lost.	Per Cent.
Empire.....	7	7	0	1000
M. P. & M.....	8	6	2	.750
Gorgona.....	8	2	6	.250
Ancon.....	7	0	7	.000

To be played February 14, 1909.

At Empire Park—Empire vs. Ancon.

At Gorgona Park—Gorgona vs. M. P. & M.

The following steamers have recently arrived at La Boca: January 31, Yacht *Alcedo*, from Philadelphia; February 1, *San Jose*, from San Francisco; February 2, *California*, from Valparaiso. Departures were: February 1, *Newport* for San Francisco; February 3, *Aztec* for Central American ports; February 4, *Limari* for Valparaiso.

COMMISSARY DEPARTMENT.

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning February 9:

FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	7
Shoulder, neck trimmed off, (4 pounds and over).....per lb	10
Entire forequarter (not trimmed), 10 pounds and over.....per lb	9
Leg (8 to 10 pounds).....per lb	19
Steak.....per lb	20
Short-cut chops.....per lb	22
Lamb—Stewing.....per lb	7
Entire forequarter, neck trimmed off.....per lb	10
Leg (6 to 8 pounds).....per lb	27
Chops.....per lb	29
Veal—Stewing.....per lb	20
Shoulder for roasting (not under 4 lbs).....per lb	15
Pork—Cuts.....per lb	20
Beef—Bones for soup.....per lb	4
Stuet.....per lb	4
Soup.....per lb	7
Stew.....per lb	11
Corned.....per lb, 12 1/4	16
Pot roast (from sirloin butt).....per lb	16
Rib-roast, second cut (not under 3 pounds).....per lb	18
Rib-roast, first cut (not under 3 pounds).....per lb	20
Rib-roast short cut (not under 3 1/2 pounds).....per lb	23
Sirloin roast.....per lb	27
Rump roast.....per lb	27
Porterhouse roast.....per lb	27
Steak, round.....per lb	20
Rib.....per lb	24
Sirloin.....per lb	27
Porterhouse.....per lb	27
Rump.....per lb	27
Tenderloin.....per lb	30

MISCELLANEOUS.

Livers—Beef.....per lb	11 1/2
Calf.....each	65
Sausage—Pork.....per lb	17
Bologna.....per lb	17
Frankfurter.....per lb	17
Leberwurst.....per lb	17
Sweet bread—Veal.....each	1.20
Sweet bread—Beef.....per lb	30
Ox tongues.....each	1.00
Pigs' feet, pickled.....per lb	14
tongues, pickled.....per lb	16
Eggs, fresh.....dozen	38
Oysters, 1/2-gallon kegs.....keg	50

POULTRY AND GAME.

Chickens—Fancy Roasting.....	1.15 and 1.35
Fowls.....each	75, 90, 1.00
Ducks, fatted.....each	1.22
Broilers.....each	75
Turkeys.....per lb	23
Squabs.....each	45
Canons.....each	2.40

CURED AND PICKLED MEATS.

Bacon—Breakfast, whole piece.....per lb	23
Breakfast, sliced.....per lb	\$26
Ham—Sugar-cured, sliced.....per lb	\$25
One-half, for boiling.....per lb	\$21
Hocks.....per lb	8
Sugar cured.....per lb	20
Beef, salt, family.....per lb	16
Salt pork.....per lb	13

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	45
Cheese—Roquefort.....per lb	45
Philadelphia Crerm.....each	22
Young America.....per lb	22
Swiss.....per lb	31
Edam.....each	1.05
Camembert.....per lb	28
Neufchatel.....each	6
Gouda.....per lb	34
Parmesan.....bottle	20
French cheese in tins—Camembert, Roquefort, Brie, Neufchatel.....tin	20
Buttermilk.....quart	15

VEGETABLES AND FRUITS

Parsnips.....per lb	7
Lettuce.....per lb	12
Celery.....head	10
White potatoes.....per lb	3 1/2
Sweet potatoes.....per lb	2 1/2
Cabbage.....per lb	5
Onions.....per lb	4
Yams.....per lb	3 1/2
Turnips.....per lb	3 1/2
Carrots.....per lb	4
Kadishes.....bunch	2 1/2
Beets.....per lb	5
Oranges.....dozen	12
Grapefruit.....each	3 1/2
Tangerines.....each	1 1/2
Cranberries.....per lb	17

§ Sold only from cold-storage and not from Commissaries.

Rainfall, February 1 to 6, 1909, Inclusive

(MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	.1	1.15
Brazos Brook.....	.55	1.84
Gatun.....	.54	1.52
Bohio.....	1.13	1.47
<i>Central Division—</i>		
Taborilla.....	.59	.67
San Pablo.....	.30	.34
Bas Obispo.....	.64	.75
Gamboa.....	.67	.81
Empire.....	.18	.26
Camacho.....	.14	.24
Culebra.....	.19	.36
<i>Pacific Division—</i>		
Rio Grande.....	.16	.33
Pedro Miguel.....	.20	.20
La Boca.....	.02	.02
Ancón.....	.02	.03
<i>Atlantic Coast—</i>		
Porto Bello.....	1.78	2.44
Nombre de Dios.....	.93	1.67
<i>Upper Chagres.</i>		
El Vigia.....	1.85	2.04
Alhajuela.....	1.49	1.57

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, February 6, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. Division)
Height of low water above mean sea level, feet.	129	92	46	1	0	0
Maximum height above low water, feet.	5.70	5.00	6.90	12.00	10.20	9.00
Sunday, Jan. 31.....	18.90	13.25	13.82	18.20	9.60	8.50
Monday, Feb. 1.....	5.00	4.90	4.00	19.20	10.80	9.40
Tuesday, Feb. 2.....	3.20	3.40	5.30	11.30	9.10	7.80
Wednesday, Feb. 3.....	2.20	2.80	4.30	8.20	6.20	5.20
Thursday, Feb. 4.....	1.80	2.50	3.80	6.40	3.70	2.90
Friday, Feb. 5.....	1.40	2.30	3.40	5.30	2.20	1.70
Saturday, Feb. 6.....						

Concert by the I. C. C. Band.

BAS OBISPO, C. Z.,

Sunday, February 14, 1909, at 2.30 p. m.

PROGRAM

1 March—K. of P.....	Williams
2 Selection—The Three Twins.....	Hoschna
3 Intermex—Rainbow.....	Wenrich
4 Idyl—The Glow Worm.....	Lincke
5 Potpourri of Southern Songs.....	Lampe
6 Chilian Dance—Manana.....	Missud
7 Novelty—The Teddy Bears' Picnic.....	Bratton
8 Overture—Raymond.....	Thomas
9 Patrol—Police.....	Merritt
10 Two Step—Hoop-e-Kack.....	Allen

CHAS. E. JENNINGS, Musical Director.

The next concert will be given at Cristobal, Wednesday evening, February 24

LOST—In the check-room of the National Theater, Panama, on Friday night, February 5, a white silk shawl. Finder please return to the office of THE CANAL RECORD.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Advance.....	P. R. R. Saturday	Feb. 6
Orinoco.....	R-M. Saturday	Feb. 6
Allianza.....	P. R. R. Saturday	Feb. 13
Prinz Joachim.....	H-A. Saturday	Feb. 13
Colon.....	P. R. R. Friday	Feb. 19
Atrato.....	R-M. Saturday	Feb. 20
Panama.....	P. R. R. Thursday	Feb. 25
Prinz Aug. Wilhelm.....	H-A. Saturday	Feb. 27
Trent.....	R-M. Saturday	Mar. 6

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Colon.....	P. R. R. Sunday	Feb. 7
Atrato.....	R-M. Tuesday	Feb. 9
Panama.....	P. R. R. Saturday	Feb. 13
Prinz Aug. Wilhelm.....	H-A. Tuesday	Feb. 16
Advance.....	P. R. R. Friday	Feb. 19
Trent.....	R-M. Tuesday	Feb. 3
Allianza.....	P. R. R. Thursday	Feb. 25
Prinz Joachim.....	H-A. Saturday	Mar. 2
Tagus.....	R-M. Tuesday	Mar. 9
Prinz Aug. Wilhelm.....	H-A. Tuesday	Mar. 19

NEW ORLEANS TO COLON.

Parismina.....	U.F.C. Saturday	Feb. 13
Heredia.....	U.F.C. Saturday	Feb. 20
Ellis.....	U.F.C. Saturday	Feb. 27
Parismina.....	U.F.C. Saturday	Mar. 6
Heredia.....	U.F.C. Saturday	Mar. 13
Ellis.....	U.F.C. Saturday	Mar. 20

COLON TO NEW ORLEANS.

Heredia.....	U.F.C. Tuesday	Feb. 9
Ellis.....	U.F.C. Tuesday	Feb. 16
Parismina.....	U.F.C. Tuesday	Feb. 23
Heredia.....	U.F.C. Tuesday	Mar. 2
Ellis.....	U.F.C. Tuesday	Mar. 9
Parismina.....	U.F.C. Tuesday	Mar. 16
Heredia.....	U.F.C. Tuesday	Mar. 23
Ellis.....	U.F.C. Tuesday	Mar. 30

COLON TO BARBADOS, CALLING AT TRINIDAD.

Orinoco.....	R-M. Tuesday	Feb. 16
Atrato.....	R-M. Tuesday	Mar. 2
Trent.....	R-M. Tuesday	Mar. 16

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line for New Orleans via Kingston, Ja., will be as follows: Steamship Mercian about February 23; steamship Memphian about March 6.

Misdirected Letters.

Division of Posts, Customs and Revenues,

Ancón, C. Z., February 10, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Archer, Mrs. E.	Hartman, Will S.
Bell, Orville	Heckmann, J. L.
Billings, Harry	Kluttz, H. C.
Bodel, Mrs. Robert	Labat, Jack
Bullard, Chester	Lincoln, Mrs. Franklin
Carlson, Oscar	McCall, Harold C.
Deniers, John R. P. Deles	McQuaide, H. J.
Drake, Miss Anna	Miller, Burton B.
Eaille, Kenneth	Nylen, C. A.
Finnims, Walter	Payne, Darnell
Fisk, Clinton	Pickett, David
Foster Elma M. (pkg)	Reiner, Eugene
Fowell, James	Rungles, W. R.
Gilmore, J. E.	Sanders, William H.
Girdner, Harry	Snapp, B. M.
Greshke, B.	Spicer, George
Hackenburg, Mrs. A. L.	White, Arthur
Harrison, Miss Rachel	Wilson, Albert S.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, FEBRUARY 17, 1909.

No. 25.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

First Vessels in Canal Entrance.

Five miles of the Canal were thrown open to navigation on February 1, when two steamships of the Pacific Mail Line, an American Company, were allowed to pass through the channel from La Boca wharf to deep water in the bay of Panama. No official notice was taken of the event and, indeed, the only Isthmian Canal Commission officials on board the first ships to use the channel, were the Resident Engineer at La Boca, two of his assistants and representatives of the Customs and Quarantine services. The Steamship *Newport*, under command of Captain Russell, the oldest captain in the West Coast trade, was the first ship to use the passage, as it steamed through on its way to San Francisco. A short time afterward the *San Jose*, under command of Captain Thompson, the youngest skipper of the Pacific Mail Line, came through on its journey from San Francisco, and tied up at the La Boca dock. Both ships were dressed for the occasion and were saluted throughout the five miles of their journey through the new channel by all the other vessels in the harbor.

Prior to the opening of the new channel, which is at the Pacific terminus to the Panama Canal, ships entered and left La Boca by means of a channel originally started by the French and completed and kept in condition by the Panama Railroad Company. The old French channel, as it is known, will be closed in the course of a few weeks by the breakwater that is reaching out from the mainland at La Boca to Naos Island. This breakwater is formed of rock and earth excavated from Culebra Cut.

The Canal is not completed even for the five miles that are now in use, but a depth of 30 feet at mean tide has been reached in the shoalest part of the channel, which has been excavated to a width of 400 feet for the first mile, and 500 feet for the remaining

four miles. Most of the channel has been excavated to a depth of 50 feet at mean tide. The greater part of the dredging necessary to make this channel has been done by the sea-going suction dredge *Culebra*, and the old French ladder dredge *Gopher*, and both of these dredges are continuing the work.

Although the channel had been deep enough for navigation for several days before it was actually opened, no vessels were allowed to pass through it, because the men who are doing the work wished that American ships should be the first vessels to use it.

Highest Daily Excavation.

The best daily record of excavation for steam shovels since American occupation was made on Wednesday, February 10, when 58 shovels in the Central Division removed 76,438 cubic yards of material, an average of 1,318 cubic yards per shovel. Of this amount, seven shovels in the Tabernilla District excavated 11,040 cubic yards, an average of 1,577 cubic yards per shovel. The highest previous daily record was made on February 5, when 56 shovels in the Central Division removed 73,442 cubic yards, an average of 1,311 cubic yards per shovel. These shovels are under steam for eight hours per day, but are not actually at work during this entire period, time being lost by the necessity of moving the shovel forward, blasting stone too big for the shovels to handle, and keeping the shovels supplied with cars, etc. On February 10, the 58 shovels were under steam a total of 464 shovel-hours and were actually digging 311.55 shovel-hours.

The 76,438 cubic yards removed were loaded on 2,223 Lidgerwood flat cars, 264 large Western dump cars, and 2,749 small Western and Oliver dump cars, a total of 5,236 carloads. The material was transported an average distance of about 11 miles, and 411 train-loads were dumped during the day.

Improvements in Subsistence Department.

The Subsistence Department is making improvements at various places in the Zone. The bakery at Cristobal is being remodeled and a new concrete floor in place of wood is being laid on the second floor. A new roll machine has been installed and the entire machinery of the bakery re-arranged. An order has been sent to the States for two modern ovens for baking French and Vienna bread. It is expected that they will be in use at the Cristobal bakery by April 1. A portable baking oven 9½ by 11½ feet for the Hotel Tivoli is on the Isthmus and will be installed immediately. Four other experimental ovens for the larger Line hotels are expected shortly. Four coffee urns of the most modern pattern are also on the Isthmus and are a part of 12 urns that have been ordered for use in the Line hotels. The old coffee urns will be repaired and remodeled

and installed in the larger laborers' messes and kitchens. Plans are complete for a new commissary at Gatun and the erection of the building will begin at once. It will be two stories high with the retail store on the second floor and the lower floor will be used as a storeroom by the Commissary and Subsistence Department. The Cristobal commissary has been remodeled. The boot and shoe department and the dry goods are upstairs, and the lower floor has been divided in the middle by an aisle. The manager's office is also located on the first floor. The north end of the building is for "gold" employes, and the south end for "silver" employes.

Rock Excavation at Corozal.

Work has been begun on a clam-shell dredge which will be one of two dredges of this type to be used in excavating a diversion channel which will take the drainage of the Rio Grande valley from the diversion near the Miraflores lock site to a point near Camp Diablo, where it will enter the present channel of the Rio Grande. The diversion channel will be a ditch about a mile and one-half long and as a piece of excavation is not of much importance. It is part of the preparatory work necessary before the rock excavation south of the Miraflores lock site can be undertaken.

The present plan for excavating in the prism south of the Miraflores lock site and north of the end of the old French canal is to throw a dyke across the valley, which will keep tide water from flowing into this part of the prism, and to divert the river and surface water through the channel referred to above. The earth will be dredged from the section between the lock site and the dyke, and steam shovels will then be put in to take out the rock down to 45 feet below sea level. This method will do away with the more expensive subaqueous rock excavation for this section of the Canal.

January Money Order Business.

During the month of January, 1909, the sixteen post-offices in the Canal Zone at which money order business is done, sold 14,464 money orders, aggregating \$409,240.04, a decrease of \$23,247.92 from the amount reported for December. Of the \$409,240.04 in January, \$288,507.33 was drawn in orders payable in the United States and elsewhere, and \$120,732.71 in orders drawn payable in the Canal Zone. The fees collected amounted to \$1,724.42, and the amount paid and repaid was \$108,382.20.

In the number of orders drawn, Cristobal was first with 2,730, Empire second with 1,720, and Ancon third with 1,476. In the amount issued, Cristobal was first with \$70,102.71, Empire second with \$47,287.65, and Gorgona third with \$45,157.39. Of the amount payable in the United States, Cris-

NOTES OF PROGRESS.

(Continued.)

tobal was first with \$53,484.32, Empire second with \$34,698.64, and Gorgona third with \$29,712.92. In orders payable in the Canal Zone, Gorgona was first with \$15,444.47, Empire second with \$12,589.01, and Cristobal third with \$11,618.39. In the amount paid and repaid, Empire was first with \$16,241.04, Cristobal second with \$15,715.20, and Gorgona was third with \$15,613.68.

The average of all the orders issued was \$28.29, the highest being at Pedro Miguel where 769 orders, aggregating \$27 370.15 were sold, an average of \$35.59 and the lowest was at Ancon, where 1,476 orders, amounting to \$31,391.37, averaged \$21.27.

New Corral at Ancon.

A new corral has been authorized at Ancon. It will be located on the north slope of Ancon Hill, on the lower Ancon-La Boca road, below wards Nos. 18 and 19 of Ancon Hospital. The corral will consist of four buildings for animals, one carriage house and one wagon house. Each of the stable buildings will have 40 stalls, and 2 box stalls, and will also have a room for harness and forage. The stalls in each of the stable buildings will be in two rows of 20 stalls each, and between the rows of stalls will be a Decauville track imbedded in cement, on which to run cars for the distribution of feed.

The grading on the site of the new corral will begin immediately, and it is expected that the buildings will be constructed by contract if found advisable.

January Dredging.

The total amount excavated by dredges in January was 1,108,677 cubic yards, of which all but 44,772 cubic yards was taken from the Canal prism. In the Atlantic Division the amount of material removed by dredges from the Canal prism was 106,283 cubic yards less than in December, due to dredge No. 85 having been transferred in the latter part of December from the Canal prism and put to work excavating a channel to the lower lock at Gatun. Dipper dredge *Chagres* throughout the entire month was at Nombre de Dios at work in connection with securing sand for the Gatun Locks. Dipper dredge *Mindi* was moved from the Canal prism January 7 to Gatun, to complete the excavation of the approach channel and slip, which are being prepared for the delivery of material for the construction of the Gatun Locks.

The dredges of the Atlantic Division made the following records for January, only 618,093 cubic yards of which were for actual Canal construction:

DREDGES.	CUBIC YARDS.		
	Earth.	Rock.	Total.
20-inch suction, No. 85.	97,043		97,043
20-inch suction, No. 82.	93,155		93,155
Dipper, <i>Mindi</i> .	34,908	9,594	44,502
Ladder, No. 1.	111,090		111,090
Ladder, No. 6.	23,368	33,719	57,087
Sea-going suction, Ancon.	343,380		343,380
Total	702,944	43,313	746,257

In the Pacific Division the sea going suction dredge *Culebra* was out of commission

from January 7 to 28, inclusive, it having been beached on Perico Island for general repairs. This loss of eighteen working days by dredge *Culebra* accounts for the total in January being 239,376 cubic yards less than in December. The records of the dredges in the Pacific Division were as follows:

DREDGES.	CUBIC YARDS.		
	In prism.	Outside prism.	Total.
Ladder, No. 14.	122,790		122,790
Ladder, Gopher.	120,618		120,618
Ladder, Mole.		78,634	78,634
Dipper Dredge.	48,385		48,385
Sea-going suction, <i>Culebra</i> .	99,102		99,102
20-inch suction, Sand-piper.	21,055		21,055
Total	411,950	78,634	490,584

Lidgerwood Unloaders in January.

The eleven Lidgerwood unloaders in the Central Division, during the month of January, unloaded a total of 2,704 trains, composed of a total of 47,379 cars. Of this number 1,293 trains, composed of 21,981 cars, were unloaded by five unloaders at Tabernilla; 628 trains, composed of 11,304 cars, were unloaded by three unloaders at the Miraflores dumps, and 783 trains, composed of 14,094 cars were unloaded by three unloaders at La Boca. As all the cars were of 20 yards capacity, the material unloaded represented about 947,580 cubic yards. In addition there were 364 Western dump cars, containing about 6,000 cubic yards of material, unloaded at the La Boca dumps during the month.

No Spring Examination For Clerks.

As the United States Civil Service Commission has a register for the position of clerk under the Isthmian Canal Commission containing sufficient names to supply all vacancies which may occur during the next six months, the usual semi-annual examination for this position will not be held in the spring of 1909.

Postage on Steamships.

The traveling public is advised that Canal Zone stamps are not valid for postage on steamers of the Panama Railroad Steamship Company after the vessels sail from Cristobal. United States stamps should be used for postage, and they can be purchased from the postal clerk on board.

LABOR FORCE FOR JANUARY.

The report of the Chief Quartermaster for the month of January shows that the number of Isthmian Canal Commission employes actually at work on January 27, was 24,878, of whom 4,295 were "gold" employes, and the remainder were on the "silver" or labor roll. The Panama railroad force was 5,650, and the Panama railroad commissary force numbered 743. Thus the total number of persons at work on the Canal and railroad on the 27th day of January was 31,271. During the month 226 people were added to the "gold" roll and there were 268 separations, the net decrease in the force being 42. No laborers were imported, as

the supply on the Isthmus is in excess of the demand.

The number of family quarters occupied by "gold" employes was 1,447, and the occupants numbered 4,408; bachelor quarters by "gold" employes, 2,042, and the occupants numbered 3,365. The family quarters occupied by West Indians numbered 982, and the occupants 3,168; bachelor quarters, 250; number of occupants, 4,934. The family quarters occupied by European laborers numbered 345, and the occupants 1,069; bachelor quarters, 146; number of occupants 5,351.

A statement of the force actually at work on January 27, 1909, follows:

DEPARTMENT.	Gold Men.	SILVER MEN.								Total Gold and Silver Men.
		Mon-thly.	Artisans.		European Laborers.		West Ind'n Laborers.		Total Silver.	
			32c. & over.	26c.	40c.	32c.	26c.	20c.		
Construction and Engineering	3,127	1,978	3,787	1,142	4,414	198	1,938	2,797	16,254	19,381
Department of Civil Administration	350	168	24						192	542
Department of Sanitation	356	597	78		3		11	167	856	1,212
Quartermaster's Department	253	1,069	278		276	22	386	596	2,627	2,880
Subsistence Department	70	637	2						639	709
Disbursements	26	9							9	35
Examiner of Accoumts	113	6							6	119
Totals	4,295	4,464	4,169	1,142	4,693	220	2,335	3,560	20,583	24,878

Panama railroad force, 5,650; Panama railroad commissary force, 743.

JANUARY HEALTH REPORT.

Lowest January Death Rate on Record.

ANCON, C. Z., February 12, 1909.

To the Acting Chairman Isthmian Canal Commission, *Culebra*, C. Z.

Sir: I forward herewith report of the Department of Sanitation for the month of January.

I would like to call attention in this report to the low death rate of the total population under our jurisdiction—22.86 per thousand. This would be small for any community in the tropics, and some of our cities in the United States have a larger death rate. It is a considerable improvement in rate over any preceding January, the rates for which have been as follows:

Year.	Rate.
January, 1905.	40.20 per thousand.
January, 1906.	47.26 per thousand.
January, 1907.	35.12 per thousand.
January, 1908.	36.66 per thousand.

I also call your attention to the small rate among employes as compared with previous years, as follows:

Year.	Rate.
January, 1905.	20.26 per thousand.
January, 1906.	40.36 per thousand.
January, 1907.	25.62 per thousand.
January, 1908.	12.72 per thousand.
January, 1909.	10.98 per thousand.

This you will see is considerably the smallest death rate we have so far had in any January.

No case of yellow fever, plague or small-pox has occurred during the month, and the general health conditions remain excellent.

Very respectfully, Wm. C. GORGAS,
Chief Sanitary Officer.

LIST OF EMPLOYEES WHO ARE ENTITLED TO CANAL MEDALS.

The publication of names of employes of the Isthmian Canal Commission and Panama Railroad Company who are entitled to receive Canal Medals, which was begun in THE CANAL RECORD of February 10, is continued in this issue. The names thus far published are those of employes of the Isthmian Canal Commission. When all these have been given the names of employes of the Panama Railroad Company will follow. Address communications relating to corrections in Medal list to Assistant to the Chairman, Culebra, C. Z.

Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.
1905.									
Lyons, Mary V.....	Mar. 22	Stanton, Wilbor D.....	Apr. 24	Thomas, Neal.....	June 13	Jackson, John J.....	July 26	Graham, Frank.....	Aug. 19
Maher, Patrick F.....	Mar. 22	Waring, Charles T.....	Apr. 24	Tipton, George W.....	June 13	Lee, James H.....	July 26	Grisson, James T.....	Aug. 19
Maltby, Frank B.....	Mar. 22	Ashton, William F.....	Apr. 25	Christenson, Carl J.....	June 15	Leibson, Israel B.....	July 26	Lawrence, Wilbur S.....	Aug. 19
Moreny, Vincent.....	Mar. 24	Eusef, Charles R.....	Apr. 25	Middleton, Nicholas B.....	June 16	Strong, George W.....	July 26	Molz, Arthur.....	Aug. 19
Cooke, Alfred I.....	Mar. 27	Harrod, Ernest E.....	Apr. 25	Baker, E. Lewis.....	June 17	Weigle, William E.....	July 26	Palmer, Eugene W.....	Aug. 19
Cornish, Frank L.....	Mar. 28	Henderson, Watt A.....	Apr. 25	Davis, A. W.....	June 17	White, Staunton A.....	July 26	Suttle, John H.....	Aug. 19
Kirk, George E.....	Mar. 28	Cornwell, Albert E.....	Apr. 29	Goodfellow, Robert C.....	June 17	Phillips, John L.....	July 27	Williamson, Norman E.....	Aug. 19
La Haye, Solomon J.....	Mar. 28	Halloran, George B.....	Apr. 29	Jeffries, James B.....	June 17	Smith, George H.....	July 27	Francisco, Howard M.....	Aug. 21
Ninas, George A.....	Mar. 28	Hunttoo, Robert J.....	Apr. 29	Kirchner, Christian A.....	June 17	Smith, Jackson.....	July 28	Brackle, Charles.....	Aug. 25
Roderick, Charles.....	Mar. 28	McKeever, Henry M.....	Apr. 29	McArdle, Ellen C.....	June 17	Austin, Charles B.....	July 29	Embry, John A.....	Aug. 25
Turner, Frederick K.....	Mar. 28	Neal, Charles J.....	Apr. 29	Tatum, Sledge.....	June 17	Jacobson, Benjamin L.....	July 31	Eyans, Forrest M.....	Aug. 25
Waltman, William D.....	Mar. 28	O'Brien, Richard.....	Apr. 29	Tobin, Edwin.....	June 17	Kinsman, Homer.....	Aug. 25	Farmer, Alfred G.....	Aug. 25
Ceddes, Albert H.....	Apr. 1	Black, Jesse L.....	May 2	Monahan, James.....	June 19	Lynch, Cornelius.....	July 31	Fendorf, Charles B.....	Aug. 25
Pianella, Antoine.....	Apr. 1	Purnell, John H.....	May 2	Heinemeyer, Louis C.....	June 20	Gibson, Collins P.....	Aug. 25	Gibson, Collins P.....	Aug. 25
Sprangler, Charles J.....	Apr. 1	McDonald, Dana C.....	May 3	White, Samuel M.....	June 20	Hayes, Charles G.....	Aug. 25	Leathley, Thomas A.....	Aug. 25
Kino, Frederick.....	Apr. 3	Russell, William E.....	May 3	Bean, Florence.....	June 21	Musgrave, William S.....	Aug. 25	Price, Elmer E.....	Aug. 25
Mattimore, Harry B.....	Apr. 3	Baumer, Herbert H.....	May 5	Mooney, Virginia.....	June 21	Currie, Milton R.....	Aug. 25	Quinby, Benjamin C.....	Aug. 25
Kennedy, Sydney J.....	Apr. 4	Booth, Julius K.....	May 5	Riddle, Paul L.....	June 21	Feld, Frederick A.....	Aug. 25	Rosenbaum, Alex'der I.....	Aug. 25
Giles, Ira A.....	Apr. 5	Cantwell, Matthew D.....	May 5	White, Walter J.....	June 21	Fox, George S.....	Aug. 25	Roudabush, Robert M.....	Aug. 25
Anderson, Channcey E.....	Apr. 7	Griley, Michael A.....	May 5	Sinz, Edward F.....	June 22	Fried, Amos E.....	Aug. 25	Sands, Robert M.....	Aug. 25
Avery, James A.....	Apr. 7	Krause, William F.....	May 5	Todd, C. S.....	June 22	Holmgren, Ole O.....	Aug. 25	Sawyer, Francis W.....	Aug. 25
Baker, Joseph A.....	Apr. 7	Loewy, Ignatz D.....	May 5	Wilson, Paul S.....	June 22	King, James O.....	Aug. 25	Sivell, Hugh G.....	Aug. 25
Bryan, T. A.....	Apr. 7	McIntyre, George B.....	May 5	Flynn, Jr., John H.....	June 23	Lerow, Philip.....	Aug. 25	Whittle, Robert.....	Aug. 25
Doty, Frank W.....	Apr. 7	Webster, J. Leon.....	May 5	Wirz, Charles C. J.....	June 23	Peterson, Garfield C.....	Aug. 25	Woods, John V.....	Aug. 25
Haywood, Harry A.....	Apr. 7	Winnie, Noruan E.....	May 5	Wickham, J. F.....	June 27	Shea, C. P.....	Aug. 25	Holden, George.....	Aug. 26
Hitt, Samuel M.....	Apr. 7	Bradberry, Randall T.....	May 10	Burr, R. T.....	June 28	Slater, James A.....	Aug. 25	Mabry, Nettie E.....	Aug. 26
Barrett, Nelson M.....	Apr. 10	Buras, John E.....	May 10	Leonard, Edward.....	June 28	Holcombe, Joseph G.....	Aug. 2	McGown, Arthur.....	Aug. 30
Bews, James E.....	Apr. 10	Dehaigne, Howard B.....	May 10	Lowe, William E.....	June 28	Floyd, Frank.....	Aug. 6	Avis, James P.....	Sept. 1
Davis, Frank.....	Apr. 10	Dickerson, Charles O.....	May 10	Mabry, William D.....	June 28	Flynn, Frank W.....	Aug. 7	Belding, William M.....	Sept. 1
Keller, John C.....	Apr. 10	Ellerbe, John C.....	May 10	Perry, Ashley H.....	June 28	Stevens, Julius D.....	Aug. 7	Berry, Enoch S.....	Sept. 1
Madden, Daniel.....	Apr. 10	Gumble, Bert.....	May 10	Porter, Felix E.....	June 28	Whitney, George A.....	Aug. 8	Buttless, Clarence W.....	Sept. 1
Miller, Albert F.....	Apr. 10	Louard, Nichol.....	May 10	Poultney, Charles.....	June 28	Baxter, John K.....	Aug. 9	Farish, H. S.....	Sept. 1
Swinehart, Charles M.....	Apr. 10	Leudecker, F. W.....	May 10	Sawtelle, Harrie W.....	June 28	Bligh, Addison.....	Aug. 9	Huselman, August.....	Sept. 1
Tighe, Joseph M.....	Apr. 10	O'Neill, Daniel.....	May 10	Young, Edmond S.....	June 28	Davis, Edwin W.....	Aug. 9	McColey, Curtis C.....	Sept. 1
Alexander, Clayton C.....	Apr. 12	Rozzell, Edwin.....	May 10	Larson, Leander.....	July 1	Gerig, William.....	Aug. 9	Palmer, A. H.....	Sept. 1
Caffray, Ruben B.....	Apr. 12	Brady, Walter H. H.....	May 11	Michel, Edward W.....	July 1	Green, George W.....	Aug. 9	Pettit, William N.....	Sept. 1
Fleming, Harry V.....	Apr. 12	Burton, John J.....	May 11	Elliott, Robert M.....	July 5	Hehn, Mary.....	Aug. 9	Pippert, John.....	Sept. 1
Geddes, Claude R.....	Apr. 12	Dearborn, Frank M.....	May 11	O'Neal, Lucius A.....	July 5	Keeling, Edward A.....	Aug. 9	Swinson, Charles O.....	Sept. 1
Haines, Abram L.....	Apr. 12	Harrison, William.....	May 11	Van Hardeveld.....	July 5	Lane, Harry H.....	Aug. 9	Walkers, Frederick G.....	Sept. 1
Hostetter, Harlan O.....	Apr. 12	Miller, Jacob.....	May 11	Potts, Frederick A.....	July 5	Lupfer, Cambridge M.....	Aug. 9	Winters, William.....	Sept. 1
MacAdam, G. M.....	Apr. 12	Owen, William R.....	May 11	Coffin, Howard.....	July 7	Manley, William G.....	Aug. 9	Wirtz, William.....	Sept. 1
MacCormack, Daniel W.....	Apr. 12	Start, Arthur E.....	May 11	Hyser, Frank H.....	July 7	Mullin, John W.....	Aug. 9	Wynne, Joseph.....	Sept. 1
Nigg, Alois.....	Apr. 12	Walsh, William H.....	May 11	Kendall, Charles R.....	July 7	O'Shaughnessy, Philip.....	Aug. 9	Noble, Frank C.....	Sept. 4
Sampson, Joseph B.....	Apr. 12	Woods, Joseph T.....	May 11	Sturges, Richard E.....	July 7	Prentiss, C. L.....	Aug. 9	Baird, James H.....	Sept. 5
Sexton, James.....	Apr. 12	Averill, James H.....	May 15	Swanson, Frederick G.....	July 7	Ross, Frank B.....	Aug. 9	Batterton, John Y.....	Sept. 5
Smith, Sara B.....	Apr. 12	Conner, James H.....	May 15	Mealer, Charles L.....	July 8	Swinkels, Joseph.....	Aug. 9	Curney, Frank R.....	Sept. 5
Ward, Frank X.....	Apr. 12	Erickson, Henry.....	May 15	Atkins, John.....	July 11	Tragsdorf, William E.....	Aug. 9	Dillon, Vesper C.....	Sept. 5
Hammel, Otto.....	Apr. 13	Farrell, William H.....	May 15	Blackhurst, John.....	July 11	Varrone, Nicholas J.....	Aug. 9	Gudger, Herman A.....	Sept. 5
Anderson, George.....	Apr. 17	Ferebee, Frank B.....	May 15	Bryon, Charles E.....	July 11	Whyte, Walter J.....	Aug. 9	Jakoby, Joseph.....	Sept. 5
Campbell, Charles R.....	Apr. 17	Johnson, Peter.....	May 15	Clement, Charles C.....	July 11	Brand, Edward W.....	Aug. 10	Lewis, Wilmot A.....	Sept. 5
Day, Frank E.....	Apr. 17	Metzger, Fred. O.....	May 15	Driscoll, Michael J.....	July 11	Dwyer, John E.....	Aug. 10	McLellan, Albert J.....	Sept. 5
Greer, George W.....	Apr. 17	Sessions, Arthur C.....	May 15	Early, Benjamin J.....	July 11	Greeley, Jr., John W.....	Aug. 10	Muhlherr, Herman.....	Sept. 5
Hall, Robert.....	Apr. 17	Small, David L.....	May 15	Paure, Ad.....	July 11	Greeley, Sr., John W.....	Aug. 10	Nedbal, Wencil.....	Sept. 5
Harvey, Robert J.....	Apr. 17	Walker, Clement.....	May 15	Fowler, J. F.....	July 11	Lawton, John M.....	Aug. 10	Schweger, Charles T.....	Sept. 5
Hertz, Gustav C.....	Apr. 17	Schwartz, Jr., Henry.....	May 18	Lumby, Earl C.....	July 11	March, Joseph B.....	Aug. 10	Shaw, George W.....	Sept. 5
Hopps, Howard B.....	Apr. 17	Eyans, Arthur K.....	May 23	Lumby, Robert C.....	July 11	Martin, James.....	Aug. 10	Sine, Elwood P.....	Sept. 5
Kochler, Charles A.....	Apr. 17	Smith, Jay M.....	May 23	Billingslea, J. M.....	July 12	Humphreys, James R.....	Aug. 11	Benninger, Sberman A.....	Sept. 6
MacFarlane, William H.....	Apr. 17	Watts, George H.....	May 25	Fairbanks, Helen G.....	July 12	Kahrman, Conrad H.....	Aug. 11	Stevenson, Jesse H.....	Sept. 6
Maxon, William E.....	Apr. 17	Lowe, Edgar.....	May 24	Green, Henriette B.....	July 12	Young, John D.....	Aug. 11	Clapp, Carl J.....	Sept. 12
McCandless, Roy.....	Apr. 17	Stone, Archibald K.....	May 24	Grove, Blanche.....	July 12	Payne, Jr., Harry M.....	Aug. 12	Claybourn, Ephraim S.....	Sept. 12
Nicolai, Edgar S.....	Apr. 17	Bitley, Ernest L.....	May 29	Hale, David H.....	July 12	Ballantine, Margaret I.....	Aug. 14	Hale, Edgar H.....	Sept. 12
Shipley, William F.....	Apr. 17	Doru, William F.....	May 29	Humphreys, James T.....	July 12	Banks, Charles H.....	Aug. 14	Lullwitz, Henry.....	Sept. 12
St. Clair, Dan.....	Apr. 17	Finley, Lee L.....	May 29	Mayne, James B.....	July 12	Bartlett, Robert L.....	Aug. 14	Nolan, Joseph J.....	Sept. 12
Tucker, James E.....	Apr. 17	Geary, Lawrence D.....	May 29	Potter, Russell B.....	July 12	Comber, W. G.....	Aug. 14	Oersted, Hans C.....	Sept. 12
Vance, Dewitt C.....	Apr. 17	Mansfield, Henry C.....	May 29	Potts, Isaac R.....	July 12	Dunning, William E.....	Aug. 14	Owens, John.....	Sept. 12
Warner, Anselm M.....	Apr. 17	McCord, William R.....	May 29	Stokoe, James.....	July 12	Douglas, Gavin.....	Aug. 14	Patton, Todd J.....	Sept. 12
West, Christopher B.....	Apr. 17	Bottenfield, P. M. Drake.....	May 31	Tate, Dexter.....	July 12	Evans, Joseph G.....	Aug. 14	Ray, Victoria.....	Sept. 12
Wood, Robert E.....	Apr. 17	Chaubers, John L.....	May 31	Vaughn, Emmett I.....	July 12	Garrison, Edgar S.....	Aug. 14	Richardson, Ada M.....	Sept. 12
Dotson, Robert H.....	Apr. 19	Hebard, Roy W.....	May 31	White, Mark.....	July 12	Goldsmith, Edwin.....	Aug. 14	Stanton, Charles J.....	Sept. 12
Dodson, William C.....	Apr. 19	Leason, Harry.....	May 31	Williams, Jr., Richard J.....	July 12	Greeley, Horace L.....	Aug. 14	Stephens, Walter E.....	Sept. 12
Ellefson, Ellef.....	Apr. 19	Leassenhop, Herbert S.....	May 31	De Lavandeyra, Jose.....	July 16	Kellerman, Rudolf J.....	Aug. 14	Stevens, Walter H.....	Sept. 12
Howland, Henry B.....	Apr. 19	Morgan, Charles.....	May 31	Davies, Evan J.....	July 17	Martin, William A.....	Aug. 14	Thompson, Tom C.....	Sept. 12
Kingsbury, Augustus H.....	Apr. 19	Thompson, William L.....	May 31	Halsey, George F.....	July 17	Murphy, Robert E.....	Aug. 14	Wiggins, Charles.....	Sept. 12
Redmond, Charles F.....	Apr. 19	Grant, Kveru.....	June 1	Hughes, Charles R.....	July 17	Norton, Francis J.....	Aug. 14	Gilmore, Clarence E.....	Sept. 16
Sargent, Charles R.....	Apr. 19	Roch, Frank.....	June 1	Joseph, Lafayette.....	July 17	Owens, Charles T.....	Aug. 14	Robb, Marquis L.....	Sept. 16
Werts, Raleigh F.....	Apr. 19	Stipp, Henry.....	June 1	Latchford, Stephen.....	July 17	Pitman, William P.....	Aug. 14	Schwan, Mary.....	Sept. 16
Clyde, Ray W.....	Apr. 24	Brown, John R.....	June 2	Morris, Robert K.....	July 17	Singer, John S.....	Aug. 14	Birte, George A.....	Sept. 19
Cohen, Jacob.....	Apr. 24	Mitchell, Hugh.....	June 4	Weitz, William.....	July 17	Smith, Drew E.....	Aug. 14	Dudley, Elmer E.....	Sept. 19
Custy, Thomas.....	Apr. 24	Preston, Perry B.....	June 4	Jenkins, Ben.....	July 18	Stewart, Frederick F.....	Aug. 14	Erickson, Arthur E.....	Sept. 20
Daly, Owen M.....	Apr. 24	Robinson, Arthur L.....	June 4	Fuhrman, Jacob F.....	July 19	Williams, Walter L.....	Aug. 14	Selby, F. Payne.....	Sept. 20
Davis, Sydney L.....	Apr. 24	Thomas, Walter J.....	June 4	LeMay, E. A.....	July 19	Ewing, Jr., Homer L.....	Aug. 15	Simmons, Clinton O.....	Sept. 21
Fitzpatrick, Frank.....	Apr. 24	Pickering, George W.....	June 5	Whitaker, Charles L.....	July 19	O'Neill, Eugene F.....	Aug. 16	Kane, Mina.....	Sept. 22
Garland, Thomas P.....	Apr. 24	O'Brien, Thomas.....	June 9	Bosse, H. Theodore.....	July 22	Robinson, Charles E.....	Aug. 16	Robertson, William T.....	Sept. 22
Kirby, Jeremiah F.....	Apr. 24	Stephens, Frank W.....	June 9	Cotton, Arthur E.....	July 22	Allen, Charles P.....	Aug. 18	Hackenber, Austin L.....	Sept. 23
Nelson, Peter.....	Apr. 24	Walker, John S.....	June 9	Miller, Inger (Miss).....	July 22	Brem, Jr., Walter.....	Aug. 19	Moore, Anna C.....	Sept. 23
Newcomer, Henry R.....	Apr. 24	Ridley, Alberta E.....	June 10	Speirs, Grace.....	July 22	Garcon, Edward J.....	Aug. 19	Shutt, H. R.....	Sept. 23
Rogers, Alfred E.....	Apr. 24	Gleason, John.....	June 12	Wilcox, Willard W.....	July 22	Cossu, Charles S.....	Aug. 19	Vanderpool, J. H.....	Sept. 23
		Seeger, Joseph.....	June 12	Gilkey, Lloyd E.....	July 24	Graff, George V.....	Aug. 19		
		Bell, William G.....	June 13	Rainwater, Roscoe.....	July 24				

ESTIMATES OF CANAL WORK.

Comparative Figures of the Board of Consulting Engineers, 1906, and the Isthmian Canal Commission, 1908.

An analysis of the differences between the amount of work necessary for the construction of the Canal, as estimated by the Board of Consulting Engineers in February, 1906, and the estimates made by the Isthmian Canal Commission in December, 1908, is appended. The increase in work necessary to carry out the present plans, as compared with the plans of the minority of the Board of Consulting Engineers in 1906, is a little over 50 per cent. The estimate made by the Commission in December, 1908, is subject to any changes that may be made as a result of the recommendations of the Consulting Engineers who accompanied President-elect Taft on his recent inspection of the Canal work. The figures are for the period, May 4, 1904, to the completion of the Canal.

The estimate of December, 1908, is larger than that of the Board in the following items:

Excavation	Cubic Yards
From prism.....	66,329,217
From diversions.....	250,000
From locks.....	3,894,763
At dams.....	397,615
Total.....	70,871,595
Back filling.....	289,000
Concrete.....	2,015,000

The estimate of December, 1908, is smaller than that of the Board in the following item:

Filling dams, cubic yards.....	8,898,000
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In making its estimate, the Board was obliged to adopt typical sections for the prism of the canal with certain standard slopes for silt, earth, and rock. It has since been found by experience that in many places flatter slopes, and consequently larger quantities, are necessary.

Material changes in the project have also been found advisable, and have been made. They have resulted in a large increase in the work to be performed. The resulting differences in the quantities are as follows:

Increased Excavation for Prism:	Cubic Yards.
From widening channel from 500 feet to 1,000 feet for a distance of 4,000 feet north of Gatun Locks, to afford a basin for vessels passing through the Canal.....	3,786,137
Dredging necessary to maintain channel in Limon Bay prior to completion of Canal.....	6,500,000
Change of line at Mindi, and flattening of slopes—Atlantic Division.....	5,588,988
Increase of bottom width in Culebra Cut from 200 feet to 300 feet for 4.7 miles.....	13,000,000
Allowance for flattening of slopes, and for slides, Central Division.....	7,929,493
Change of alignment and widening of bottom from 500 feet to 500 feet in Panama Bay; and changes in prism by reason of moving the locks from La Boca to Miraflores.....	29,524,599
Total.....	66,329,217
Increased excavation for Diversions.....	250,000
Increased excavation for locks:	
From enlarging lock chambers from 95 by 900 feet to 110 by 1,000 feet and making deeper foundations.....	3,894,763
Increased excavation for dams:	
For sheet piling and curtain walls at spillway.....	397,615
Grand total increase in all excavation.....	70,871,595

Increased Back Filling:	
From lengthening locks and changing location of locks at Pacific end of Canal.....	289,000
Increased Concrete:	
From increase in size of lock chambers from 95 feet by 900 feet to 110 feet by 1,000 feet, deeper foundations and curtain walls	2,015,000
Changes for Fill for Dams:	
Increase for Gatun Dam.....	3,200,000
Decrease from changing location of the dams at the Pacific end of the Canal.....	12,098,000
Net decrease of.....	8,893,000

A comparison of the quantities estimated for each Division and each class of work by the Board of Consulting Engineers in 1906, and the Isthmian Canal

Commission in December, 1908, together with the percentages of increase and decrease, is given in the following table:

CLASS OF WORK.	Minority Report 1906.	I. C. C. Estimate December 1908.	Per cent of increase.
EXCAVATION.			
<i>Prism—</i>			
Atlantic Division.....	20,330,000	36,205,125	78
Central Division.....	67,615,000	88,544,493	31
Pacific Division.....	7,010,000	36,534,599	421
Total.....	94,955,000	161,284,217	70
<i>Diversions—</i>			
Central Division.....	1,000,000	1,250,000	25
<i>Locks—</i>			
Atlantic Division.....	3,660,000	5,139,304	40
Pacific Division.....	2,600,000	5,015,459	93
Total.....	6,260,000	10,154,763	62
<i>Dams—</i>			
Atlantic Division.....	1,580,000	1,732,882	10
Pacific Division.....	.....	244,733	.....
Total.....	1,580,000	1,977,615	25
Total excavation.....	103,795,000	174,666,595	68
FILLING.			
<i>Back filling—</i>			
Atlantic Division, locks.....	660,000	949,000	44
Pacific Division, locks.....	1,340,000	2,756,000	106
Total.....	2,000,000	3,705,000	85
<i>Filling Dams—</i>			
Atlantic Division.....	21,200,000	24,400,000	32
Pacific Division.....	13,380,000	1,282,000	944
Total.....	34,580,000	25,682,000	*35
Total filling.....	36,580,000	29,387,000	*24
CONCRETE.			
<i>Diversions, etc.—</i>			
Central Division.....	(a)	400,000	.....
<i>Locks—</i>			
Atlantic Division.....	1,330,000	2,096,000	58
Pacific Division.....	1,431,000	2,250,900	57
Total.....	2,761,000	4,346,900	57
<i>Dams—</i>			
Atlantic Division.....	.....	200,000	.....
Pacific Division.....	50,000	68,500	37
Total.....	50,000	268,500	437
<i>Spillway—</i>			
Atlantic Division.....	189,000	.....	.....
Total concrete.....	3,000,000	5,015,400	67

(a) Expenditure for concrete estimated for in minority, but quantities not given.

* Decrease from minority.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The Boys' Department of the four Young Men's Christian Associations in the Zone had an excursion to Fort Lorenzo on Saturday, February 13. Transportation to Gatun was furnished by the Panama Railroad and launches from Gatun to Fort Lorenzo and return, by the Atlantic Division. Fifty-two boys made the trip, four from Gatun, ten from Cristobal, twelve from Gorzonia, twelve from Empire, and ten from Culebra. Lunch was eaten on the banks of the Chagres near the mouth of the River, after which a complete examination of the old Spanish fort was made. On their return to Gatun in the afternoon about two hours were spent in going over the site of the locks and dam

CULEBRA.

A smoker for members of the Y. M. C. A. will be held on Friday evening, February 19. A good program has been arranged. The medals won in the recent duck pin and billiard tournaments will be presented at the smoker.

Any social club which desires to make use of the moving picture films in the possession of the Y. M. C. A. can make arrangements to do so by communicating with the Secretary of the Y. M. C. A., Culebra.

CRISTOBAL.

An exhibition game of duck pins was played on Thursday night, February 11, between the "First Team" and "All Stars" resulting in a victory for the latter team by a score of 2 to 1.

The following entertainments are scheduled: Thursday, February 13, Musical, under the auspices of Christ Church, Colon; Saturday, February 20, Dance, under auspices of the Bachelors' Club; Monday, February 22, Moving pictures, illustrating the book of Ben Hur.

JANUARY SHOVEL RECORDS.

In January the steam shovels at work on Canal excavation removed 1,815,874 cubic yards of material, all but 110,147 cubic yards of which was taken from the Canal prism.

The high record for the month was made by shovel No. 216 (90-ton shovel), at work in the Empire district, which took out 44,225 cubic yards, all but 64 cubic yards of which was rock, in 25 working days, an average of 1,769 cubic yards per day. The best record for shovels in the 70-ton class was made by shovel No. 112, working in the lock site at Gatun, which removed 36,126 cubic yards in 25 days, an average of 1,445 cubic yards per day.

Best Records for the Month.

CENTRAL DIVISION.
TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
254.....	33,031	4,310	37,341	25
127.....	36,099	.....	36,099	24

BAS OBISPO DISTRICT.

256.....	15,498	18,942	34,440	23
228.....	21,836	8,636	30,472	25

EMPIRE DISTRICT.

216.....	64	44,161	44,225	25
265.....	8,605	34,432	43,040	25

CULEBRA DISTRICT.

260.....	40,753	40,753	25
257.....	40,716	40,716	20

OBISPO DIVERSION.

226.....	22,568	15,045	37,613	22
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ATLANTIC DIVISION.

GATUN SPILLWAY.

135.....	9,544	5,645	15,189	24
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GATUN LOCKS.

112.....	9,315	26,312	36,126	25
129.....	648	32,286	32,874	25

MINDI.

101.....	650	23,172	23,822	24
120.....	7,446	14,396	21,842	25

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS.

222.....	30,020	30,020
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MIRAFLORES LOCKS.

118.....	23,440
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Best Records for One Day.

CENTRAL DIVISION.

The best daily records were as follows:

Shovel No.	Location.	Date.	Character material excavated.	Cubic yds. excavated.
254	Tabernilla.....	Jan. 7	Rock and earth	2,400
127	Tabernilla.....	Jan. 13	Earth.....	1,910
255	Bas Obispo.....	Jan. 11	Rock and earth	2,560
236	Bas Obispo.....	Jan. 21	Rock and earth	2,210
265	Empire.....	Jan. 30	Rock and earth	3,485
216	Empire.....	Jan. 5	Rock and earth	3,419
260	Culebra.....	Jan. 23	Rock and earth	3,160
223	Culebra.....	Jan. 16	Rock and earth	2,580

ATLANTIC DIVISION.

112	Gatun Locks.....	Jan. 13	Clay and rock..	2,250
129	Gatun Locks.....	Jan. 12	Rock.....	1,800
101	Mindi.....	Jan. 9	Rock.....	1,795
120	Mindi.....	Jan. 5	Earth.....	1,639
135	Gatun spillway.....	Jan. 2	Earth.....	1,390
251	Gatun spillway.....	Jan. 2	Earth and rock	1,200

PACIFIC DIVISION.

258	P Miguel Locks	Jan. 16	Rock.....	2,070
151	Miraflores Locks	Jan. 8	Not classified..	1,750

FOUND—A small diamond horseshoe stick-pin, recently found in the vicinity of Gatun, has been turned over to the Chief of Police, Police Headquarters, Ancon, Canal Zone. Owner can obtain same by applying at Police Headquarters and properly identifying it. No charges.

RED CROSS.

Notice to Members of the Canal Zone Branch.

It is desired to complete the organization of the Canal Zone Branch of the American National Red Cross, and to take up all unfinished business at meetings to be held on February 21 and February 28.

The American National Red Cross is organized as a corporation pursuant to Act of Congress approved January 5, 1905. One of the provisions of the Act is as follows:

"It shall be the duty of the central committee to organize with as little delay as possible, State and Territorial societies, including the District of Columbia, under such rules as the said committee may prescribe."

The rules for State and Territorial societies are published in a pamphlet called "Regulations for Branch Societies of the American National Red Cross."

Under Article 1, the following appears:

"Each society shall elect by ballot from its members a president, vice-president, secretary and treasurer, and such other officers as the branch society may deem wise to elect, who shall hold office for one year, or until their successors are duly elected and qualified. They shall also elect by ballot an executive committee of five members, of which number the president *ex-officio*, shall be one, to serve for one year, or until their successors are duly elected and qualified."

Under the above, it is in order for the Canal Zone Branch to elect a vice-president, and five members of an executive committee.

Article 2 provides:

"Branch societies may at their discretion create such subdivisions in different parts of the State or Territory as may be considered advisable in furtherance of the work of the society, such subdivisions to be presided over by a chairman, and to be under the general control and direction of the State or Territorial Society."

For convenience of administration, it is suggested that the subdivisions of the Canal Zone Branch be localized as are the Quartermaster's Department Districts, and that there be in each subdivision a chairman and treasurer and such executive committee as may be best adapted to the size and needs of the subdivision, the chairman, treasurer and executive committee to act in all matters pertaining to Red Cross work in their subdivisions, including increase of membership, raising funds, etc., and make recommendation in all cases that may come up for relief.

A complete set of regulations will be obtained for distribution, also blank forms for vouchers. The rules and regulations provide for audit of all accounts by a disbursing officer of the War Department. It is suggested that the Examiner of Accounts of the Isthmian Canal Commission act as auditor for the Canal Zone Branch.

Article 10 of the regulations states:

"The president shall appoint a finance committee of not less than four persons, who shall serve until their successors are appointed. It shall be the duty of the finance committee to attend to the collection of money and material for the benefit of the society."

Inasmuch as the collection of funds is to be handled by a committee in the various subdivisions, it is thought a finance com-

mittee will not be necessary in the Canal Zone Branch.

Under section 5 of the Act mentioned herein, the following is quoted:

"Fifth—And to continue and carry on a system of national and international relief in time of peace, and apply the same in mitigating the suffering caused by pestilence, famine, fire, floods, and other great calamities, and to devise and carry on measures for preventing the same."

It is believed that as the construction of the Canal is a great national undertaking, suffers from various causes during the construction work, can be relieved singly under the terms of the Act, instead of waiting for any one national calamity.

It is believed that matters pertaining to the Canal Zone Branch can be best handled by delegates rather than by an attempt to assemble the 1,200 members now enrolled. It is therefore requested that the local subdivisions proceed on Sunday, the 21st instant, to select delegates in numbers equal to ten per cent of the total membership in the subdivisions, and that these delegates be instructed in all matters pertaining to the subjects mentioned herein, or other subjects that may be deemed pertinent. The temporary committees now acting will be advised of the number of delegates to be elected from each subdivision, and will give notice of the hour and place of each meeting. The delegates to be so selected are requested to report at a meeting of the Canal Zone Branch to be held at the Tivoli Hotel, Ancon, at 3 p. m., Sunday, the 28th instant.

The following is a synopsis of subjects to be discussed at the meetings to be held February 21 and 28:

Method of voting at meetings of the Canal Zone Branch, by delegates or otherwise; election of vice-president and executive committee of five; administration of subdivisions as outlined; scope of authority; publishing regulations and blanks for distribution; auditor for accounts; finance committee, is it necessary? discussion and adoption of by-laws; organization of a committee to institute a First Aid Course in the Canal Zone; date before which dues must be paid; discussion of Section 5 of the Act of Congress, and definite outline of special cases that are to be cared for from funds of the Red Cross; whether it would be best to have funds raised by various means kept separate from the regular funds obtained by membership dues.

C. A. DEVOL, *President.*

SALE OF REAL PROPERTY.

By virtue of a decree of foreclosure of real property, to me directed from the Circuit Court in and for the Second Judicial Circuit, Canal Zone, in favor of Pascal Canavaggio against A. Rome, I shall sell, at public auction, to the highest bidder for cash, at the east door of the court house of the Circuit Court, in the city of Empire, Canal Zone, on the 4th day of March, 1909, at three o'clock in the afternoon of said day, the following described property, situated in the city of Empire, Canal Zone, and more particularly described as follows: A certain three-story frame building, together with all the appurtenances thereunto belonging, known as the Pennsylvania Hotel, and designated as by number 163, more particularly described as bounded on the north by the property of Muller, on the south by the property of Jose Garavel, on the east by the Panama railroad tracks, and on the west by the property of the Panama Banking Co., and Fishbaugh, respectively.

The above described property is to be sold at public auction as above described by virtue of a decree of foreclosure issued by the Circuit Court in and for the Second Judicial Circuit, Canal Zone, in which said cause, I. L. Toledo was the plaintiff and A. Rome, Pascal Canavaggio, and P. P. Peterson were the defendants.

GROSVENOR A. PORTER, *Marshal.*

OFFICIAL CIRCULARS.

Wage Classification of Silver Employees.

CULEBRA, C. Z., February 11, 1909.

CIRCULAR No. 229-C.

The following additions to Circular No. 229—Pay Schedule for employes on the silver roll—are hereby approved:

Designation.	Rate, Silver, Month, Daily, Hr.
Bakers.....	\$75.00
Bakers.....	100.00
Boatmen.....	30.00
Cenecterymen.....	65.00
Dairy-men.....	50.00
Dairy-men.....	65.00
Druggists, Assistant.....	150.00
Gardeners.....	60.00
General Foremen, Assistant to.....	150.00
Hostlers.....	50.00
Hostlers.....	60.00
Laborer.....	\$3.00
[This rate is for laborers on the Chagres River survey only. No overtime or extra pay for Sundays or holidays will be allowed when this rate is paid.]	
Laundresses.....	45.00
Laundresses.....	50.00
Laundrymen.....	150.00
Saddlers.....	60.00
Upholsterers.....	50.32
Upholsterers.....	40.00
Wardmaids.....	30.00

H. F. HODGES,

Acting Chairman and Chief Engineer.

Coupon Books in February.

CULEBRA, C. Z., February 12, 1909.

TO ALL CONCERNED:

There being only twenty-eight days in the present month, no coupon books will be issued after the 25th of the month.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Rules Governing Leaves of Absence.

CULEBRA, C. Z., February 12, 1909.

CIRCULAR No. 132-E.

Circular No. 132-B contains the following:

"In no case shall an employe be prevented from going on leave, under the new rules, within four months after it is due, and Heads of Departments will arrange accordingly."

In various instances this rule has been disregarded, without the previous sanction of the Chairman, and the circumstances have been reported later to this office with a request that the employe who was detained be permitted to enter on deferred leave.

Whenever it seems probable that the exigencies of the service will prevent an employe from entering on his vacation within the prescribed period, the case should be reported to this office, before his vacation is forfeited, with a full statement of the facts and an estimate of the earliest date on which the employe can be relieved. Each such case will then be decided on its merits and unless the postponement of the leave is specifically authorized before forfeiture, the rule will be applied literally and without exceptions.

H. F. HODGES, *Acting Chairman.*

Duties of Superintendent of Plumbing.

ANCON, C. Z., January 30, 1909.

TO ALL CONCERNED:

The duties of the Superintendent of Plumbing are as follows:

1. To inspect all plumbing in I. C. C. buildings, including those at Forto Belio and Taboga in accordance with the regulations governing this work, during progress of installation, this to include the application of the water test and the final inspection on completion of work; also to make periodical inspection of all completed plumbing work, to see that the maintenance of same is properly attended to.

2. To supervise and direct Sanitary Inspectors in their work as inspectors of the water mains and water connections in the Canal Zone, whose duty it is to detect leaks and prevent the waste of water from public reservoirs.

3. To render such assistance to other departments as they may require.

The Superintendent of Plumbing shall be advised by departments or divisions who are doing work, of any and all construction, alteration or repairs to plumbing in I. C. C. buildings (but this shall not apply to the repair of a leak in a waste pipe, supply pipe, valve, cock, or faucet), and all such work must meet with his approval.

All wastes and leaks and stoppages, etc., detected, will be reported at once direct to the department responsible for the maintenance of the work effected, in order that same may be attended to with as little delay as possible.

W. C. GORGAS, *Chief Sanitary Officer.*

Approved:

GEORGE W. GOETHALS,
Chairman and Chief Engineer.

SOCIAL LIFE OF THE ZONE.

New Interest Awakened in Women's Clubs.

Mrs. Philip North Moore, president of the the General Federation of Women's Clubs, and her daughter, who have been guests of the Canal Zone Federation, returned to the States on the *Panama*, leaving Cristobal on February 13.

Mrs. John Dickinson Sherman, vice-president of the General Federation, underwent an operation for appendicitis on February 12, at Colon Hospital. She is recovering and will sail for the States as soon as she is able to do so.

During the visit of these ladies to the Canal Zone interest in the Women's Clubs and in general social life among the women of the Zone has been greatly stimulated.

At every place where she made an official visit Mrs. Moore not only made an address but met each club member. In her addresses she outlined the scope and purposes of the General Federation, giving a sketch of its history, and telling of the work of the committees. In speaking of the Zone Federation she emphasized the point that its chief aim was to be a help to the American homes on the Isthmus. Each club was encouraged to maintain its independence and persevere in its work of study, charity, and promoting interest in municipal affairs. Keeping in touch with the world at large by a careful study of current events was urged as a means of promoting interest in local affairs. Mrs. Moore expressed special interest in the work planned by the botanical committee of the Canal Zone Federation, which has recently been appointed.

Mrs. Sherman's addresses dwelt largely with parliamentary law. From the simplest rules of order she branched out into the more intricate rules that are necessary for a smoothly working organization. Mrs. Sherman's handbook, "Parliamentary Law at a Glance," is in use in all the clubs throughout the Zone.

The guests of the Federation were entertained on February 8 by the Paraiso and Pedro Miguel Women's Clubs, which met at Paraiso. Music was furnished by Mrs. Henry Montgomery, Mrs. William Lowe, and Mrs. W. Downs. Souvenir spoons containing a view of Culebra Cut were presented to the visitors. At Empire on February 10, the Empire Woman's Club entertained Mrs. Moore and Mrs. Sherman. Music was furnished by Mrs. Adolf Faure and Miss Sophie Johnson.

A joint meeting of the Gorgona and Las Cascadas Women's Clubs was held at the Gorgona clubhouse on February 11. Vocal music was rendered by Mrs. McFarlane and Mrs. Meyers, recently elected members of the Club.

The executive board of the Cristobal Woman's Club met on February 10, Mrs. Otis Biddle was appointed recording secretary in place of Mrs. J. J. Jackson, who has resigned, and Mrs. Charles Owens was chosen to take charge of the home department during the absence of Mrs. H. J. Slifer, who leaves on February 19, for a short visit in the States.

The Gorgona Woman's Club gave a reception to the married residents of Gorgona on the evening of February 10.

The Gatun Woman's Club held its regular study meeting on February 12 at the

home of Mrs. W. H. Brady. In the absence of the president, the vice-president, Mrs. O. L. Brownell, presided. The lesson was conducted by Mrs. H. K. Higgins, and literary selections in connection with the subject, "Panama," were read. Mrs. J. Vreeland and Mrs. W. M. Martin were elected to membership. The club will meet February 19 at the home of Mrs. C. G. Carty and February 25, with Mrs. Brownell. The membership is rapidly increasing and steps are being considered to secure a permanent meeting place. Until some such measure is effected, the club will continue to meet at the homes of the members, by invitation.

The Sunshine Club at Gatun has affiliated with the International Sunshine Society, and Mrs. Cynthia Westover Alden, founder and president-general of the society has appointed Mrs. Nellie Anderson, of Gatun, representative for the Canal Zone. Las Cascadas has also a branch of the society.

Thomas H. Lucey, impersonator and monologist has been giving a series of entertainments in various towns of the Zone. On Thursday, February 11, Mr. Lucey appeared at Kangaroo Hall, Empire, for the benefit of St. Mary's Church, and on Friday, at the Commission chapel, Culebra, for the benefit of Trinity Church. On Saturday evening Mr. Lucey gave an entertainment at Paraiso under the auspices of the Kangaroos. All the performances have been well attended.

J. Wesley Holland gave an entertainment at Pedro Miguel on Wednesday evening February 10, for the benefit of the Woman's club.

The Bachelor Girls' Club gave a St. Valentine's dance at the Culebra clubhouse on Saturday evening, February 13. There was a large attendance.

Services as follows have been arranged for St. Luke's Church, Ancon, during Lent: Ash Wednesday, February 24, there will be Holy Communion at 7 a. m. and morning prayer at 10. On Wednesday afternoon there will be a children's service at 3.45, followed with evening prayer. During the absence of the chaplain for a few weeks, services will be conducted by Col. W. C. Gorgas, Dr. H. R. Carter, and Judge H. A. Gudger.

Red Men's Picnic Washington's Birthday.

The Improved Order of Red Men and Degree of Pocahontas will hold an outing and basket picnic at East La Boca on Washington's Birthday, February 22, to which all their friends are invited. A special train will leave Cristobal at 6.30 a. m., stopping at Gatun, Gorgona, Las Cascadas, Empire, Culebra, Paraiso, Pedro Miguel, and Panama.

The Red Men will form in line at Panama and march to East La Boca, and transportation will be furnished for ladies and children. Games and sports will be held in the afternoon followed by a ball in the evening. A special train will leave for Cristobal and way stations after the ball.

Elks' Entertainments.

The members of the B. P. O. E. will hold a social on Sunday evening, February 21, at the Imperial, Panama. Members of the order who wish to participate should communicate with Mr. Charles Ponton, Panama, at once, in order that reservations may be made for them. An executive committee has been appointed with a representative in each

town who will receive names and forward them to the assistant chairman at Panama.

An informal smoker will be held at the B. P. O. E. lodge hall, Cristobal, on Tuesday, February 23, at 8 p. m. All Elks are cordially invited to attend.

Red Cross Benefit Dance.

There will be a dance at the Tivoli Hotel Saturday evening, February 20, at 8.30 o'clock, for the benefit of the Canal Zone Branch of the Red Cross. Mrs. Squiers, Mrs. Blackburn, Mrs. Gorgas, Mrs. Bishop and Mrs. Gudger have consented to act as patronesses. Tickets are being sold by a committee of young ladies, and may also be obtained at the office of the District Quartermaster at Ancon.

Atlantic Baseball League.

The Atlantic Baseball League was organized at Cristobal, on January 28. The officers of the league are: R. E. Stevens, president; M. Arango, vice-president; C. E. Gilmore, treasurer; R. W. Kiplinger, secretary; Dubois and Mansfield, umpires; Daniels and DeCreny, scorers. The league is composed of teams from the Subsistence and Commissary Department, the Cristobal Dry Dock, the Department of Civil Administration at Cristobal, and from the general offices of the Panama railroad. Uniforms for all the teams have been ordered from the States and they are expected to arrive very shortly. The league is using a park at the corner of 13th and D streets back of the Salvation Army social hall. Two games are played every Sunday afternoon, the first game being started at 1.30 o'clock.

Personal.

The Hon. Arnold Shanklin, former Consul-General at Panama, who has been appointed Consul-General to the City of Mexico, will sail for the States on Friday, February 19. He will attend the inauguration in Washington and take possession of his new post on April 1.

Missing Man.

Information is wanted in regard to Joseph Molyneux, an Englishman. Anyone having knowledge concerning him is requested to communicate with the Collector of Revenues, Ancon, C. Z.

Pacific Masonic Club.

A meeting of the Pacific Masonic Club will be held on Saturday evening, February 20. Master Masons along the Line are cordially invited to attend.

Brotherhood of Locomotive Engineers.

A regular meeting of the Division 756 of the Brotherhood of Locomotive Engineers will be held at Las Cascadas on Sunday, February 21, at 1 o'clock in the afternoon.

Steam Shovel and Dredge Men.

Local No. 19, I. B. of S. S. & D. M. will hold a special meeting Sunday, February 21, at 2 p. m. in the I. C. C. lodge hall, Empire. All members are requested to be present.

Order of Railroad Conductors.

All members of the Order of Railroad Conductors of America are requested to be present at a meeting to be held at Paraiso on Sunday, February 21, at 9.30 a. m. Very urgent business is to be transacted.

BACHELORS OR MARRIED MEN?

Which Were the Isthmus Pioneers?

THE CANAL RECORD:

Four years ago, more or less, Uncle Sam purchased the Canal rights to construct a canal from the Atlantic to the Pacific. Energetic young men, ambitious and full of hope, like Cæsar, came amidst plague and sickness and the fearful ravages of yellow fever, that they might in after years be proud of having been each a small iota in this wonderful work. How many proved martyrs to the cause? Ancon cemetery, with its short upright pine boards, is grim evidence: There are the ages—19, 21, 23, 24, and so on, all young, mostly unmarried men who came to an early death.

Now comes "Benedicto" to reap the rewards of young America's hard fought battle. The poor unmarried man now hears himself reviled for lack of interest, insufficient capability of performance without brother "Benedict's" guardian soul and hand to guide him in varied tasks on this great undertaking. How many married men, pray, were in the machine that fought *ste-gomya*, *anopheles*, and the scarcity of necessities of life in the early days? Yea, how many? No doubt the married men did come here with families and subsist out of the kindness of a beneficent country, after the lowly, berated young bachelor, the unfortunate single man had cleared a path of cheerfulness in what was a "satanic paradise."

Point to the great number of lonely bachelors who have mated after untiring efforts and laborious savings—and still he is eluded, scorned. Is the married man not given his just dues, his meritorious reward for the kindness shown him by U. S. America? Kindly elucidate, Mr. Married Man of Family, elucidate the exaggerated ability you have given the Zone public at large to understand you are possessed of. A satisfactory explanation and we bow, kneel to your talents.

In conclusion, as a bachelor, let me quote from President Roosevelt's speech (in reply to an interruption), made at Cristobal in November, 1906: "In all great undertakings there is always to be found some one small enough, low enough, mean enough, to find fault; but such persons will rise like bubbles on the surface of a stream and gradually disappear as they float onwards."

SAMUEL D. FREEDMAN.

Gorgona, C. Z., February 12, 1909.

Proof Wanted.

THE CANAL RECORD:

In reference to Antonio's allegation "Are Bachelors Worth Less?" of January 25, I would thank you to print the following:

It is a matter of record that there are numerous bachelors on the job, in the capacity of superintendents, chief clerks, chiefs of divisions, yardmasters, foremen, etc., which require steadiness and force of character. They are filling these various jobs with efficiency, and they have also shown stability by holding them down several years; in fact some of them were here in the earliest days when married men on the Isthmus were few.

It may be true that there is more stability in that class of married men who were "bad men" when they were bachelors. But is it not a fact that there are a great many in-

stances where married men's efficiency at work is somewhat impaired, viz.:

When married very happily and spooning too much.

When married unhappily and trying to drown his sorrows

When wifey hits him with a rolling pin.

When hubby is obliged to walk the floor all night to put baby to sleep.

When walking the floor with babies (plural). In which case he is denied even the soothing effect of a cigarette, etc.

Bachelors may or may not be worthless, but if Antonio cannot support his allegation with better than the proverbial toothbrush and clean collar, we will have to conclude that his inspiration was put on paper at a time when he was over-intoxicated with nuptial happiness. WORTHLESS BACHELOR.

Culebra, C. Z., February 12, 1909.

Philosophical Views of a Married Man.

THE CANAL RECORD:

Will you allow me space in THE CANAL RECORD to answer the writer of the article that appeared in the issue of February 11, 1909, entitled "Are Bachelors Worth Less?" His article can be construed two ways: "Are Bachelors Worth Less?" or "Are Bachelors Worthless?" Which does he mean? He evidently is a married man and is afraid of his position or he would not write such an article. But being a married man myself, I will nevertheless take up for the bachelors, being that I was once one myself. They, as a rule, are a steady hard working body of men with no responsibilities attached to them, but who can tell but what they have a dear old widowed mother back in the States to take care of? Who were the pioneers to the Canal Zone, if they were not mostly composed of single men? Did they not leave good positions to come down here, to work on this, the greatest undertaking the world has ever known, "digging the Panama Canal?" In the starting of this work, were they not in the eyes of thousands, called heroes, coming to a foreign land where yellow fever and diseases were rampant? How many married men cared to venture here, either by themselves or bring their families with them?

Of course the single men can do as the writer stated, that is, pack their toothbrush and a clean collar any week, and go back to the States or where they will. Yet cannot the married man do likewise and also carry an extra toothbrush along with his family? Does he forget that he was once single himself or is he just talking so as to get his name in print? What does the writer mean by saying that it is necessary to have married men to direct the movements of the poor little single fellow, who, in his estimation, is only fit for minor clerical duty or laborers' work? Where did he get all his knowledge from? Why don't he publish a book on such things, then perhaps he could resign from his position which he now holds and leave the bachelor all to himself to dig the great ditch. Is the married man always the best worker? Nay. It is often the case that he is the worse of the two and uses the fact of his family as an ironclad bond to retain his position. It is not always the fault of the man for being so unfortunate as to remain single. Can our able writer say that he has probed this question so deeply that he can quote himself as he has done? Where did he get his knowledge from? I speak for many, when

I say I am surprised that any man down here, no matter who he is, would make such statements as he has.

I agree with what the Quartermaster wrote and will say that my friend who signs himself "Antonio Falvo" should not be so positive in putting himself in print. The Quartermaster does not tell the whole truth. But why should we argue this question. Each and every one of us is here for a certain purpose and that is to help to build the Canal, be it that all are single or all are married men. I agree with my friend when he says "base metals cost less than gold," but he must also remember that "all that glitters is not gold."

F. G. TREVLAC.

Miraflores, C. Z., February 11, 1909.

Suggestion of Nogi.

THE CANAL RECORD:

This for you: Who are Hon. Antonio Falvo? I require of cousin Nogi, with battle expression. Why for you expel so sudden affection to Hon. Antonio? say Nogi, with serious look. Who are he, I yell, with fist smash that upset ink well: who are he that make faces at poor bachelor boys in one whole column of CANAL RECORD, which paper always complain of "no space" habit? No noise from Nogi. I declaim, with Roosevelt move, that Hon. Antonio are a very hen-pecked galleigho gentleman, maybe, who live at Empire, so say, and who demand all bachelor boys get married whether can or not. Nogi screw up eyes and doze like a trance for thought. Presently it sound like this from him: Suppose, maybe, Hon. Antonio have a few daughters, cousins and aunts, with long necks and short hair, which are marked down to 98 cents, and which presence have very much influence with Hon. Antonio and cause him all this pain. My face open with surprise and admiration for Nogi was very smart. Nogi now says that he make some demands or resolutions, which are the same, and like this:

We resolve not to marry any one—unless they say so.

We resolve that a bachelor is worth more than a married man and his wife.

We resolve not to be bum clerks and laborers.

We resolve to pack our toothbrush, maybe?

Togo No. 2.

Empire, C. Z., February 12, 1909.

Bachelors Dig But Don't Talk.

THE CANAL RECORD:

Please give one of those "worthless" bachelors a show now. You know "bachelors cost less" and they don't take up so much room, neither in the Commission houses nor in your valuable newspaper.

It has been a long time since I've read such an article supposed to be written by a "transmuted" bachelor who hints that he is capable of assuming "great responsibilities," and is endowed with that stuff called "force of character," and then writes the narrowest article about bachelors (who have been much talked about lately by one or two of the "transmuted"), that I have ever read.

But with all your talk "Antonio" I have observed three things, *i. e.*, bachelors don't write things about "transmuted" people, nor they don't liken themselves unto a lump of gold, but they do dig dirt and "that's all."

CIGARO CIGARILLO.

Empire, C. Z., February 12, 1909.

COMMISSARY DEPARTMENT.

The hours during which commissaries are open are as follows:

Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.

All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

COMMISSARY PRICES

For week beginning February 16:

FRESH MEATS.

	Price.
Mutton—Stewing.....	per lb 7
Shoulder, neck trimmed off, (4 pounds and over).....	per lb 10
Entire forequarter (not trim- med), 10 pounds and over.....	per lb 9
Leg (8 to 10 pounds).....	per lb 19
Steak.....	per lb 20
Short-cut chops.....	per lb 22
Lamb—Stewing.....	per lb 7
Entire forequarter, neck trimmed off.....	per lb 10
Leg (6 to 8 pounds).....	per lb 29
Chops.....	per lb 27
Cutlets.....	per lb 26
Pork—Cuts.....	per lb 20
Beef—Bones for soup.....	per lb 3
Suet.....	per lb 4
Soup.....	per lb 7
Stew.....	per lb 11
Corried.....	per lb 14
Pot roast (from sirloin butt).....	per lb 16
Rib-roast, second cut (not under 3 pounds).....	per lb 18
Rib-roast, first cut (not under 3 pounds).....	per lb 20
Rib-roast short cut (not under 3½ pounds).....	per lb 23
Sirloin roast.....	per lb 27
Rump roast.....	per lb 27
Porterhouse roast.....	per lb 27
Steak, round.....	per lb 20
Rib.....	per lb 24
Sirloin.....	per lb 27
Porterhouse.....	per lb 27
Rump.....	per lb 27
Tenderloin.....	per lb 30

MISCELLANEOUS.

Livers—Beef.....	per lb 11½
Calif.....	each 65
Sausage—Pork.....	per lb 17
Bologna.....	per lb 17
Frankfurter.....	per lb 17
Leberwurst.....	per lb 17
Sweet bread—Veal.....	each 1.20
Sweet bread—Beef.....	per lb 30
Ox tongues.....	each 1.00
Pigs' feet, pickled.....	per lb 14
Tongues, pickled.....	per lb 16
Eggs, fresh.....	dozen 38
Oysters, ½-gallon kegs.....	keg 50

POULTRY AND GAME.

Chickens—Fancy Roasting.....	1.15 and 1.35
Fowls.....	each 75, 90, 1.00
Ducks, fatted.....	each 1.22
Broilers.....	each 75
Furkeys.....	per lb 28
Squabs.....	each 45
Capon.....	each 2.40

CURED AND PICKLED MEATS.

Baron—Breakfast, whole piece.....	per lb 23
Breakfast, sliced.....	per lb \$26
Ham—Sugar cured, sliced.....	per lb \$28
One half, for boiling.....	per lb \$21
Hocks.....	per lb 8
Sugar cured.....	per lb 20
Beef salt family.....	per lb 16
Salt pork.....	per lb 13

DAIRY PRODUCTS.

Butter—Prints, fine quality.....	per lb 45
Cheese—Roquefort.....	per lb 45
Philadelphia Cream.....	each 22
Young America.....	per lb 22
Swiss.....	per lb 31
Edam.....	each 1.05
Camembert.....	per lb 28
Neufchatel.....	each 6
Gouda.....	per lb 34
Parmesan.....	bottle 20

French cheese in tins—Camembert, Roquefort, Brie, Neufchatel..... Price.

fort, Brie, Neufchatel.....	tin 2½
Milk, Briarcliffe.....	quart 25

VEGETABLES AND FRUITS

Parsnips.....	per lb 7
Lettuce.....	per lb 15
Celery.....	head 10
White potatoes.....	per lb 3½
Cabbage.....	per lb 5
Onions.....	per lb 4
Yams.....	per lb 3½
Turnips.....	per lb 3½
Carrots.....	per lb 4
Radishes.....	bunch 2½
Beets.....	per lb 5
Lemons.....	per dozen 2½
Oranges.....	per dozen 12
Grapefruit.....	each 3½
Apples.....	per lb 7
Pineapples.....	each 15

§ Sold only from cold-storage and not from Commissaries.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight, February 13, 1909:

	STATIONS					
	Vigia	Alhauela.	Gamboa.	Bohio	Gatun (Canal)	C. Tuu (W. Diver n
Height of low water above mean sea level feet.	129	92	46	1	0	0
Maximum height above low water, feet:						
Sunday, Feb. 7.....	1.20	2.10	3.00	4.70	2.20	1.70
Monday, Feb. 8.....	1.00	1.90	2.80	4.30	1.90	1.50
Tuesday, Feb. 9.....	1.00	1.90	2.70	4.30	1.60	1.30
Wednesday, Feb. 10.....	1.00	1.90	2.70	3.90	1.60	1.20
Thursday, Feb. 11.....	1.00	1.90	2.60	4.10	1.60	1.40
Friday, Feb. 12.....	3.60	3.70	5.20	6.00	1.70	1.40
Saturday, Feb. 13.....	1.10	2.00	2.40	5.90	2.00	1.80

Rainfall, February 1 to 13, 1909, Inclusive (MIDNIGHT TO MIDNIGHT)

Stations	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	.61	1.40
Brazos Brook.....	.85	2.35
Gatun.....	.59	1.37
Bohio.....	1.13	2.20
<i>Central Division—</i>		
Tabernilla.....	.59	1.24
San Pablo.....	.30	.55
Bas Obispo.....	2.27	3.03
Gamboa.....	1.60	2.43
Empire.....	.22	.48
Camacho.....	.19	.47
Culebra.....	.19	.44
<i>Pacific Division—</i>		
Rio Grande.....	16	.37
Pedro Miguel.....	20	.20
La Boca.....	.55	.57
Ancon.....	.52	.55
<i>Atlantic Coast—</i>		
Porto Bello, (to midnight Feb. 12)	1.78	2.98
<i>Upper Chagres</i>		
El Vigia.....	1.85	2.34
Alhauela.....	1.49	1.72

Misdirected Letters.

Division of Posts, Customs and Revenues
Ancon C. Z., February 17, 1909
The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be secured on request of addresser:

Bromer, Fred	Johnson, Mason W.
Christoferson, Nikolai	Johnson, Jul
Cox, John	Lamarcha, Cecil
Curran, James S.	Meyerswitz, Mrs. Fannie
Dalrymple, W. H.	Smith, Denton H.
Donnelly, E. A.	Smith, H. A.
Fulipano, Emilia	Squires, Geo. B.
Garvey, Joseph	Stamer, Jack
Golden, John A.	Walker, John A.
Gore, W. T.	Willett, S.
Williams, Jno H.	

J. W. Holland of Culebra, will deliver an address on "Singular Life" at the Methodist Episcopal church, Panama, on February 23, at 8 p. m.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Allianca.....	P. R. R. Saturday	Feb. 13
Prinz Joachim.....	H. A. Saturday	Feb. 13
Colon.....	P. R. R. Friday	Feb. 19
Atrato.....	R.-M. Saturday	Feb. 20
Panama.....	P. R. R. Thursday	Feb. 25
Prinz Aug. Wilhelm.....	H. A. Saturday	Feb. 27
Trent.....	R.-M. Saturday	Mar. 6

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Advance.....	P. R. R. Friday	Feb. 19
Trent.....	R.-M. Tuesday	Feb. 23
Allianca.....	P. R. R. Thursday	Feb. 25
Prinz Joachim.....	H. A. Tuesday	Mar. 2
Tagus.....	R.-M. Tuesday	Mar. 9
Prinz Aug. Wilhelm.....	H. A. Tuesday	Mar. 16

NEW ORLEANS TO COLON.

Parismina.....	U. F. C. Saturday	Feb. 13
Heredia.....	U. F. C. Saturday	Feb. 20
Ellis.....	U. F. C. Saturday	Feb. 27
Parismina.....	U. F. C. Saturday	Mar. 6
Heredia.....	U. F. C. Saturday	Mar. 13
Ellis.....	U. F. C. Saturday	Mar. 20

COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Tuesday	Feb. 23
Heredia.....	U. F. C. Tuesday	Mar. 2
Ellis.....	U. F. C. Tuesday	Mar. 9
Parismina.....	U. F. C. Tuesday	Mar. 16
Heredia.....	U. F. C. Tuesday	Mar. 23
Ellis.....	U. F. C. Tuesday	Mar. 30

COLON TO BARBADOS, CALLING AT TRINIDAD.

Atrato.....	R.-M. Tuesday	Mar. 2
Trent.....	R.-M. Tuesday	Mar. 16

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Generale Trans atlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line for New Orleans via Kingston, Ja., will be as follows: Steamship *Mercian* about February 23; steamship *American* about March 6.

Concert by the I. C. C. Band.

CRISTOBAL, C. Z.

Wednesday, February 24, 1909, at 8.15 p. m.

PROGRAM

1 March—Our Director.....	Bigelow
2 Selection—A Knight for a Day.....	Hubbell
3 Waltz—Moonlight on the Hudson.....	Tohani
Requested.	
{ a Intermezzo—Rainbow.....	Wenrich
{ b Southern novelty—Moonlight in Dixie.....	Clement
5 Marche—The Dawn of Love.....	Bendix
6 Selection—Chimes of Normandy.....	Planquette
7 Descriptive—The Forge in the Forest.....	Michaelis
Adagio, Night; Adagio lento, Morning; Allegro, vivace, By the Brook; Adagio, Morning Prayer; Allegretto, At Work at the Forge.	
8 Overture—Raymond.....	Thomas
9 Patrol—American.....	Maccham
Requested.	
10 March—Col. Esty.....	Bagley

CHAS. E. JENNINGS, Musical Director.

The next concert will be given at Taboga, Sunday, February 28.

Entertainments at Ancon.

Prof. J. J. Lowe will give a moving picture entertainment entitled the "Life and Passion of Christ" at Ancon Chapel on Thursday evening, February 18, and Dr. L. W. Munhall will deliver his lecture on The Book of Books on Friday evening, February 19, in the same chapel. Admission free.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

New Dock at Cristobal.

Commissioner Rousseau, S. B. Williamson, and Major Jadwin, conferred with General Manager Slifer, Chief Engineer Budd, and Superintendent Smith of the Panama Railroad on February 19, with regard to the extension of dock No. 11 at Cristobal, to be known as dock No. 12. The borings show that a suitable foundation exists along the line of the old French canal between dock No. 14, at Mount Hope and dock 11, and this will be the location of the new dock. No decision was reached as to the type of dock, that is, whether the tracks will run longitudinally with the line of the dock, the same as on the La Boca wharf and dock No. 11 at Cristobal, or at right angles, as on dock No. 4 in Colon, but it is believed that the latter form will be adopted. The method of construction, that is, the engineering problems, and the manner of construction, whether by day labor or by contract, were also considered, but no decision was reached.

Chairman's Monthly Report.

The report of the Acting Chairman of the Isthmian Canal Commission for the month of January is published in other columns of this issue of THE CANAL RECORD. The grand total of excavation for the month was 2,924,551 cubic yards, of which 1,803,997 cubic yards were removed by steam shovels, 1,108,677 cubic yards by dredges, and 11,877 cubic yards by hand excavation.

Pile driving for the docks at the handling plant at Gatun was practically completed during the month, and other work in connection with the handling plant is advancing steadily. During the month two duplex tail towers for the handling plant were erected on the west cableway dock, and four lock duplex head towers were erected, up to the level of the operating platform, and the erection of the first duplex lock tail

tower was started. The dredge *Mindi* excavated 35,000 cubic yards from the channel to the cableway docks. At Gatun Dam 119,559 cubic yards of material were placed in the north and south toes. The mixing and handling plant for concrete for the spillway was practically completed at the close of the month.

The average daily number of laborers employed on actual Canal construction was 14,078. There were 327.15 tons of explosives used, and 398,710 feet, or 75½ miles, of rock drilling were accomplished.

The total revenues of the Canal Zone collected during the month amounted to \$52,444.63. The general revenues amounted to \$44,595.40, as compared with \$14,990.74 in December. Of the amount collected in January, \$34,800 was for licenses for the sale of liquor at retail.

The amount of water consumed in the city of Panama in January amounted to 27,524,000 gallons, and in the city of Colon 22,388,488 gallons.

Oil Burning Locomotives.

Six of the twelve new locomotives recently purchased by the Panama Railroad Company have arrived on the Isthmus, and the other six will come in two consignments, on ships due to arrive this month. These are the locomotives that are to use oil as fuel, and to this end they have been equipped with combination oil and water tanks, the oil capacity being 2,300 gallons and the water 5,000 gallons. The oil tanks can be taken from the tenders and the space they occupy can be used as coal bins in case it is ever desirable or necessary to use the locomotives as coal burners. The coal capacity is ten tons. The oil burners are of the Booth pattern, and they can be removed readily and replaced by grates at any time it becomes necessary to use coal. The locomotives are of the simple mogul type, cylinders 20 by 26 inches, tractive power, 26,000 pounds; steam pressure in boilers, 200 pounds to the square inch; drivers, 63 inches in diameter. They have the latest Westinghouse air brake equipment automatic couplers, and Cardwell draft gear. The first of them will leave the Cristobal shops this week, and all six of those now under erection will be in service within a month. When the twelve are put in service the twelve 100-class engines now in use will be retired to yard use, or will be equipped as oil burners. A 50,000-gallon oil tank will be erected at Cristobal to supply oil to the locomotives.

Safety Appliances on Panama Railroad.

In order to comply with the provisions of the safety appliances law and the order of the President published in THE CANAL RECORD of January 27, 1909, the Panama

Railroad Company has placed orders for equipment and supplies needed to bring all its engines and cars up to the requirements before July 1. Most of the equipment on the road already meets the requirements of the law.

Rapid Work by Steam Shovels.

Fourteen shovels in the Empire District, Central Division, on February 17, 1909, excavated 22,286 cubic yards of material in a working day of eight hours, an average of 1,592 cubic yards per shovel for the day. The shovels were under steam a total of 112 hours and were actually digging 79 hours and 30 minutes. The time not spent in digging is accounted for as follows: Cleaning track, 1 hour and 25 minutes; waiting for cars, 23 hours and 10 minutes; mining, 1 hour and 55 minutes; cleaning dipper, 1 hour and 45 minutes; repairing shovel, 3 hours and 25 minutes; coaling shovel, 30 minutes; sliding, 20 minutes.

On Thursday, February 18, 1909, seven shovels in the Tabernilla Construction District, Central Division, during eight working hours, excavated 11,450 cubic yards of material, an average of 1,636 cubic yards per shovel for the day. The shovels were under steam 56 shovel-hours and were actually digging 48 hours and 5 minutes of this time.

Horses and Mules.

An order has been placed in the United States for fifty mules to take the place of mules condemned as unsuitable for service and to meet the increased demand for animal transportation in road building and other construction work. A consignment of forty-five mules arrived in January. Nearly half of the mules now in the service were purchased prior to September, 1905, and have therefore put in over three years of work. A consignment of twenty horses also arrived in January. Both the horses and mules were carefully inspected on their arrival and were found to be of unusually high grade. A statement of the horses and mules purchased since the beginning of the work follows:

Date of Purchase.	Number.	Price paid.
March, 1905.....	2 horses,	Each \$154.00
June, 1905.....	4 horses,	Pair 600.00
July, 1905.....	6 horses,	Each 219.15
April, 1906.....	20 horses,	Each 145.00
April 1906.....	6 horses,	Each 160.00
August, 1906.....	9 horses,	Each 275.00
October, 1906.....	2 horses,	Each 250.00
October, 1906.....	10 horses,	Each 150.00
January, 1908.....	13 horses,	Each 250.00
March, 1908.....	3 horses,	Each 210.00
January, 1909.....	20 horses,	Each 109.00
December, 1904.....	10 mules,	Each 175.00
March, 1905.....	28 mules,	Each 178.50
June, 1905.....	70 mules,	Each 178.50
July, 1905.....	50 mules,	Each 174.00
September, 1905.....	120 mules,	Each 188.50
April, 1906.....	50 mules,	Each 169.50
October, 1906.....	50 mules,	Each 186.50
March, 1907.....	77 mules,	Each 189.50
January, 1909.....	45 mules,	Each 157.50

ESTIMATED COST OF CANAL.

Summary of Items Entering Into the Estimates Made in the Year 1906 and in the Year 1908.

Supplementing the comparative statement of the amount of work necessary to complete the Panama Canal from the time the Americans took control on May 4, 1904, as estimated by the Board of Consulting Engineers in 1906, and by the Isthmian Canal Commission in December, 1908, and published in THE CANAL RECORD of February 17, 1909, a statement of the cost as estimated by the Board and by the Commission is given below. This statement is a general summary. An itemized statement giving the differences in the estimated amount of work and the estimated cost in the Central Division is published in this issue, and similar statements for other parts of the work will be published in forthcoming issues of THE CANAL RECORD.

The cost of an 85-foot-level lock canal as contemplated by the Minority of the Board of Consulting Engineers in 1906, was estimated—Construction, \$116,421,000, plus 20 per cent for administration, etc., \$23,284,200; total, \$139,705,200.

The cost of the Canal as estimated by the Commission in December, 1908, was—Construction \$213,671,000, general items, corresponding to the 20 per cent for administration, etc., \$84,095,000; total, \$297,766,000. Neither of these estimates includes the expenses of Canal Zone government, or of sanitation, or the \$40,000,000 paid the French Canal Company, or the \$10,000,000 paid to the Republic of Panama.

Comparing the two estimates it is seen that the cost of construction is \$97,250,000, or about 53 per cent greater in the Commission's estimate, and that the cost of administration, etc., is \$60,810,800, or 261 per cent greater.

The 83 per cent increase in the cost of construction comprises an increase of over 50 per cent in the amount of work to be done, an increase of about 20 per cent in the cost of excavation, and a general increase in the cost of labor. The 50 per cent increase in work is explained in the comparison of the estimated amounts of work, as published in THE CANAL RECORD of February 17, 1909, and as it appears in detail for the Central Division in this issue, and will appear for other parts of the work in future issues. This is due chiefly to changes in the locks, greater minimum width of channel, and the change in the location of the Pacific locks from La Boca to Miraflores. In making its estimate, the Board was obliged to adopt typical sections for the prism of the Canal with certain standard slopes for silt, earth and rock. It has since been found by experience that in many places flatter slopes, and consequently larger quantities, are necessary.

The cost of excavation as estimated by the Board was a little less than 60 cents per cubic yard, while that estimated by the Commission in December, 1908, was 72 cents; an increase of about 20 per cent. The estimate of the Board was based upon a ten hour day, whereas the work is being done on the basis of an eight hour day. There has been a large increase in the base pay of employes of almost every grade, the rate of pay since the Board estimate was made has greatly increased, and increase of pay on account of continued service has been granted to a large proportion of the gold employes.

ESTIMATE OF BOARD OF CONSULTING ENGINEERS, 1906.

Atlantic Division	\$35,445,000
Central Division	48,867,000
Pacific Division	28,109,000
New Panama Railroad	3,700,000
Land damages	300,000
	<u>\$116,421,000</u>

20 per cent for Administration, Engineering and Contingencies, but not including interest during construction, sanitation and expenses of Zone Government..... 23,284,200

Minority's estimate of cost of Canal, exclusive of interest during construction, sanitation and expenses of Zone Government.... \$139,705,200

ESTIMATE OF ISTHMIAN CANAL COMMISSION, DECEMBER, 1908, FOR ITEMS INCLUDED IN ESTIMATE OF BOARD OF CONSULTING ENGINEERS.

Atlantic Division	\$68,564,000
Central Division	88,458,000
Pacific Division	47,985,000
New Panama Railroad	8,164,000
Land damages	500,000
	<u>\$213,671,000</u>

General items corresponding to 20 per cent for Administration, etc., of Minority's estimate:

Lighthouses, buoys and beacons	\$500,000
Roads, waterworks, sewers, etc., termed Municipal Improvements (as per itemized statement).....	12,114,000
Constructing and repairing buildings for the Department of Construction and Engineering (as per itemized statement)	14,651,000
Double tracking Panama Railroad	1,200,000
Purchase of steamers Panama and Colon (leased to Panama Railroad).....	1,300,000
Purchase of steamers Tremont and Shawmut	1,550,000
Docks and wharves leased to Panama Railroad Company	500,000
Purchase of land not flooded by Gatun Lake.....	100,000

General expenses (as per itemized statement).....	23,730,000
Purchase of Panama Railroad stock.....	150,000
Contingencies, including fire and marine risks.....	20,000,000
Loans to Panama Railroad (as per itemized statement)	8,300,000
	<u>\$1,095,000</u>

Commission's estimate including items covered by estimate of Board of Consulting Engineers

ESTIMATE OF ISTHMIAN CANAL COMMISSION, DECEMBER, 1908, FOR WORK NOT INCLUDED IN ESTIMATE OF BOARD OF CONSULTING ENGINEERS.

<i>Sanitation:</i>	
Expenditures to October 1, 1908.....	\$7,553,000
Estimate after October 1, 1908: 6¼ years, at \$2,000,000....	12,500,000
	<u>\$20,053,000</u>

<i>Civil Administration:</i>	
Expenditures to October 1, 1908.....	\$2,382,000
Estimate after October 1, 1908: 6¼ years, at \$800,000....	5,000,000
	<u>7,382,000</u>

Grand total..... \$27,435,000

<i>Payments for Franchises, as authorized by the Spooner Act of June 28, 1902:</i>	
Amount paid to New French Canal Company.....	\$40,000,000
Amount paid to Republic of Panama.....	10,000,000
	<u>\$50,000,000</u>

ESTIMATE OF REIMBURSEMENTS TO THE UNITED STATES TREASURY NOT INCLUDING ALLOWANCE FOR SALVAGE FROM PLANT UPON COMPLETION OF THE WORK.

Municipal Improvements—Cities of Panama and Colon.....	\$3,700,000
Loans to Panama Railroad Company.....	8,300,000
Miscellaneous receipts returned to the United States Treasury, not credited to appropriations for the Canal.....	3,000,000
	<u>\$15,000,000</u>

COMPARATIVE ESTIMATES OF COST OF WORK FOR CENTRAL DIVISION, 1906 AND 1908.

The Central Division includes the territory between the south end of Gatun Dam and the locks at Pedro Miguel. In this territory the Canal will run through Gatun Lake and Culebra Cut. The estimates for the Atlantic and Pacific Divisions will be published in the issues of March 3 and March 10, respectively, and for other parts of the work in the issue of March 17

ESTIMATE OF BOARD OF CONSULTING ENGINEERS, 1906.

<i>Channel from Gatun Locks to Mile 30.6:</i>	
(15.42 miles, 1,000 feet wide; 3.5 miles, 800 feet wide; 3.6 miles, 500 feet wide.)	
Excavation—Earth, dry, 600,000 cubic yards, at 40 cents per yard.....	\$240,000
Indurated clay (rock) 1,130,000 cubic yards, at 70 cts. per yd.	91,000
Rock in the dry, 1,160,000 cubic yards, at \$1.15 per yard.....	1,334,000
Dredging, 12,960,000 cubic yards, at 25 cents per yard.....	3,240,000
	<u>\$4,905,000</u>

Cutting trees in Gatun Lake..... 100,000

Total excavation, 14,850,000 cubic yards, at 33.7 cents per yard.... \$5,005,000

Mile 30.6 near Bas Obispo to Mile 39.0, Pedro Miguel Locks:

(0.65 miles, 500ft. wide; 3.05 miles, 300 ft. wide; 4.7 miles, 200 ft. wide.)	
Excavation—Dry, 53,765,000 cubic yards, at 80 cents per yard, \$43,012,000	
Allowance for diversion channels between Bas Obispo and Pedro Miguel.....	850,000
	<u>43,862,000</u>

Total, Central Division, 68,615,000 cubic yards, at 71.2 cts. per yd., \$48,867,000

ESTIMATE OF ISTHMIAN CANAL COMMISSION, DECEMBER, 1908.

<i>Channel from Gatun Locks to Mile 30.6:</i>	
(15.42 miles, 1,000 feet wide; 3.0 miles, 800 feet wide; 0.50 miles, 700 feet wide; 3.6 miles, 500 feet wide.)	
Excavation—Earth and rock, dry, 7,752,198 cubic yds., at 90 cts. per yd.	\$6,977,000
Earth, dredging, 4,000,000 cubic yards, at 25 cts. per yd.	1,000,000
	<u>\$7,977,000</u>

<i>Mile 30.6 near Bas Obispo to Mile 39.0, Pedro Miguel Locks:</i>	
(0.65 miles, 500 feet wide; 7.75 miles, 300 feet wide.)	
Excavation—Dry, 78,042,295 cubic yards, at 98 cts. per yard.....	\$76,481,000
Concrete, 400,000 cubic yards, at \$10 per yard.....	4,000,000
	<u>\$80,481,000</u>

Total, Central Division..... \$88,458,000

Total excavation, 89,794,493 cubic yards, at 94 cents per yard..... \$84,458,000
Concrete, 400,000 cubic yards, at \$10 per yard..... 4,000,000

The present estimate is greater than that of the Minority—		
By reason of increase in quantity, 21,179,493 cubic yards, at 94 cents per yard.....	\$19,921,000	
By reason of increase in unit prices, 68,615,000 cubic yards, at 24.1 cents per yard.....	16,520,000	
		<u>\$36,441,000</u>
By reason of concrete revetment 400,000 cubic yards at \$10 per yard.....		4,000,000
		<u>\$40,441,000</u>
Less lump sum for diversions in Minority estimate		850,000
		<u>\$39,591,000</u>

In the Minority estimate the cost of concrete revetment was included in the 20 per cent allowance for administration, contingencies, etc. Of the increased yardage 15,000,000 cubic yards are due to widening Canal from 200 feet to 300 feet for 4.70 miles.

LIST OF EMPLOYEES WHO ARE ENTITLED TO CANAL MEDALS.

The publication of names of employes of the Isthmian Canal Commission and Panama Railroad Company who are entitled to receive Canal Medals, which was begun in THE CANAL RECORD of February 10, is continued in this issue. The names thus far published are those of employes of the Isthmian Canal Commission. When all these have been given the names of employes of the Panama Railroad Company will follow. Address communications relating to corrections in Medal list to Assistant to the Chairman, Culebra, C. Z.

Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.
1905.									
Williams, William L.	Sept. 23	Kershaw, James H.	Nov. 13	Galimat, Frank D.	Jan. 1	Kunze, Oren H.	Feb. 15	Mealer, William O.	Apr. 1
Butz, Leonard.	Sept. 23	MacDonald, Dessa V.	Nov. 13	Gleeson, Louis B.	Jan. 1	Paris, Philip.	Feb. 15	Brown, Perry F.	Apr. 1
McRobert, William J.	Sept. 28	Orenstein, Alexander J.	Nov. 13	Simmons, Frederic R.	Feb. 15	Thompson, Thomas C.	Feb. 15	Whitney, George M.	Apr. 3
Bates, James P.	Sept. 30	Richardson, Mary H.	Nov. 13	Jenkins, James M.	Jan. 1	Whitaker, Ellis J.	Feb. 15	Groves, Richard B.	Apr. 6
Bryan, Clarence L.	Sept. 30	Roper, Mary J.	Nov. 13	Morris, David R.	Jan. 1	Smith, John W.	Feb. 20	Dunn, John H.	Apr. 8
Fitzke, Henry C.	Sept. 30	White, Louis R.	Nov. 13	Russell, William G.	Jan. 1	Hayden, Charles W.	Feb. 21	Reeder, Dennis F.	Apr. 8
Hunt, Maud H. B.	Sept. 30	Black, Wellington K.	Nov. 21	Smith, Norman H.	Jan. 1	Hurst, Ira.	Feb. 21	Dew, Harvey C.	Apr. 10
Otis, Harry W.	Sept. 30	Carlson, Clarence O.	Nov. 21	Thompson, Charles G.	Jan. 2	Kuller, Benjamin F.	Feb. 21	Dickey, Arthur M.	Apr. 10
Pender, Walter I.	Sept. 30	Conrod, Moise.	Nov. 21	Kyte, Margaret E.	Jan. 2	Stoddard, Charles.	Feb. 21	Field, Harry G.	Apr. 10
Ross, Stanley S.	Sept. 30	Davis, Frank F.	Nov. 21	Foley, Jeremiah R.	Jan. 4	Martin, William M.	Apr. 10	McLean, Andrew L.	Apr. 10
Segall, John I.	Sept. 30	Fechtig, Edward M.	Nov. 21	Perria, James H. E.	Jan. 5	Nolan, Michael C.	Apr. 10	Peterson, William B.	Apr. 10
Sheridan, Patrick I.	Sept. 30	Glaser, Albert.	Nov. 21	Russell, Charles B.	Jan. 5	Smith, Charles L.	Apr. 10	Steffan, Jr., Eugene.	Apr. 10
Sisson, Benjamin F.	Sept. 30	Green, Marsh C.	Nov. 21	Andrews, Isaac H.	Jan. 6	Wurdemann, Herman.	Apr. 10	Lewis, Fitz J.	Apr. 18
Sonnenman, Otto F.	Sept. 30	Hammond, Edward D.	Nov. 21	Dyer, May.	Jan. 6	Hart, Henry A.	Apr. 12	Blake, Arthur O.	Apr. 16
Taylor, Bruce.	Sept. 30	Higgins, Charles I.	Nov. 21	Franklin, Charles.	Jan. 6	Burnett, George G.	Apr. 16	Russell, Minna A.	Apr. 16
Russell, Harold C.	Oct. 3	Huzins, Herman K.	Nov. 21	Huff, Fred L.	Jan. 6	Watson, George W.	Apr. 18	Feurtado, Joseph P.	Apr. 20
Sims, Eli.	Oct. 3	Little, Joseph.	Nov. 21	MacNair, Athol C.	Jan. 6	Albrecht, John E.	Apr. 21	Carrigan, Thomas.	Apr. 21
Hooper, Lee.	Oct. 4	Malia, John T.	Nov. 21	Stacey, Patrick H.	Jan. 6	Hubbert, Tilghman C.	Apr. 21	Lucas, Charles K.	Apr. 21
Gabel, Edwin C.	Oct. 9	McMahon, John C.	Nov. 21	Small, William H.	Jan. 7	Mahoney, Patrick J.	Apr. 21	Reed, Edward I.	Apr. 21
Bailey, Ethel E.	Oct. 10	McMeets, Laumbert G.	Nov. 21	Robinson, E. M.	Jan. 10	Rideout, Orland J.	Apr. 21	Sergeant, William R.	Apr. 21
Caldwell, S. Hutson.	Oct. 10	Tubby, Walter G.	Nov. 21	Betschler, Jacob.	Jan. 13	Siggis, Michael.	Apr. 21	Underwood, Joseph W.	Apr. 21
Carter, Arthur E.	Oct. 10	Turner, George H.	Nov. 21	Corliss, Edwin M.	Jan. 13	Wilson, Charles M.	Apr. 21	Ocun, Isaac.	Apr. 25
Chisholm, Charles R.	Oct. 10	Williams, Edward J.	Nov. 21	Eighme, Harvey D.	Jan. 13	Billingslea, Loy E.	Apr. 26	Cartwright, Charles H.	Apr. 26
Close, Joseph A.	Oct. 10	Wright, Frank P.	Nov. 21	Gallagher, Harry J.	Jan. 13	Conner, Frank W.	Apr. 26	Getz, Albert C.	Apr. 26
Elliott, Ira I.	Oct. 10	De Grummond, Raymond.	Nov. 25	Heinrich, Amandus.	Jan. 13	Grant, Ward E.	Apr. 26	Janson, John.	Apr. 26
Ferber, Louise A.	Oct. 10	Brownell, Oscar L.	Nov. 26	Howard, Robert C.	Jan. 13	Krueger, Charles J.	Apr. 26	MacIntyre, William C.	Apr. 26
Fowler, Jay W.	Oct. 10	Christiansen, John.	Nov. 26	King, Jr., Preston.	Jan. 13	MacPherson, Carrie I.	Apr. 26	Madden, Garfield E.	Apr. 26
Green, William H.	Oct. 10	Conover, Howard H.	Nov. 26	McCauley, Daniel J.	Jan. 13	Perrott, George T.	Apr. 26	Shuck, Frank E.	Apr. 26
Houston, J. Frank.	Oct. 10	Crawdock, John D.	Nov. 26	McCormack, William T.	Jan. 13	Bowen, Henry.	May 1	Clark, Lee C.	May 1
Love, J. Percy.	Oct. 10	Craddock, John.	Nov. 26	Schwartz, Max.	Jan. 13	Davis, Clarence J.	May 1	Inman, Donald B.	May 1
Machler, Francis P.	Oct. 10	Culbertson, Willoughby.	Nov. 26	Stewart, Charles.	Jan. 13	Muller, Henry.	May 1	Richards, Gottlieb F.	May 1
Metcalf, Christopher C.	Oct. 10	Kantor, Edward O.	Nov. 26	Taylor, Robert H.	Jan. 13	Van Fleet, Minnie.	May 2	Broderick, Timothy J.	May 4
Sims, William E.	Oct. 10	Kelty, Charles O.	Nov. 26	Staats, John.	Jan. 16	Chandler, Earl H.	May 4	Fanning, Howard C. B.	May 4
Smith, Emily C.	Oct. 10	Mansfield, Julius S.	Nov. 26	Holleman, Marshall S.	Jan. 19	Leftwich, Clem S.	May 4	Woodman, Charles L.	May 4
Smith, Reynolds B.	Oct. 10	Matis, Charles.	Nov. 26	Albin, Walter.	Jan. 20	Ekedahl, Olaf.	May 5	Cottrell, Richard.	May 7
Storm, Willi H.	Oct. 10	McCain, Orville E.	Nov. 26	Carnott, William.	Jan. 20	Clark, Lee C.	May 1	Sheibley, Firmer H.	May 7
Weems, Mandville A.	Oct. 11	McElroy, Hiram.	Nov. 26	Dunfer, Russell D.	Jan. 20	Davis, Clarence J.	May 1	Smith, Alfred.	May 7
Berger, Albert.	Oct. 14	Morgan, Stanley D.	Nov. 26	Duffey, Charles.	Jan. 20	Keeler, Thomas I.	Mar. 17	Steinbaugh, Howard H.	May 7
Braden, Robert J.	Oct. 14	Speight, Thomas E.	Nov. 26	Jerry, Edward N.	Jan. 20	Robertson, Alfred.	Mar. 17	Turner, Robert L.	May 7
Caldwell, Bert W.	Oct. 14	Stratton, David V.	Nov. 26	Johnson, Nelson R.	Jan. 20	Viberg, George L.	Mar. 17	Campbell, George.	May 10
Curtis, Karl P.	Oct. 14	Van Dusen, Herman T.	Nov. 26	Rabbitt, David F.	Jan. 20	Zeliensky, Louis.	Mar. 17	Egan, Mark E.	May 10
Lincoln, Sr., Lucius F.	Oct. 14	Williams, James O.	Nov. 26	Bryan, John H.	Jan. 22	Gilmore, John E.	Mar. 17	Warren, Daniel S.	May 10
Morse, William H.	Oct. 14	Cooper, John B.	Nov. 27	Canfield, Herman.	Jan. 22	Keeler, Thomas I.	Mar. 17	Barnes, Jay R.	May 11
Eno, Harry.	Oct. 15	Lavery, Matthew.	Nov. 27	Herz, Simon.	Jan. 22	Kennedy, Edward J.	Mar. 17	Cooper, John C.	May 11
Wise, James I.	Oct. 16	McGimsey, James V.	Nov. 27	Miles, Lloyd E.	Jan. 22	Robertson, Alfred.	Mar. 17	Dorsey, William.	May 11
Holliday, Mary.	Oct. 21	Roper, Cecil T.	Nov. 27	Surles, Clarence O.	Jan. 22	Viberg, George L.	Mar. 17	Dozier, William T.	May 11
Adams, Roger H.	Oct. 22	Austin, Louis D.	Dec. 2	McGuigan, Joseph J.	Jan. 23	Zeliensky, Louis.	Mar. 17	Edmonson, Alonzo.	May 11
Dewling, Andrew W.	Oct. 23	Bozeman, Walter J.	Dec. 2	Hammond, Robert S.	Jan. 24	Launster, Edward J.	Mar. 20	Irwin, Mary B.	May 11
Gibson, John K.	Oct. 23	Brown, Charles M.	Dec. 2	Luedtke, Charles L.	Jan. 25	Biggle, Harry E.	Mar. 22	Jennings, Samuel W.	May 11
Henshaw, William P.	Oct. 23	Fitzpatrick, Edward D.	Dec. 2	Berry, George G.	Jan. 26	Burton, Stephen F.	Mar. 22	Lacy, Abner B.	May 11
Russell, Christine R.	Oct. 23	Hanagan, Thomas.	Dec. 2	Davis, Owen M.	Jan. 26	Caswell, Charles A.	Mar. 22	Lewis, John F.	May 11
Shontz, George M.	Oct. 23	Flanzer, Elmo M.	Dec. 2	Gallagher, Edward L.	Jan. 26	Freeman, Sam D.	Mar. 22	Lipssett, Gordon L.	May 11
Stevens, Juliet N.	Oct. 23	Garland, Henry V.	Dec. 2	Gruver, Fleetwood.	Jan. 26	Henderson, William.	Mar. 22	Majors, John I.	May 11
Woodsum, D. M.	Oct. 23	Gebhardt, John H.	Dec. 2	Wheeler, Charles P.	Jan. 26	Hofmann, Otto W.	Mar. 22	McCoy, William M.	May 11
Storla, John L.	Oct. 24	Gerow, William.	Dec. 2	Claus, William.	Jan. 26	Pike, Nelson S.	Mar. 22	McRaven, Robert B.	May 11
Brewer, L. Augustus.	Oct. 25	Kemney, Peter J.	Dec. 2	McAllister, Frank I.	Jan. 29	Tweed, Homer N.	Mar. 22	Montgomery, Henry.	May 11
Magnell, Andrew M.	Oct. 25	Laird, James.	Dec. 2	Mannoni, Lawrence.	Jan. 29	Kimball, Melvin J.	Mar. 23	Murphy, James W.	May 11
McLaughlin, William J.	Oct. 26	Rourke, Louis K.	Dec. 19	Rose, Charles.	Jan. 29	Clardy, Albert B.	Mar. 24	Polk, William F.	May 11
Powers, Joseph J.	Oct. 26	Scribner, Allen L.	Dec. 16	Akers, Ralph P.	Feb. 1	Doherty, Frank P.	Mar. 26	Roberts, Frank B.	May 11
Gallaher, Walter R.	Oct. 31	Woodsum, Walter C.	Dec. 16	Harris, Charles.	Feb. 1	Gibson, William C.	Mar. 26	Shanahan, John.	May 11
Goldenberg, Benjamin.	Oct. 31	Cunn, George E.	Dec. 18	Jones, Bennie W.	Feb. 1	Launster, Edward J.	Mar. 26	Swearinger, Lon B.	May 11
Gorham, George A.	Oct. 31	Parmelee, Edward H.	Dec. 18	Kimberly, William T.	Feb. 1	Hurley, Walter W.	Mar. 26	Taylor, Willoughby M.	May 11
shaw, James N.	Oct. 31	Daley, Thomas.	Dec. 20	Stevens, George H.	Feb. 1	McDonald, Patrick J.	Mar. 26	Walt, David V.	May 11
Shelov, John C.	Oct. 31	Bryant, Ed.	Dec. 23	Curzel, Peter S.	Feb. 5	Griffin, Charles E.	Mar. 26		
Williams, David.	Oct. 31	Campbell, George.	Dec. 24	Glenzinger, William M.	Feb. 5	Berry, James.	Mar. 31		
Porter, Carl B.	Nov. 1	Campen, George L.	Dec. 24	McCullough, Archie.	Feb. 5	Brady, Clyde.	Mar. 31		
Arnold, Frank A.	Nov. 2	Coleman, Robert.	Dec. 24	Redmayne, Robert C.	Feb. 5	Clark, Edward B.	Mar. 31		
Lynn, William J.	Nov. 6	Craswell, Robert J.	Dec. 24	Russell, David W.	Feb. 5	Linthwaite, Herbert B.	Mar. 31		
Strang, Frederick W.	Nov. 6	Dutrow, Howard V.	Dec. 24	Vandeburgh, C. L.	Feb. 5	Speary, Anna.	Mar. 31		
Beyer, Minnie F.	Nov. 7	Frazier, Jr., William H.	Dec. 24	Whitehead, Wilbur W.	Feb. 5	Maylor, William.	Mar. 31		
Cannon, Minnie J.	Nov. 7	Goldman, Isaac E.	Dec. 24	McKay, Frank J.	Feb. 6	Taylor, William.	Mar. 31		
Larson, Fred.	Nov. 7	Hider, Arthur S.	Dec. 24	Penny, Hugh H.	Feb. 8	McIntooth, A.	Apr. 1		
Norcross, Daniel E.	Nov. 7	Kinne, Hugh T.	Dec. 24	Walker, Lewin W.	Feb. 8				
Quimby, E. Frederick.	Nov. 7	Kirk, James.	Dec. 24	Boyle, Edward M.	Feb. 9				
Rose, Charles A.	Nov. 7	Leftwich, Robert B.	Dec. 24	Fisher, Allen D.	Feb. 9				
Spalding, Walter J.	Nov. 7	Pompeji, Guido B. F.	Dec. 24	Mayrs, James A.	Feb. 9				
Vandergrift, Luella.	Nov. 7	Richards, John R.	Dec. 24	Pennell, George B.	Feb. 9				
Williams, Harold P.	Nov. 7	Crowley, Daniel E.	Dec. 25	Poole, Bernell C.	Feb. 9				
Crabtree, George H.	Nov. 8	Holcomb, Benoni E.	Dec. 25	Roussner, William E.	Feb. 9				
Farber, Frank.	Nov. 9	Martin, James.	Dec. 25	Wood, Benjamin F.	Feb. 10				
Schoellkopf, Louis C.	Nov. 11	Sykes, Henry W.	Dec. 25	Carprow, James M.	Feb. 12				
Atwood, F. Stanley.	Nov. 12	Bowling, Madison.	Dec. 29	Bourcy, Stanislas L.	Feb. 13				
Becker, Emil.	Nov. 13	Hill, Urban L.	Dec. 29	McDerimid, Johnie.	Feb. 13				
Benedict, Harry L.	Nov. 13	Jones, Walter.	Dec. 29	Phillips, Charles E.	Feb. 14				
Du Jardin, John W.	Nov. 13	Keeling, James R.	Dec. 29	Brown, Peter B.	Feb. 15				
Gerlatch, Charles F.	Nov. 13	Sappington, Walter F.	Dec. 29	Daly, Charles C.	Feb. 15				
Hearue, Charles A.	Nov. 13	Whitaker, Henry.	Dec. 29	Hancock, Henry H.	Feb. 15				
				Huff, Mercer, B.	Feb. 15				

MR. TAFT ON CANAL WORK.

Two Speeches in New Orleans on His Return from the Isthmus.

FIRST SPEECH, FEBRUARY 11.

I am here on my way from a great constructive work, the greatest entered upon by any Nation during the present two centuries, and I am glad to say to you who perhaps are more interested in that work than any other part of the people of the United States, that the work is going on as you would have it to go on; that on the 1st of January, 1915, if not before, and I am very much interested in having it in the next four years, that Canal will be completed and you will see flowing down this river your great commerce, going on through those straits to the west coast of America, to the west coast of South America, to the Orient and Australia. The board of engineers that accompanied me have examined the whole work, and they say it is good; that it shall go on as it has gone on, and that the esprit de corps along the Isthmus, the organization and the American push that are there, commend themselves to them as men who understand great works and convince them that the Canal is now in immediate prospect.

SECOND SPEECH, FEBRUARY 12.

Now, I want to come to another matter, and that's a matter that we have gotten into a condition where work is being pushed and where we can look forward confidently to completion. I mean the Panama Canal. I am quite willing to concede to the State of Louisiana her patriotic desire to have that Canal completed, and also to concede that the treaty of 1903 made it possible to build the Canal, but I want to call your attention to one thing. It is said that the Lord looks after children and drunken men. Well, I think we ought to include the United States, too. The class is not as high in intelligence in the rest of the United States, but it is a very good class to be in, when the Lord is looking after it. If the Hay-Harmon Treaty of 1903 had been confirmed by the Colombian Senate, a failure to do which aroused our national indignation, we would not have been at all in the favorable position we are now to complete that Canal.

Because, under the Treaty with Panama we are entitled to exercise all the sovereignty and all the rights of sovereignty that we would exercise if we were sovereign, and Panama is excluded from exercising any rights to the contrary of those conceded to us. Now that may be a ticklish argument, but I do not care whether it is or not. We are there. We have the right to govern that strip, and we are going to govern it. And without the right to govern the strip, without the power to police it, and without the power to make the laws in that strip bend, all of them, to the construction of the Canal, we would not have been within two or three or four years, hardly, of where we are now in the construction.

Read the history of the French and you will see the significance and proof of what I say in respect to something that happened to us that we were very sorry to have happen, to-wit, the defeat of the Colombian Treaty. What happened subsequently met the approval of the people of the United States. It met the approval of the Repub-

lican Administration and the people who supported it, and it has worked out well.

Now, I would like to say that the result of the visit of the Commission of seven engineers to the Isthmus has been entirely favorable to the project as it has heretofore been planned, and according to the type already determined by Congress, and that their views are full of commendation for the organization of the forces on the Isthmus, and in the conviction that a continuance of what is now going on will give us a Canal within a very reasonable time.

Now, gentlemen, there are those who believe, and have always believed, in a sea-level canal, and there are those who believe in a canal of the lock type. We have got to build one type or the other, and we want the Canal as soon as we can have it. If we are going to change our minds every time you see a sensational article in the newspapers we will never build the Canal by any type. It has got to be decided some time. We did decide it through our houses of Congress and through our President four years ago, and nothing has occurred since that time to make the arguments any less strong in favor of the type adopted than they were when we adopted them on those arguments.

In that view then, what I say is that I believe that—well, it is not fair, of course, to impugn the patriotism of a man who differs from you, just because he does differ from you, but I believe if they sat down and thought the matter all over, they would realize that this continuous agitation about a change in the type of the Canal is the thing that, more than any other, is calculated to paralyze the hands and confuse the brains of the gentlemen whom we have there, who are attempting to carry out the plans as already made, and who, if not interfered with, will carry out these plans to redound to the credit of the Nation.

There is nothing so discouraging as a fire in the rear, and when you are on that isthmus, and you do not get papers more than once a week, and there is only filtered through the cables to the one or two papers published there, anything that is said in Congress that has a sensible turn—when you realize the nervous strain that there is on the men who are carrying out this great work; when you realize they are 2,000 miles from base, so to speak, and that they cannot understand and cannot have the sense of appreciation of the importance of what a gentleman says on the floor of the House or the floor of the Senate, when he is only talking for buncombe—you will understand me when I say that that kind of fire in the rear is calculated to break down the nervous system of those persons on the Isthmus and who are working night and day, tooth and toenail to build the greatest enterprise of two centuries.

What I appeal for is the settlement of this question definitely, so that we shall not have continuous debates, which, to those of us who understand the matter and know how difficult it is to establish an affirmative in Congress against something that has been done, does not appear to be important, and yet may be important to those men upon whose nerve and upon whose energy the whole enterprise is dependent.

Now, it is going to cost more than was estimated, and why? Well, there is 50 per cent more yardage of excavation in the

Canal than was estimated. That is one thing. Then we pay 20 per cent more than they estimated per yard. We pay good wages down there, excellent wages, and we build a very extensive plant in the way of furnishing good accommodations to the laborers who go down there. We have had to deal with a tropical country, and any one who knows what a tropical country is, knows that the conditions cannot be made too good to save the energy and preserve the health and strength of those who are to work under that tropical sun. It is said that we might have let the work by contract.

We tried to figure it out in some way, and after receiving bids concluded that to do general work, dependent upon a railroad forty miles long, dependent for its success upon Government control and upon sanitation, was not a work that could be safely intrusted to contractors. Generally, I am in favor of Government contract work, but I am familiar with the difficulties that we have encountered there, and I believe that the present system is the only one by which the work can be carried on to a complete success.

We have increased the size of the locks over what was projected by the original Commission. They made the locks 950 feet long and 95 feet wide. The Navy Department comes in and tells us they are going to build ships that will be too wide for these locks, and as we are building the Canal to meet the value, the fighting value of our Navy, we want the Canal big enough to carry our largest warships. Hence, we enlarged the locks to 110 feet in width and 1,000 feet in usable length. Those two extensions added a number of millions of dollars to the cost. Then there was in the middle of the Canal one passageway only 200 feet wide across the bottom, in the great Culebra Cut, about five miles. We thought, gentlemen, that that was one of the weaknesses of the Canal, and accordingly the President directed the plan to be changed, so that now that width for five miles is 300 feet instead of 200 feet, making a very great difference in the safety of navigation from one side to the other. The truth is that that is one of the great features of the Canal which we are now constructing.

Most of the Canal will be 500 or 800 feet or 1,000 feet in width across the bottom of the channel. There will be only eight miles out of the fifty-one that are 300 feet. The sea-level canal would have been but 150 feet wide across the bottom of the Canal for twenty-one miles, and 200 feet for the rest of the Canal. It is said that the increase in the cost, which may be even double or more, but hardly more than that, of what was estimated by the engineers is an argument, or is newly discovered evidence in favor of the construction of a sea-level canal, because the increase in the cost of the lock canal indicates that the lock canal will be now as expensive as a sea-level canal. Well, that kind of an argument does not impress me. We have done very little work on the Canal now that would not have had to be done in a sea-level canal.

The work that has been done has been largely that of excavation and if we went down eighty-five feet below the level of where we are now going, the cost of excavation as you go down, because of the difficul-

ty of working steam shovels or mud dredges in the same extent of dredging surface, will make the cost considerably greater. So that every argument in favor of the sea-level canal, dependent upon it being less expensive than a lock canal, ignores that situation entirely. The present increase in the lock canal is an increase which would have had to be met in a sea-level canal. With a full understanding and knowledge of the language I use, I wish to say and challenge any evidence to the contrary, that a man wanting evidence to weigh as worth a scintilla, that the money which has been expended in that Canal, every dollar and every cent of it has been expended in the interest of the Government, and not a dollar can be traced to graft in any shape. When you see in the headlines of the newspapers "Panama Scandal," "Panama Graft," I beg you to read down under those lines and pick out what statement is made there that makes it graft or makes it a scandal.

I beg you to weigh those statements and find out whether there had been, on the fact as proven or on the mere allegation of some gentleman who forgets the obligation placed on him as a member of Congress or a member of the Senate, because he is in a place where what he says is immune, by not weighing the evidence as he would if he were a lawyer speaking to a jury, a judge considering its weight, or a man of business looking into a question of fact. Fortunately, the lightness with which such charges are made and not proved, because incapable of proof, has so impressed itself on the American people that they do not hurt anybody.

And now, my friends, I have spoken of the Panama Canal to this audience because I really believe that the people of New Orleans are more interested in the completion of that Canal than any other Americans within the borders of the United States, and you are entitled to know as much as any of us know about the Canal and what we really believe.

Colonel Goethals, who honors the Army and the Corps of Army Engineers, is carrying on that work with a fidelity and judgment and a knowledge that do honor to the corps of which he is a member, and I could not pay a higher tribute. He believes thoroughly in the lock type of canal, and its successful completion. If you change that type, I do not think it too strong a statement to make that you will dishearten a force on the Isthmus to-day that is working as no force I ever knew about has worked heretofore, with an esprit de corps and a belief that they will build a canal that insures success.

Reward for Life Saving.

Fitz Wiltshire, Grenadian, was presented with a gold watch and Robert Mellon, American, with a medal, on February 18, in token of their heroism in saving Robert Dean, Scotch, from drowning on January 20, near Perico Island in Panama Bay, reference to which was made in the THE CANAL RECORD of January 27.

The watch and medal, each with a suitable inscription, were purchased by a subscription made by the gold employes at the La Boca shipways and dredges, and the presentation was made by the Resident Engineer at La Boca at the close of the day's work.

SOCIAL LIFE OF THE ZONE.

Women's Clubs, W. C. T. U. Organized, and Other Features.

"The Civic Federation in Chicago" was the topic of an address delivered by Judge Lorin C. Collins, at a meeting of the Cristobal Woman's Club, held February 17. Mrs. Campbell, who is visiting her daughter, Mrs. Courtland Nixon, spoke on Club work in Denver, and the presiding officer, Miss E. Lewis Baker, spoke on the civic work of the Nebraska Women's Clubs. A short address was given by the Rev. Mr. Elliott, pastor of the Cristobal Union Church.

A comedy will be presented by the art and literary department of the Cristobal Woman's Club on Wednesday evening, March 3, Mrs. Claude C. Pierce is the director.

Dr. R. H. Carter spoke on "Early Days on the Isthmus," giving a review of domestic and sanitary conditions during the first years of the American occupation, at the meeting of the Ancon Woman's Club, February 17. A reception will be given by the education department at the Club rooms in Ancon on Thursday evening, February 25. Tea and light refreshments will be served at club rates. It is the intention of the department to give similar receptions once a week. The Club Year-book is ready for distribution.

A Washington program was the feature of the meeting of the Empire Woman's Club on February 18. Eighteen children from the public school gave a flag song, Mrs. A. B. Hillerman gave a talk on Mount Vernon. Miss Mills rendered several musical numbers, and the audience sang "America." Refreshments were served and appropriate favors were given.

A bowling class has been formed by the Gorgona Woman's Club. The art department, which meets each Tuesday afternoon, is working on linen for use at the social sessions of the Club.

Through the efforts of the Paraiso Woman's Club a wagonette has been assigned by the Commission to meet all train stopping at Paraiso. On Sunday the wagonette meets the 1 o'clock train from Panama at Pedro Miguel, as this train does not stop at Paraiso.

Mrs. John Dickinson Sherman, second vice-president of the General Federation of Women's Clubs, who was operated on at Colon Hospital for appendicitis, is recovering, and it is believed she will be able to sail for the States in about two weeks.

The Christian League of Culebra gave a concert at the Commission chapel on the evening of February 17, in which the Tivoli orchestra, Mrs. Adolph Faure, Mrs. Lee, and Mr. J. Wesley Holland participated.

Woman's Christian Temperance Union.

The Empire Union of the W. C. T. U. was organized on February 17, the memorial day of the founder, Frances E. Willard. Mrs. Abbie B. Hillerman, president of the Oklahoma Branch, who has been appointed organizer for the Canal Zone, presided. The following officers were elected: President, Mrs. Hillerman; vice-president, Mrs. Ball; recording secretary, Mrs. Rainwater; corresponding secretary, Mrs. J. C. Freeman; treasurer, Mrs. C. L. Whitaker. Memorial exercises were held, in which Mrs. Rainwater and Mrs. Helmer read papers on Miss

Willard; Mrs. Gray and Mrs. Sobeys gave reminiscences of Miss Willard and Lady Somerser, and Mrs. Ball outlined the Junior and Legion work. Meetings will be held at the Commission chapel each Thursday afternoon.

Visit of the Pacific Fleet.

The first squadron of the Pacific Fleet of the United States Navy in command of Rear-Admiral Swinburne arrived in Panama Bay at noon Monday, February 22. The vessels of the squadron are the same as were in Panama Bay between December 13 and 22, a list of which was published in THE CANAL RECORD of December 16. It is expected that the fleet will remain here until March 4.

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., February 24, 1909

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts and may be secured on request of addressee:

Bartholomew, J. M.	Osborne, H. C. (2)
Crown, James F.	Rhodes, B. G.
Cumiskey, John	Scheels, Lambert G.
Deans, Robert	Southerland, Jay
Frayer, Thomas	Splin, T. H.
Green-lade, G. A.	Stolberg, E. W.
Hooper, Allison C.	Tafel, Mr. and Mrs. R. J.
Jenkins, George L.	Watt, J. M. G.
Jerry, Carl	Weast, Mrs. W. L.
Kelsey, John B.	Williams, James O.
Lorih, Walter L.	Woods, L. F.
McClelland, J. L.	Zampeta, Cosima
Oliva, J. T.	

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight February 20, 1909:

	STATIONS.					
	Vigia.	Alhajuela	Gambora	Bohio	Gatun (Canal)	Gatun (W. Diverch.
Height of low water above mean sea level, feet,	129	92	46	1	0	0
Maximum height above low water, feet:						
Sunday, Feb. 14,	133.0	94.2	45.8	4.6	1.5	1.3
Monday, Feb. 15,	133.0	95.9	51.2	7.0	2.2	1.7
Tuesday, Feb. 16,	130.7	94.5	49.5	5.6	1.8	1.6
Wednesday, Feb. 17,	130.0	94.7	49.2	5.3	1.8	1.5
Thursday, Feb. 18,	129.9	93.8	48.6	4.6	1.6	1.5
Friday, Feb. 19,	129.7	93.6	48.5	4.5	1.5	1.6
Saturday, Feb. 20,	129.7	93.7	48.4	4.4	1.6	1.4

Rainfall, February 1 to 20, 1909, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day.	Total for period.
<i>Atlantic Division—</i>		
Cristobal . . . . .	.61	1.71
Brazos Brook . . . . .	.85	3.36
Gatun . . . . .	.59	2.04
Bohio	1.13	2.56
<i>Central Division—</i>		
Taherilla . . . . .	.59	1.93
San Pablo . . . . .	.30	1.13
Bas Obispo	2.27	4.72
Gambora	1.60	4.05
Empire . . . . .	.73	1.50
Camacho . . . . .	.85	2.14
Culebra	1.18	2.46
<i>Pacific Division—</i>		
Rio Grande	1.82	2.80
Pedro Miguel	2.60	2.92
La Boca . . . . .	.64	1.37
Ancon	1.60	2.83
<i>Atlantic Coast—</i>		
Porlo Bello	2.13	*6.38
Nombre de Dios	4.40	8.35
<i>Upper Chagres</i>		
El Vigia	1.85	4.88
Alhajuela	1.49	3.7

*Five p. m. of the 20th.

CANAL WORK FOR JANUARY

Monthly Report of the Acting Chairman to the Secretary of War.

CULEBRA, C. Z., February 16, 1909

The Honorable the Secretary of War, Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of January, 1909:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic	Central.	Pacific.	Total.
<i>Steam Shovel Excavation—</i>					
In prism.....	Cubic yards.....	114,665	1,445,321	138,109	1,698,095
Auxiliary.....	Cubic yards.....	19,207	86,695	.....	105,902
Total.....	Cubic yards.....	133,872	1,532,016	138,109	1,803,997
<i>Dredge Excavation—</i>					
In prism.....	Cubic yards.....	573,321	.....	490,584	1,063,905
Auxiliary.....	Cubic yards.....	14,772	.....	.....	14,772
Total.....	Cubic yards.....	588,093	.....	490,584	1,078,677
<i>Hand and Scraper Excavation—</i>					
In prism.....	Cubic yards.....	.....	7,632	.....	7,632
Auxiliary.....	Cubic yards.....	.....	.....	4,245	4,245
Total.....	Cubic yards.....	.....	7,632	4,245	11,877
Total excavation.....	Cubic yards.....	751,965	1,539,648	632,938	2,924,551
Explosives used.....	Tons (2240 lbs).....	38.04	270.96	18.15	327.15
Rock drilling.....	Feet.....	44,653	328,643	25,404	398,700
New track laid.....	Miles.....	2.85	11.8	3.94	18.57
Track removed.....	Miles.....	.....	12.8	.....	12.8
Material placed in dumps.....	Cubic yards.....	212,714	17,578	79,354	309,646
Rock crushed.....	Cubic yards.....	.....	6,504	6,593	13,097
Cement used.....	Barrels.....	870	.....	966	1,836
Concrete placed.....	Cubic yards.....	767	.....	845	1,612
New roads built.....	Miles.....	0.11	0.85	1	1.96
Water mains laid.....	Feet.....	1,800	440	1,320	3,560
Sewers laid.....	Feet.....	4,066	640	773	5,479
Open drains and ditches dug.....	Feet.....	400	2,411	60	2,901
Open drains and ditches cleaned.....	Feet.....	.....	.....	68,801	68,801
Daily average number of laborers.....	.....	3,040	8,019	3,019	14,078
Piles driven.....	.....	738	.....	.....	738
Wash drilling.....	Feet.....	1,140	.....	1,685	2,825
Diamond drilling.....	Feet.....	61.9	.....	125.5	190.4
Rail fall.....	Inches.....	7.17	2.25	3.05	.....

Atlantic Division.

GATUN LOCKS.

Unloading Cableway Dock—Work on the diagonal bracing under the wharf was commenced, and 12,890 square feet of decking have been laid. Pile driving in this dock is 99 per cent completed; decking 85 per cent completed.

Cement Shed Dock—During the month 293 piles were driven in this dock, and 5,000 square feet of vertical sheathing were placed on the east side of the cement delivery tracks running under this dock. The pile driving and capping in the dock is 99 per cent completed.

Unloading Head Tower Tracks—These tracks were completed during the month throughout, and are now ready for the erection of the head towers.

Storage Pile Tunnels—Excavation in the open cuts for these tunnels was completed, and the reinforced concrete footings for the timber were placed. Framing of the timber work for these tunnels was completed, and the erection commenced. This work was 20 per cent completed.

Automatic Electric Road—About 3,000 cubic yards of rock and earth were removed, and the trestles carrying the Panama railroad tracks over this road were 60 per cent completed; 75 piles were driven. A portion of this road, approximately 500 feet in length, is ready for laying of tracks.

Cableway Towers—Two duplex tail towers were erected on the west cableway dock and are ready for placing of concrete counterweights. Four lock duplex head towers were erected up to the level of the operating platform, and the erection of the first duplex lock tail tower was started.

Power House—Construction of this plant was continued. About 3,000 cubic yards were excavated in the foundation for culvert and main building, a small portion of which was rock. In the construction of the intake culvert, 300 feet of which is completed, 105 cubic yards of concrete and 11 tons of reinforcement were placed.

Excavation and Dredging—The excava-

tion of the lock prism was continued with two shovels and one hydraulic dredge. During the month the dredge *Mindi* excavated 35,000 cubic yards from the approach channel to the cableway docks.

GATUN DAM.

Pile driving, dredging and excavation was continued in the dam operations, and 119,559 cubic yards of material were placed in the north and south toes of the dam.

At the close of the month, the mixing and handling plant for making concrete for the spillway was 98 per cent completed. Grading for tracks for concrete trains was nearly completed.

PORTO BELLO.

Satisfactory progress was made in the work at this point, which included work on the crusher site, the erection of an air compressor, a driving engine, three Porter locomotives, one 15-ton locomotive crane and 15 dump cars, hydraulic stripping in the quarry and miscellaneous road and building construction.

NOMBRE DE DIOS.

The dredge *Chagres* has been operating at this point during the month. A concrete dam was constructed at Gloria Springs. Preparations were made for the construction of a pile bulkhead for use as a wharf.

HARBOR AND CHANNEL SECTION.

At the close of the month, 40 feet of water could be carried from 0 to Mile 2 + 4,500

MUNICIPAL ENGINEERING AND BUILDING CONSTRUCTION.

The usual work of this subdivision was performed, consisting of the construction of bridges, surveys, laboratory work, and construction and maintenance of buildings.

Central Division.

During the month of January, the total amount of material excavated in the Central Division was 1,539,648 cubic yards, of which 506,866 cubic yards were classified as earth and 1,032,016 cubic yards as rock.

Of this quantity, 1,532,016 cubic yards were removed by steam shovels, and 7,632 cubic yards by hand on the Bohio Diversion.

The daily average number of steam shovels at work during the month was 51.80, as compared with 50.73 for the month of December.

For comparison with the work done during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels.	Classification of material.		Av. No. of steam shovels working during month.	W'kg days in month.	Av. amount excavated per shovel per 8-hour day.
		Rock.	Earth.			
1908:	cu. yds. 1,392,939	cu. yds. 816,138	cu. yds. 546,801	51.53	26	cu. fs 110.10
1909:	1,532,016	1,027,132	504,884	51.80	25	1,183

Rainfall at Empire: 1908, 0.024 ins.; 1909, 2.280 ins.

The above table shows that the average output per shovel-day was nearly 14 per cent greater in January, 1909, than in the corresponding month of the previous year.

During the month, 146,640 cubic yards of material excavated from the Cut were transported to the relocation of the Panama railroad between Caimito and Bas Obispo and dumped as filling in the embankment for the new roadbed, making a total to date for this purpose of 449,901 cubic yards.

In building construction work, three new buildings were completed, two of which were turned over to the Quartermaster's Department and one to the Department of Motive Power and Machinery. Eleven new buildings were worked upon during the month, but not completed. Five jobs of alterations to buildings were completed and thirteen were partly completed. Twenty-three buildings had rescreening completed and four partly completed. There were four repair jobs other than rescreening, done to buildings and completed, and five were partly completed. Three buildings were demolished during the month. At the close of the month, two buildings were being moved to new locations.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

At Pedro Miguel, the storage trestle and the dump track leading to the same were continued. The installation of a pump for the purpose of puddling the core of the west dam was begun. The excavation of the locks and east recess was continued, and the installation of a pump at the south end of

the lock site, to take care of drainage, was completed.

At Miraflores the excavation for the upper locks was continued, and the excavation for the diversion of the Cocoli River begun. The core trench for the Cocoli dam, south of Cocoli River, was carried down to rock, and for test pits begun along the center line.

Grading for the power house was continued during the month. Grading for the 100-ton powder magazine was completed, and the construction of the building begun.

The dredge *Sandpiper*, operating at the lower end of the lock site, made slow progress, due to necessary alterations and to the character of the material, which is extremely hard and mixed with boulders. This material is so hard, in fact, that blasting has been found necessary and advantageous.

The construction of the track leading to the quarry on Ancon Hill was begun and well advanced; also the storage yard.

DISTRICT NO. 2—DREDGING, AND LA BOCA SHIPWAYS.

Four dredges were in operation during the entire month. The dredge *Culebra* worked from the 1st to the 6th inclusive; was beached on Perico Island from the 7th to the 28th inclusive, and worked from the 29th to the 31st, inclusive. The output of the dredges was as follows:

Dredge	Type.	Cubic yards.		Remarks.
		In prim	Anxily	
Culebra	Suction	99,102	.....	Scow measurement
Gopher	Ladder	120,613	.....	Place measurement
Mole	Ladder	.....	78,634	Place measurement
No. 14	Ladder	122,790	.....	Place measurement
Dipper	Dipper	48,355	.....	Place measurement
Total	.....	390,895	78,634	

A large amount of repair work was done on dredges, clapnets, tugs, launches and other floating equipment.

DISTRICT NO. 3—MUNICIPAL AND BUILDING WORK.

The usual work of this subdivision was satisfactorily performed during the month.

Mechanical Division.

The usual work of this Division was performed.

Relocation of Panama Railroad.

During the month, 77,717 cubic yards of excavation were accomplished on the relocated line, and 258,595 cubic yards of embankment. At the end of the month a total of 801,024 cubic yards of excavation had been accomplished, and 3,282,289 cubic yards of embankment. The work of constructing trestles for filling, bridges and culverts was continued.

The heading of Miraflores tunnel has been opened through to the south end, and the full section of the tunnel has been opened and timber placed for a distance of 55 feet from the south end.

During the month, 1,868 linear feet of permanent track were laid, making a total at the end of the month of 59,154 feet.

The unusual rainfall during the month interfered with the work on the relocated line to a considerable extent.

Quartermaster's Department.

No appreciable change in the labor and quarters situation during the month is noted.

The new allotments of appropriations for the Quartermaster's Department, put into effect February 1, show a reduction of \$14,000 from the allotments of October 1.

The new system of property accounting

is reported by the Chief Quartermaster to be working out with gratifying success.

Subsistence Department.

The Tivoli Hotel at the end of the month, showed a profit of \$2,373 17.

On the 15th of the month, an extra food cost to the common laborers' kitchens of two cents per ration was authorized, and the food cost allowance of all the hotels was increased, so that the minimum allowance was twenty-six cents at the end of the month.

Department of Civil Administration.

COURTS.

The Supreme Court held one session during the month.

In the Circuit Courts 9 civil cases and 37 criminal cases were disposed of, and in the District Courts 68 civil and 463 criminal cases were disposed of.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

The total revenues in the Canal Zone in January aggregated \$52,444.63. The general revenues amounted to \$44,595.40, as compared with \$14,990.74 in December. Of the amount collected in January, \$34,800 was for licenses for the sale of liquor at retail.

Money order sales in the post-offices during the month amounted to \$409,262.41, of which \$288,058 was payable in the United States and foreign countries, and \$121,204 41 in the Canal Zone.

Thirteen vessels entered at and 16 cleared from the port of Ancon, and 18 vessels entered at and 15 cleared from the port of Cristobal during the month.

DIVISION OF POLICE AND PRISONS.

The number of arrests during January was 524, as compared with 507 in December.

There were 138 persons confined in the district jails at the close of the month. Nine convicts began penitentiary sentences during the month, 7 were discharged at the expiration of their sentences, and on January 31, 124 convicts were confined in the penitentiary.

DIVISION OF PUBLIC WORKS.

The usual business of this division was conducted during the month. The amount of water consumed in January in the city of Panama amounted to 27,524,000 gallons, and in the city of Colon 22,388,488 gallons.

DIVISION OF FIRE PROTECTION.

No serious fires occurred during the month. Authority was granted for the establishment of a paid fire company at Gatun, and the necessary equipment therefor has been requisitioned.

DIVISION OF SCHOOLS.

The total enrollments in the white schools was 656, and the average daily attendance was 566. In the colored schools the total enrollment was 1,258, and the average daily attendance 731.

Department of Sanitation.

[The substance of the report of this department was published in THE CANAL RECORD last week.]

President-elect William H. Taft arrived on the Isthmus January 29, on a visit of inspection, accompanied by the following engineers: Frederick P. Stearns, John R. Freeman, A. P. Davis, J. D. Schuyler, Allen Hazen, Isham Randolph and Henry A. Allen.

Respectfully,
H. F. HODGES,
Acting Chairman and Chief Engineer.

OFFICIAL CIRCULARS.

New Style Brass Check.

DEPARTMENT OF EXAMINATION OF ACCOUNTS.
EMPIRE, C. Z., February 20, 1909

CIRCULAR No. 10.

To all Chief Timekeepers—Effective March 1, 1909. The new style brass check (round) will be issued to all employees of the Commission. This style of check was furnished to contract laborers as provided in Circular No. 8 of January 19, 1909, issued from this office.

About February 24, 1909, a supply of these new checks will be sent to all chief timekeepers and should be issued to all employees except contract laborers, on or before March 1, 1909, and after the latter date no other check will be recognized.

In the case of contract laborers the same check number was given and the old star checks taken up. In the present issue there is no occasion to take up the star checks as they will be void on March 1. All employees should retain their star checks for use in connection with hotel and commissary books which have been issued under their star check numbers.

Chief timekeepers will be charged with the new checks sent to them for distribution, and will send to this office a list showing the numbers of checks issued by them to each district timekeeper. When an employe leaves the service the timekeeper must take up his metal check and give to the employe a certificate to that effect, for use in connection with the cashing of his time voucher. If the check is not taken up and certificate furnished, a deduction of 50 cents must be made. Checks so taken up must not be reissued, but will be sent to this office once a month.

A record should be kept in your office showing the name of the employe to whom each check is issued.

W. W. WARWICK, Examiner of Accounts.

Approved:

H. F. HODGES,
Acting Chairman and Chief Engineer.

Dogs Must be Muzzled.

In accordance with authority vested in the Chief Sanitary Officer by resolution of the Isthmian Canal Commission, dated July 18, 1908, and approved by the Secretary of War on August 12, 1908, the entire Canal Zone is designated as territory in which it shall be unlawful for unmuzzled dogs to be allowed at large until further notice.

Any unmuzzled dogs found at large shall be impounded by the police officers and the owners punished as provided for in the resolution above referred to.

W. C. GORGAS, Chief Sanitary Officer.
ANCON, C. Z., February 16, 1909.

SALE OF REAL PROPERTY.

By virtue of a decree of foreclosure of real property, to me directed from the Circuit Court in and for the Second Judicial Circuit, Canal Zone, in favor of Pascal Canavaggio against A. Rome, I shall sell, at public auction, to the highest bidder for cash, at the east door of the court house of the Circuit Court, in the city of Empire, Canal Zone, on the 4th day of March, 1909, at three o'clock in the afternoon of said day, the following described property, situated in the city of Empire, Canal Zone and more particularly described as follows: A certain three-story frame building, together with all the appurtenances thereunto belonging, known as the Pennsylvania Hotel, and designated as by number 168, more particularly described as bounded on the north by the property of Muller, on the south by the property of Jose Garavel, on the east by the Panama railroad tracks, and on the west by the property of the Panama Banking Co. and Fishbough, respectively.

The above described property is to be sold at public auction as above described by virtue of a decree of foreclosure issued by the Circuit Court in and for the Second Judicial Circuit, Canal Zone, in which said cause, I, L. Toledano was the plaintiff, and A. Rome, Pascal Canavaggio, and F. P. Peterson were the defendants.

GROSVENOR A. PORTER, Marshal

Proposal for Building Jail at Pedro Miguel, C. Z.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, C. Z., until 2 p. m., Saturday, February 27, 1909, when they will be publicly opened, for the erection by contract of a type "A" jail at Pedro Miguel, C. Z. The Commission will furnish all materials at the site of the work and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with certified check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$150 conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to be in its interest, and to waive defects or informalities in proposals. C. Nixon, Purchasing Agent on the Isthmus.

PERFORMANCE OF STEAM SHOVELS

MOVEMENT OF OCEAN VESSELS.

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS
The subjoined tables show the monthly records of steam shovel work in Canal excavation since American occupation

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

CENTRAL DIVISION.					ATLANTIC DIVISION.						
PERIOD.	Working days.	Output per shovel (cubic yards.)		Rainfall (inches.) Equivalent.	PERIOD.	Working days.	Output per shovel (cubic yards.)		Rainfall (inches.)		
		Per day	Per month				Per day	Per month			
1906—					1907—						
January..	26	12.83	363	9,430	1.25	July.....	19½	1.83	323	8,393	11.12
February	23	12.48	587	13,494	0.57	August..	27	7.70	580	15,647	16.37
March...	27	12.37	716	19,335	0.45	September	24	8.12	753	18,790	8.03
April....	24	12.33	720	17,289	11.42	October..	27	9.00	597	24,232	19.27
May.....	27	12.41	581	15,684	7.54	November	24	9.00	935	2,514	11.27
June.....	26	14.81	539	14,026	6.92	December.	25	9.00	1,773	30,933	5.53
July.....	25	16.64	378	9,441	14.61	1908—					
August..	27	16.93	536	14,461	11.84	January..	26	10.72	1,334	7,115	3.18
September	21	21.33	568	13,664	7.41	February	24	11.76	1,235	9,623	1.29
October..	27	22.67	532	14,373	3.97	March....	26	13.54	1,296	33,711	2.81
November.	24	20.46	459	10,833	21.05	April....	25	14.00	1,260	31,492	1.47
December.	25	22.68	491	12,267	8.15	May.....	25	12.18	1,055	26,361	17.30
1907—						June.....	26	10.18	1,046	27,208	13.33
January..	26	31.04	702	18,248	0.08	July.....	26	8.31	1,096	28,505	13.67
February	23	39.87	674	15,966	0.13	August..	26	7.23	1,058	28,295	15.88
March....	25	43.88	741	18,530	0.16	September	25	7.32	973	24,331	8.52
April....	26	44.12	765	19,884	0.09	October..	27	8.88	832	22,471	12.22
May.....	26	31.70	833	21,674	6.22	November	23	8.57	819	18,834	8.87
June.....	25	38.28	651	16,266	13.53	December.	26	6.15	1,067	27,730	7.95
July.....	26	43.38	680	17,670	9.85	1909—					
August..	27	39.85	729	19,679	11.28	January..	25	7.00	765	19,124	7.17
September	24	39.42	815	19,563	10.86	February					
October..	27	39.85	792	21,383	15.44	March....					
November.	24	44.88	772	18,541	10.40	April....					
December.	25	48.84	923	23,066	1.47	May.....					
1908—						June....					
January..	26	51.53	1,039	27,003	0.75	July.....					
February	24	54.00	1,112	26,690	0.00	1903—					
March....	26	53.66	1,152	29,947	0.41	March....	26	4.50	686	17,849	0.00
April....	25	53.04	1,184	29,596	1.36	April....	25	5.50	753	18,829	0.76
May.....	25	53.24	894	22,341	12.91	May.....	25	6.75	525	13,116	8.65
June.....	26	55.15	1,011	26,294	8.21	June....	26	5.30	701	18,217	4.98
July.....	26	52.57	1,071	27,848	11.79	July....	26	5.80	824	21,441	5.66
August..	26	52.58	1,122	29,181	8.11	August..	26	5.91	846	21,992	7.39
September	25	49.68	1,178	29,414	9.76	September	25	6.59	818	20,455	7.56
October..	27	49.55	1,177	31,766	8.87	October..	27	6.77	742	20,034	8.41
November.	23	50.91	1,156	26,577	4.46	November	23	7.00	713	16,396	8.65
December.	26	50.73	1,209	31,421	5.09	December.	26	6.11	838	21,793	10.27
1909—						1909—					
January..	25	51.80	1,183	29,576	2.28	January..	25	6.42	840	21,512	3.08
February						February					
March....						March....					
April....						April....					
May.....						May.....					
June....						June....					
July.....						July....					
August..						August..					
September											
October..											
November.											
December.											

NEW YORK TO COLON.

Colon.....	P. R. R. Friday.....	Feb. 19
Atrato.....	R.-M... Saturday.....	Feb. 20
Panama.....	P. R. R. Thursday.....	Feb. 25
Prinz Aug. Wilhelm..	H.-A... Saturday.....	Feb. 27
Advance.....	P. R. R. Wednesday.....	Mar. 3
Oruba.....	R.-M... Saturday.....	Mar. 6
Allianca.....	P. R. R. Tuesday.....	Mar. 9
Colon.....	P. R. R. Monday.....	Mar. 15
Panama.....	P. R. R. Monday.....	Mar. 22
Advance.....	P. R. R. Saturday.....	Mar. 27
Allianca.....	P. R. R. Friday.....	Apr. 2
Colon.....	P. R. R. Thursday.....	Apr. 8
Panama.....	P. R. R. Wednesday.....	Apr. 14
Advance.....	P. R. R. Tuesday.....	Apr. 20
Allianca.....	P. R. R. Monday.....	Apr. 26
Colon.....	P. R. R. Monday.....	May 3
Panama.....	P. R. R. Saturday.....	May 8
Advance.....	P. R. R. Friday.....	May 14

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca.....	P. R. R. Thursday.....	Feb. 25
Prinz Joachim.....	H.-A... Tuesday.....	Mar. 2
Colon.....	P. R. R. Wednesday.....	Mar. 3
Panama.....	P. R. R. Tuesday.....	Mar. 9
Tagus.....	R.-M... Tuesday.....	Mar. 9
Advance.....	P. R. R. Monday.....	Mar. 15
Prinz Aug. Wilhelm..	H.-A... Tuesday.....	Mar. 16
Allianca.....	P. R. R. Sunday.....	Mar. 21
Colon.....	P. R. R. Saturday.....	Mar. 27
Panama.....	P. R. R. Friday.....	Apr. 2
Advance.....	P. R. R. Thursday.....	Apr. 8
Allianca.....	P. R. R. Wednesday.....	Apr. 11
Colon.....	P. R. R. Tuesday.....	Apr. 20
Panama.....	P. R. R. Monday.....	Apr. 26
Advance.....	P. R. R. Sunday.....	Apr. 26
Allianca.....	P. R. R. Saturday.....	May 8
Colon.....	P. R. R. Friday.....	May 14
Panama.....	P. R. R. Thursday.....	May 20
Advance.....	P. R. R. Wednesday.....	May 26

NEW ORLEANS TO COLON.

Heredia.....	U. F. C. Saturday.....	Feb. 20
Ellis.....	U. F. C. Saturday.....	Feb. 27
Parismina.....	U. F. C. Saturday.....	Mar. 6
Heredia.....	U. F. C. Saturday.....	Mar. 13
Ellis.....	U. F. C. Saturday.....	Mar. 20

COLON TO NEW ORLEANS.

Heredia.....	U. F. C. Tuesday.....	Mar. 2
Ellis.....	U. F. C. Tuesday.....	Mar. 9
Parismina.....	U. F. C. Tuesday.....	Mar. 16
Heredia.....	U. F. C. Tuesday.....	Mar. 23
Ellis.....	U. F. C. Tuesday.....	Mar. 30

COLON TO BARBADOS, CALLING AT TRINIDAD.

Atrato.....	R.-M... Tuesday.....	Mar. 2
Trent.....	R.-M... Tuesday.....	Mar. 16

The next sailing of the Leyland Line for New Orleans via Kingston, Ja., will be as follows: Steamship *Memphian* about March 6.

The following steamers have recently arrived at La Boca: February 12, *Horda*, collier from Newport News; February 14, *Glacier*, United States supply ship from Callao; February 15, *Kipley*, collier from Newport News; February 17, *Vina*, from Valparaiso; February 18, *Sau Juan*, from San Francisco; February 19, *Ecuador* from Guayaquil. Departures were: February 18, *Sierre* for Southern ports, and *Huasco* for Valparaiso.

Concert by the I. C. C. Band.

TOBOGA SANITARIUM, TOBOGA ISLAND.
Sunday, February 23, 1909, at 2:30 p. m.

PROGRAM

- 1 March—*Old Faithful*..... Holzman
 - 2 Selection—*A Knight for a Day*..... Hubbell
 - 3 *a* Intermezzo—*Rainbow*..... Wenrich
 - 3 *b* Southern novelty—*Moonlight in Dixie*..... Clement
 - 4 Waltz—*Autumn Smiles*..... Bagley
 - 5 Medley selection—*Hits of the Day*..... Remick
 - 6 Porto Rican dance—*Rosita*..... Missud
 - 7 Tone poem—*Apple Blossoms*..... Roberts
 - 8 Overture—*Raymond*..... Thomas
 - 9 Patrol—*American*..... M. J. P. P.
 - 10 March—*Boys of the Militia*..... Boehlein
- CHAS. E. JENNINGS, Musical Director.

The next concert will be given at Hotel Tivoli, Sunday, March 7.

Isthmian Baseball League.

Standing of the Clubs.

	Played	Won.	Lost	Per Cent
M. P. & M.....	11	9	2	.818
Empire.....	10	8	2	.800
Ancon.....	10	2	8	.200
Gorgona.....	11	2	9	.182

Scores, February 21, 1909:
Ancon, 11; Gorgona, 2. M. P. & M., 5; Empire, 4
February 22, 1909:
Ancon, 9; Empire, 4. M. P. & M., 6; Gorgona, 5

Atlantic Baseball League.

Standing of the Clubs.

	Played	Won.	Lost	Per cent.
Dry Dock.....	4	4	0	1000
Cosmy. Sub.....	3	2	1	.666
P. R. R.....	3	0	3	.000
Civil Adm.....	2	0	2	.000

Scores, February 21, 1909:
Dry Dock, 8; P. R. R., 5. Cosmy, 7; C. A., 6.
Scores, February 22, 1909:
Dry Dock, 8; C. A., 2. Cosmy, 2; P. R. R., 1.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Roosevelt on Canal Plans and Work.

To the Senate and House of Representatives:

I submit herewith the report of the engineers appointed by me to accompany the ex-Secretary of War, the Hon. William H. Taft, to the Isthmian Canal to look into the condition of the Canal work, and especially to report upon the feasibility and safety of the Gatun Dam project, with a view to deciding whether or not there should be any change in the plans in accordance with which the Canal is being constructed, these plans having been adopted by the Congress. I am happy to report to you that the accompanying document shows in clearest fashion that the Congress was wise in the position it took, and that it would be an inexcusable folly to change from the proposed lock canal to a sea-level canal.

In fact, this report not only determines definitely the type of canal, but makes it evident that hereafter attack on this type—the lock type—is in reality merely attack upon the policy of building any Canal at all. The board of engineers who signed this report are, of all the men in their profession within or without the United States, the men who are, on the whole, best qualified to pass upon these very questions which they examined. I commend to you the most careful consideration of their report. They show that the only criticism that can be made of the work on the Isthmus is that there has sometimes been almost an excess of caution in providing against possible trouble. As to the Gatun Dam itself, they show that not only is the dam safe, but that, on the whole, the plan already adopted would make it needlessly high and strong, and, accordingly, they recommend that the height be reduced by 20 feet, which change in the plans I have accordingly directed.

Every American citizen should feel not

merely gratification, but a very keen sense of pride in the statement made by this distinguished body of engineers as to the way in which the work has been done and in which it is now proceeding. The American people are to be heartily congratulated on everything of importance that has been done in connection with the building of the Panama Canal.

THEODORE ROOSEVELT.

THE WHITE HOUSE, February 17, 1909.

[The full text of the engineers' report is published in other columns.]

Reduced Height of Gatun Dam.

The reduction of 20 feet in the height of the dam, authorized by President Roosevelt, will save about 2,600,000 cubic yards of fill, reducing the total fill of the dam to 21,800,000 cubic yards. The top of the dam, as planned by the Consulting Engineers in 1906, was to be 135 feet above sea-level, and the plan as changed will place the top at 115 feet above sea-level, and 30 feet above the normal level of water in Gatun Lake.

Taft's Pledge of Support.

The Panama Canal is going to be built and what I want you to do, and what I want every American citizen to do, is to stand by the men who are building it (Voices: "We will do it.") Do not set a fire in the rear; do not distrust the men that are giving up their strength and energy and enterprise to put that great work through. When you have agents who are doing your work, you stand behind them. If you do not you cannot get your work done. The men who do your work are entitled to your help and confidence, and you ought not to allow yourselves to be led astray by buncombe speeches on the floor of the House of Representatives, or by headlines in sensational newspapers, and go back on the men that are doing your work.

I do not care whether you are Democrats or Republicans, you want the work done, and when the army engineers who are doing this work are giving all their time to the carrying out of this work, you are not men to go back on them or to believe every idle story that comes from the mouth of some politician who is seeking to make himself prominent, or to give himself the advertisement of a little unfounded sensational statement.

That work is being done honestly. I know what I am talking about. The Canal will be built, and all the windy opposition that comes merely from a desire to exalt and exploit the man who makes himself responsible will not obstruct it.

I know what the people of the United States want in that regard, and in so far as I have power as the Executive of this country, I am going to push that work, and I am

going to stand behind the men who are doing it.—Mr. Taft in speech at Meridian, Miss., February 13.

Power Plants at the Locks.

Six Curtis 1500-K. W. steam turbines, with their accessories, have arrived on the Isthmus and will be installed as soon as the power houses at Gatun and Miraflores are ready to receive them. They were shipped from the Schenectady plant of the General Electric Company in twenty-two carloads, and formed the largest unit turbine shipment ever made from that plant. The accessories include the generators, oil pumps, and all other necessary machinery excepting the vacuum and circulating pumps. The pumps, have been shipped by the Alberger Condenser Company of New York. Twelve boilers, six for each plant, with piping and induced draft equipment, will be shipped by the D'Olier Engine Company of Philadelphia about April 15, and when they arrive on the Isthmus the equipment for the power plants will be complete.

Work on the power houses is being pushed so that the foundations may be ready for the boilers at the earliest possible date. These are the plants that will furnish power for operating the concrete mixing and handling apparatus for constructing the locks at Gatun, Pedro Miguel, and Miraflores. After the locks are built the steam power plants will be held in reserve to operate the locks in times when there is not sufficient water to run the hydraulic plants.

Bridge over the Cut—New Highways.

Work has begun on the foundations for the suspension bridge over Culebra Cut at Empire. The bridge will run from Cerro, the labor camp immediately south of the Central Division offices, directly across the Cut. The towers will be built of creosoted timber, and will be 60 feet high. On the west side they will rest on a concrete foundation built on rock, and on the east side on concrete built on piles, which will be driven down to bed rock. The anchorages will be of concrete, reinforced with old French steel. The cables will be of 2¾-inch galvanized steel suspension bridge wire, two on each side, with the cables of each pair only an inch apart. The total length of the four cables will be 3,480 feet; the length of the bridge between towers will be 600 feet, and the width of the roadway 7 feet. The total dead load will be 230,000 pounds, the live load capacity, 54,000 pounds, and the breaking strain of the four cables 2,480,000 pounds. While the primary purpose of the bridge is to carry the air and water pipes used in the Cut across the channel and so avoid the necessity for moving them constantly, when the lower levels are reached, the bridge will also be used as a highway, and will be the only means of crossing the

NOTES OF PROGRESS.

(Continued.)

Canal between Gamboa and Paraiso. The plans call for a structure that will be serviceable for seven years, before which time it will be necessary to take it down as the distance of the center above the water level in Culebra Cut will be only 108 feet 6 inches and therefore ships could not pass under it.

The opening of the suspension bridge will give access to the country on the east side of Culebra Cut which is now almost inaccessible. Authority has been granted and work has been begun on the road to Las Cascadas Plantation, a distance of three miles from the end of the bridge. The road will cross the Obispo Diversion on a small bridge and will then run through the bush on an easy grade to the plantation. A survey and estimate have been ordered for a road that will connect with the east end of the bridge and run to Paraiso. The reconnaissance shows that the best route will be to follow the east side of the Obispo Diversion to Gold Hill, run over the dumps at Gold Hill, and then east of the hill and east of Cucaracha and Paraiso Hills to Paraiso. If this highway is built there will be connection by road from Panama to Las Cascadas.

Injured Canal Employees.

The Mann bill, relative to compensation for injured Canal employes, the full text of which was published in THE CANAL RECORD of December 23 last, and which passed the House of Representatives on January 5, was passed without amendment by the Senate on February 19. Its certain approval by the President will make it a law.

Obispo Diversion.

The last big cut on the Obispo Diversion, that through the hill which rises between the Chagres river and the ravine opposite Bas Obispo is nearing completion, and it is expected that the water of the Obispo will be flowing into the Chagres above Gamboa by the middle of May. Four steam shovels are doing the excavating, making a cut 97 feet deep and 250 feet wide on the top. The material excavated is dumped on the dikes opposite Bas Obispo and in the ravine near the hydraulic station at Gamboa.

Commissary Goods Labeled.

In order to prevent the disposal of goods bought at the commissary by dishonest persons having the commissary privilege, and to prevent the sale of commissary goods by outsiders, all cartons containing goods bought by the Commissary Department will be branded, and all individual articles, such as shirts, shoes, and other articles wherever possible, will bear the label "C. P. R." All goods recently purchased that are now on sale at the commissary bear this label.

A Dance for the Catholic Church.

THE CANAL RECORD:

The Catholic Ladies' Club of Gorgona gave a dance at the Y. M. C. A. clubhouse on the night of February 16, for the benefit of the Church of the Holy Redeemer at Culebra, the only American Catholic Church on the Zone. A special train from Pedro Miguel brought a large delegation from that place, Culebra, and Las Cascadas. A contest to decide who is the most popular lady in the three clubs was won by Mrs. Wade of Gor-

gona, with Miss McGowan of Las Cascadas second. The club wishes to thank the managers of the Y. M. C. A. for their kind assistance and also all those who contributed to the success of the entertainment. The sum of \$638 was realized and has been turned into the building fund.

MRS. C. I. CATE,
President C. L. Club, Gorgona, C. Z.

Death of Willis J. Rodman.

COLON, R. P., March 1, 1909.

ALL AGENTS AND OPERATORS:

It is with extreme regret and deep sorrow that we are compelled to announce the death of Mr. Willis J. Rodman, who has been acting as Superintendent of Telephones and Telegraph for this company for several years. Flags on all buildings of the Panama railroad will be displayed at half mast Monday, Tuesday, and Wednesday, and as a further mark of respect, all business will be suspended in the general office building at Colon, Wednesday afternoon, March 3.

H. J. SLIFER, General Manager.

Willis J. Rodman, Superintendent of Telephones and Telegraph of the Panama railroad, died at Colon hospital, February 28, after a long illness. He was employed in the United States on August 23, 1905, and began work on the Isthmus on September 4, 1905. For several months prior to September 10, 1906, he acted as train dispatcher. A wife, a daughter, and father survive him.

Bas Obispo Explosion.

All of the rock and earth thrown into Culebra Cut at Bas Obispo by the explosion of December 12, has been removed. No bodies have been found since January 13. The total number of deaths resulting from the explosion was 26, of which 5 bodies were unidentified.

Visit of the Pacific Fleet.

The first squadron of the United States Pacific Fleet under command of Rear Admiral William T. Swinburn will leave Panama Bay on Thursday, March 4, for the following ports:

The *Washington* and *Tennessee* for Punta Arenas, Costa Rica; *Colorado* and *South Dakota*, for Corinto, Nicaragua; *West Virginia* and *Maryland*, for Acajulta, Salvador. The *Pennsylvania* and *California* sailed on Sunday, February 28, for Amapala, Honduras.

Isthmian Construction Foremen.

A general business meeting of the Order of Isthmian Construction Foremen will be

held at Culebra hall on Sunday, March 7, at 2.30 p. m. All members are earnestly requested to attend as matters of importance will be decided.

Locomotive Engineers.

A regular meeting of Division No. 756, Brotherhood of Locomotive Engineers, will be held at Cristobal on March 7, at 1 p. m.

Isthmian Canal Lodge, No. 1, I. O. O. F.

Isthmian Canal Lodge No. 1, I. O. O. F., Gorgona, C. Z. meets every Tuesday at 7 p. m. in the I. C. C. clubhouse. All Odd Fellows are cordially invited to attend these meetings.

Kangaroo Dance.

The members of the Independent Order of Panamanian Kangaroos residing in Corozal, will give a Shirt Waist Dance at the hotel in Corozal on Saturday evening, March 6, 1909. A special train will be run from Panama, returning after the dance. All Kangaroos are cordially invited. The I. C. C. band will play.

Kangaroo Meeting.

Cristobal Court No. 8, I. O. P. K., will hold a regular meeting at I. C. C. Lodge Hall, Cristobal, on Sunday, March 7, at 2 p. m. All members are requested to be present.

Rainfall, February 1 to 28, 1909, Inclusive (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	.61	1.92
Brazos Brook.....	.85	4.13
Gatun.....	.88	4.12
Bohio.....	1.13	3.74
<i>Central Division—</i>		
Tabernilla.....	.92	2.87
Sun Pablo.....	.55	1.76
Bas Obispo.....	2.27	4.72
Gamboa.....	1.60	4.07
Empire.....	.73	1.50
Camacho.....	.85	2.16
Culebra.....	1.18	2.46
<i>Pacific Division—</i>		
Rio Grande.....	1.82	2.88
Pedro Miguel.....	2.60	3.26
La Boca.....	.69	1.67
Ancon.....	1.60	2.90
<i>Atlantic Coast—</i>		
Porto Bello.....		
<i>Upper Chagres</i>		
El Vigia.....	1.85	4.88
Ahjuela.....	1.49	3.71

LOST—A United States Army Sharpshooter's medal, between Cristobal and the new corral. Finder will please leave same at building No. 2, Cristobal.

LOST—A locket and chain, monogram M. L. M on locket. Finder call phone No. 206, Empire. Reward.

STATEMENT OF CLASSIFIED EXPENDITURES TO NOVEMBER 30, 1908.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1908. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Civil Administration.	Sanitation.	Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.....	\$1,446,405.26	\$4,636,645.62	\$13,427,274.62	\$4,296,728.36	\$19,323,893.27	\$43,130,947.13
Fiscal year 1908.....	704,610.15	2,310,212.01	16,680,660.46	1,494,956.41	11,684,215.15	32,874,654.18
Fiscal year 1909:						
July, 1908.....	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August, 1908.....	77,019.80	145,870.37	1,599,556.90	60,798.76	517,046.09	2,400,291.92
September, 1908.....	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
October, 1908.....	59,612.51	155,676.68	1,443,614.64	67,696.17	727,544.14	2,459,144.14
November, 1908.....	59,374.12	147,957.24	1,369,805.86	77,406.64	480,139.10	2,134,682.96
Total.....	\$2,501,787.02	7,724,050.39	37,614,864.53	6,142,296.71	33,980,354.07	87,963,552.72

LIST OF EMPLOYES WHO ARE ENTITLED TO CANAL MEDALS.

The publication of names of employes of the Isthmian Canal Commission and Panama Railroad Company who are entitled to receive Canal Medals, which was begun in THE CANAL RECORD of February 10, is continued in this issue. The names thus far published are those of employes of the Isthmian Canal Commission. When all these have been given the names of employes of the Panama Railroad Company will follow. Address communications relating to corrections in Medal list to Assistant to the Chairman, Culebra, C. Z.

The following names should have been included in the 1905 list which was printed in THE CANAL RECORD of February 24:

Name.	Medal service begins.
Putney, George H.	Dec. 2
Scannell, Edward J.	Dec. 2
Stephens, Fred H.	Dec. 2
Tireman, Claude K.	Dec. 2
Weidman, Charles E.	Dec. 2
Johnson, August.	Dec. 2
Schutt, Oscar	Dec. 2
Cole, John H.	Dec. 8
Agee, James	Dec. 9
Bolich, David W.	Dec. 9
Bronk, A. Earl.	Dec. 9
Cassidy, Frank	Dec. 9
Chambers, John W.	Dec. 9
French, Archie W.	Dec. 9
Herrington, Walter W.	Dec. 9
Jennings, Edward F.	Dec. 9
Keyser, Elgie M.	Dec. 9
Kyte, Edward M.	Dec. 9
Lagerquist, John	Dec. 9
Melton, James M.	Dec. 9
O'Connor, David C.	Dec. 9
Rull, Emil J.	Dec. 9
Rhodes, Jessie O.	Dec. 9
Ebert, Clarence W.	Dec. 11
Millelot, Fred.	Dec. 13
Stevenson, Alex W.	Dec. 13
Turner, Edward G.	Dec. 14
Bennett, Arthur R.	Dec. 16
Bliss, Gerald De Leo.	Dec. 16
Bremner, Fleming	Dec. 16
Browning, Waller S.	Dec. 16
Getman, Adolph	Dec. 16

1906.

Wickham, Clarence A.	May 11
Byrd, Robert L.	May 14
Boland, John	May 15
Christian, William F.	May 15
Colburn, Alvin	May 15
Cronan, Charles	May 15
Davies, Richard M.	May 15
Hartigan, Fred L.	May 15
Hartley, Edwin B.	May 15
Howson, William A.	May 15
Martin, Nan	May 15
Miller, Edward C.	May 15
O'Haire, William J.	May 15
Rice, Willard	May 15
Steele, Russell L.	May 15
Tudor, Abraham L.	May 15
Wager, Andrew F.	May 15
Wundes, William N.	May 15
Cochran, James P.	May 16
Lavin, James	May 16
Ruhe, Albert	May 16
Finley, Thomas	May 17
Kenyon, William	May 17
Brennan, Charles F.	May 21
Creators, Cheney F.	May 21
Deane, Edward S.	May 21
Fagan, Claud C.	May 21
Gayer, William C.	May 21
Girdner, Harry	May 21
Hackman, Henry J.	May 21
Kaynor, Walter L.	May 21
McConahy, John	May 21
Mead, Charles H.	May 21
O'Donovan, William J.	May 21
Richmond, Veua E.	May 21
Stoehr, George P.	May 21
Deer, Edgar H.	May 26
Donaldson, Bert A.	May 26
Duncan, Samuel	May 26
Earhart, Troy W.	May 26
Gotsch, John W.	May 26
Guyant, Claude K.	May 26
Kemp, James	May 26
Luther, Arthur P.	May 26
McClinton, Joseph L.	May 26
McCormick, Joseph	May 26
Maney, Frank L.	May 26
Stewart, Malcolm	May 26
Stewart, William	May 26
Zeiler, Avrum H.	May 26

Name.	Medal service begins.
Wheeler, Christopher O.	May 28
Brumer, Jasper H.	May 31
Chamcey, William L.	May 31
Clark, Fred P.	May 31
Davies, Pinkney A.	May 31
Hall, John	May 31
Julien, Clark	May 31
Kaue, John H.	May 31
Loomis, Howard B.	May 31
McIlverne, Joseph	May 31
Payne, Burd W.	May 31
Seiders, David E.	May 31
Walker, Alfred J.	May 31
Walling, Clifford T.	May 31
Jackson, Bertram Y.	June 4
Browne, Frank A.	June 5
Corcoran, Anthony T.	June 5
Cotton, Harold L.	June 5
Gage, Clarence E.	June 5
Harrington, Charles R.	June 5
Lawlor, William A.	June 5
Tracy, Edmund H.	June 5
Woodward, William B.	June 5
Wood, Stanley W.	June 6
Chnte, Frank E.	June 9
Clifton, Robert B.	June 9
Crosgrove, James	June 9
Farrow, William E.	June 9
Pitter, Peter	June 9
Kendall, Joshua W.	June 9
McDavid, William H.	June 9
Morley, John F.	June 9
Nevis, Chester E.	June 9
Pilson, Frank K.	June 9
Randall, Ortez G.	June 9
Windsor, Joseph W.	June 9
Wolverton, David R.	June 9
Wuerz, Robert	June 9
Young, Thomas H.	June 9
McLean, Leonard	June 13
Daughtrey, Talbert H.	June 15
Gorham, Frederick L.	June 15
Hummer, James L.	June 15
Jury, Frank J.	June 15
Loulau, James A.	June 15
Perry, William H.	June 15
Pope, Henry	June 15
Richmond, John	June 15
Robinson, Rennie R.	June 15
Soule, Edgar C.	June 15
Waldron, Frank K.	June 15
Finn, Michael J.	June 16
Burnham, Howard D.	June 20
Clark, Edward B.	June 20
Cutler, Albert T.	June 20
Darling, George	June 20
Derhammer, Peter	June 20
Faxon, William R.	June 20
French, Marvin L.	June 20
Harrington, Nellie T.	June 20
Hovsepian, Armen G.	June 20
Kelleher, Jerry F.	June 20
Light, Ben F.	June 20
Needham, William H.	June 20
Sullivan, Dan	June 20
Titus, William L.	June 20
Wertz, Harry C.	June 20
Lambert, Clarence K.	June 21
Bovay, Kenneth	June 24
Brayton, Nelson D.	June 24
Buecholdt, Joseph A.	June 24
Dawson, George H.	June 24
Dickinson, Albert M.	June 24
Loveless, Robert	June 24
McNamara, Gordon G.	June 24
Moore, Paul D.	June 24
Moore, Edward	June 24
Reichl, Frank	June 24
Smith, Julian C.	June 24
Tabor, Charles S.	June 24
Kennedy, Arthur W.	June 25
Savinien, Francis P.	June 27
Grinder, Joseph B.	June 30
Mickintosh, Joseph	June 30
Stollmack, Abraham I.	June 30
Westburg, John E.	June 30
Whipple, C. Earl	June 30
Hoffman, Benno A.	July 1
Hilton, John F.	July 2

Name.	Medal service begins.
Phillips, Jack	July 2
Barnett, Charles C.	July 4
Caruthers, Albert B.	July 4
Deneen, Jack	July 4
Edwards, Gaston H.	July 4
Key, Grant	July 4
Sturdivant, Roy H.	July 4
Whaler, John W.	July 4
Yeagley, James G.	July 4
Betterley, William J.	July 10
Bradney, Madison F.	July 10
Cook, George H.	July 10
Gayle, Edmund D.	July 10
Gilbert, James J.	July 10
Hart, Franklin W.	July 10
McCormick, Edward B.	July 10
Maenner, Ludwig T.	July 10
Stocchini, Thomas F.	July 11
Bowlby, Richard F.	July 12
Carroll, John M.	July 12
Griley, George L.	July 13
Alexander, William H.	July 14
Browne, George	July 14
Cole, Lyman U.	July 14
Conley, Richard S.	July 14
Conley, William H.	July 14
Hughes, William E.	July 14
James, Wm. McNully	July 14
Jones, McClelland K.	July 14
Nelson, Richard M.	July 14
Pulsifer, Chase	July 14
Staley, Frank S.	July 14
Kuehnle, Fred G.	July 15
Deeds, Edward F.	July 16
Paris, Joseph	July 17
Adkins, Stausbury B.	July 19
Beard, Frederick S.	July 19
Brown, Ancil T.	July 19
Brown, Warren J.	July 19
Carr, Merle H.	July 19
Cook, Robert W.	July 19
McLean, William P.	July 19
Russell, Bessie E.	July 19
Steinmeier, Harry	July 19
Thomas, Trevor	July 19
Thompson, Ernest R.	July 19
Titcomb, Jr., Hiram	July 19
Keefe, John H.	July 20
Payne, Louis W.	July 21
Taylor, Philip	July 21
Manning, Charles T.	July 23
Brown, Worcester W.	July 25
Dibowski, Charles J.	July 25
Drake, Charles B.	July 25
Hescher, Charles	July 25
Lawton, Alfred W.	July 25
Logan, Orren	July 25
McKelvey, Mary J.	July 25
Peel, Samuel	July 25
Sexton, Charles B.	July 25
Smithwick, Georgia I.	July 25
Smith, Leroy	July 25
Tinsley, Elias C.	July 25
Ward, Rupert P.	July 25
Webster, Lewis	July 25
White, James	July 25
Walton, George E.	July 26
Allison, Edward H.	July 30
Bamgardner, Elton M.	July 30
Cameron, Charles G.	July 30
Davis, Perry W.	July 30
Durand, Louis A.	July 30
Fogg, Belmont A.	July 30
Cerrard, Fred C.	July 30
Henkle, Benjamin F.	July 30
Hunter, Abel A.	July 30
Jones, William C.	July 30
Knudtson, Bertha M.	July 30
Maas, Charles L. C.	July 30
Oyster, William M.	July 30
Persons, Charles L.	July 30
Angell, Chester	Aug. 1
Biscoe, Herbert S.	Aug. 1
Coffey, Harry T.	Aug. 1
Kenny, Arthur F.	Aug. 1
Bohall, Peter	Aug. 3
Brown, Elizabeth C.	Aug. 5
Jones, Kemp G.	Aug. 5
Kealy, Daniel	Aug. 5

Name.	Medal service begins.
Matchette, J. Marion	Aug. 5
Palmer, Charles A.	Aug. 5
Grout, Floid E.	Aug. 5
Telfer, William	Aug. 6
O'Conner, Fred B.	Aug. 7
Bath, Charles H.	Aug. 9
Bradley, William E.	Aug. 9
Miller, Jr., John B.	Aug. 9
Million, George	Aug. 9
Mostyn, Ed.	Aug. 9
Munroe, John K.	Aug. 9
Newman, Charles J.	Aug. 9
Nitzer, William A.	Aug. 9
Quinn, Carmelius	Aug. 9
Reese, George P.	Aug. 9
Rich, Elizabeth	Aug. 9
Short, Robert	Aug. 9
Sommerville, Robert	Aug. 9
Speer, Adolphus G.	Aug. 9
Sprecken, Harry V.	Aug. 9
Towle, Ross S.	Aug. 9
Arhstyn, Ed.	Aug. 9
Rich, Elizabeth	Aug. 9
Short, Robert	Aug. 9
Sommerville, Robert	Aug. 9
Speer, Adolphus G.	Aug. 9
Sprecken, Harry V.	Aug. 9
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Short, Robert	Aug. 9
Sommerville, Robert	Aug. 9
Speer, Adolphus G.	Aug. 9
Sprecken, Harry V.	Aug. 9
Towle, Ross S.	Aug. 9
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ENGINEERS ON CANAL.

Full Text of the Report of the Special Board of Engineers Submitted to Congress by the President.

WASHINGTON, February 16, 1909.

SIR: In accordance with your instructions, we have visited the Isthmian Canal, in company with Hon. William H. Taft, and have examined the work in progress and the plans for the structures as far as now developed.

We have given especial consideration, under the instructions of Mr. Taft, to the foundations for the Gatun Dam, and the feasibility of constructing and maintaining thereon a safe dam for retaining water at 85 feet above sea-level.

We have examined the slides in the banks of the Canal and the surveys, plottings, and sections that have been made of them. The subsidence in the fills in the toes of the dams and in the railway embankments has also been examined, and we have considered the effect of the qualities of materials thus disclosed upon the construction of the various works and upon their ultimate stability.

We have also considered the evidence that has been accumulated as to the permeability of the different materials and the possible loss of water by percolation through the bed and banks of the future Gatun Lake; and the question whether such loss of water by seepage would result in materially reducing the water supply or in undermining and ultimately crippling the structure.

GATUN DAM.

The Gatun earth dam is the central point of discussion, and we were instructed by Mr. Taft to give it first consideration in the light of all new evidence.

We are satisfied, both from the records of the experiments that have been made and from our own personal examination of the materials, as seen in cuts now open and as disclosed by samples from test borings, that there will be no dangerous or objectionable seepage through the materials under the base of the dam, nor are they so soft as to be liable to be pushed aside by the weight of the proposed dam so as to cause dangerous settlement.

We are also satisfied that the materials available and which it is proposed to use are suitable and can be readily placed to form a tight, stable, and permanent dam.

The type of dam now under construction is one which meets with our unanimous approval. It is a combination of rock fill and hydraulic fill, in which the exterior faces are to be composed largely of rock of all sizes obtained from the canal excavation, dumped and laid on slopes much flatter than are ordinarily found in earth dams, while the interior of the great mass will consist of clayey material obtained by hydraulic dredging from large deposits at a little distance from the dam and carried by water through pipes to the places where it is to be used. The material as delivered is a mixture of earth and water. The material held in suspension slowly deposits, finally forming a solid, water-tight embankment. The pond necessarily maintained on the top of the dam during construction tests the embankment at all stages of its growth, searches out any weak points, and leads to the closure of any voids or cracks.

The most practical question in the construction of the Gatun Dam is the possible slipping and sliding of the materials underneath and in the body of the dam. The materials, speaking broadly, are of a clayey nature, generally impervious to water, but sometimes slipping when subjected to heavy unbalanced pressure or on high steep slopes when saturated with water. In this respect the materials differ radically from the sandy and gravelly materials which have been frequently used in the construction of other earth dams.

In order to build a dam of these clayey materials that will be stable and permanent, it is necessary that the slopes should be flatter than would be needed to secure the stability of a dam of siliceous, sandy, or gravelly materials.

The evidence that has been accumulated as to the degrees of slope that are stable with these materials seems to us conclusive. The fact that the materials are slippery does not mean that a dam built from them is necessarily less stable than a dam built of materials that do not slip so easily. It does mean that, in order to secure stability and permanency, the dam must be built with a greater thickness at the bottom.

The dam as proposed is more than a third of a mile in horizontal thickness at its base, including the rock-fill portions.

The design upon which the work is now being prosecuted abundantly fulfills the required degree of stability and goes far beyond the limits of what would be regarded as sufficient and safe in any less important structure.

As a matter of convenience and economy during construction, materials have been piled up on slopes

much steeper than those contemplated in the finished work. Generally, the materials so placed have remained in position, but in some cases slips have occurred. The occurrence of these slips is of no serious consequence either in the practical execution of the work or in the ultimate stability of the structures. We can readily understand how incorrect deductions may have been drawn from these occurrences, especially by those not fully informed as to the character of the materials and the ample dimensions and much less steep slopes of the proposed structures in their final form.

We were requested to consider the proper height for the crest of the Gatun Dam, and after consideration concluded that it could be safely reduced 20 feet from that originally proposed, namely, to an elevation of 115 feet above sea-level, or 30 feet above the normal level of the water against the dam. We are also of the opinion that the sheet piling recently proposed under the base of the dam may be safely omitted. The narrow cut-off trench now in progress through the upper earth stratum on Gatun Island and elsewhere and designed to be refilled with sluiced material should be continued.

Changes in these respects will facilitate the work of construction and will reduce somewhat the cost of the proposed work.

A full study of all the data at hand, and of the materials, and of the plans that are proposed with the above modifications, leaves no doubt in our minds as to the safe, tight, and durable character of the Gatun Dam.

CHANGES IN PLAN OF CANAL.

It was suggested to us by Mr. Taft that we give special consideration to those changes which have been made in the plans of the minority of the Board of Consulting Engineers of 1905 since the adoption of the project.

Change in Position of Lower Pacific Locks.

One of the most important of these changes is the moving of the lower locks on the Pacific end of the Canal from La Boca, on the shore of Panama Bay, to Miraflores, about 4 miles inland.

This change involved abandoning the construction of two earth dams at and near La Boca and the substitution of about 4 miles of deep-sea level channel 500 feet wide from La Boca to Miraflores in place of a wider channel through the lake that would have been created by the dams.

Before this change was made work had been commenced upon the toes of one of the dams. The material had been piled up to a considerable height on slopes steeper than were capable of being supported by the underlying material. Under these conditions settlements occurred with lateral displacement of some of the underlying material. Your board, after carefully inspecting the ground and the partially completed work, is of the opinion that these settlements cause no reason to doubt the stability of the proposed dams. We are unanimously of the opinion that stable and water-tight dams of substantially the proposed dimensions could have been constructed on the proposed sites without recourse to dredging out the underlying soft material.

The report of the minority of the Board of Consulting Engineers of 1905 recognized that an objection might be made from a military point of view to placing locks on the shore of a bay, exposed to guns of hostile ships. We now understand that the controlling reason for the change was a military one. This change in the plans will result in an increase in cost of the Canal by an amount judged from evidence at our disposal to be not less than \$10,000,000. We are informed, however, that this change would greatly lessen the cost of fortification.

Increased Width of Canal.

Another change is the increase of the minimum bottom width of the Canal from 200 feet to 300 feet. This applies to a length of about 4.7 miles in the Culebra Cut. We understand that this change will increase the cost of the work by about \$13,000,000. The work upon the excavation of the Culebra Cut under the revised plan has now so far advanced that this widening will not delay the completion of the Canal.

The widening will permit ships to pass one another in this portion of the Canal, as they may under the original plan in all other portions, and will otherwise facilitate navigation through it.

If slides occur after the completion of the Canal, the wider Canal is not as likely to be blocked as a narrow one.

We understand that this change was authorized directly by you on the presentation of its advantages by the Chief Engineer, and we merely call attention to it as one reason for the increased cost of the Canal.

Increased Size of Locks.

Another change is the increase of the dimensions of the locks from 95 by 900 feet to 110 by 1,000 feet. The increase in width we understand has been made

in compliance with a request from the General Board of the Navy Department, in order to allow the passage of the largest war vessels contemplated.

A large increase in cost is involved in these enlarged dimensions.

Changes in Breakwaters.

An important change is proposed in the location of the breakwater at the Atlantic end of the Canal. The plan provisionally adopted by the Board of Consulting Engineers of 1905, and adopted for the purpose of estimate by the minority of that board, was for a breakwater generally parallel with the channel, which included less than one third of Limon Bay; whereas the breakwater in the location now proposed will protect the entire bay and furnish a more commodious harbor not only for ships using the Canal, but for all other shipping which makes use of the port. A considerable increase in cost is involved in this change.

We had an opportunity to view the present harbor during what is said to have been the only severe norther of the past two years, and have no doubt that a good breakwater is a desirable adjunct to the Canal. We are not prepared to pass on the precise location, form, or cost of this.

A change of less importance has been made at the Pacific end by relocating the dredged channel leading to deep water and increasing its width from 300 feet to 500 feet and by constructing a breakwater from the shore at La Boca to Naos Island with material excavated from the Culebra Cut. This breakwater, now under construction, serves to prevent currents across the Canal cut and tends to prevent deposits in the dredged channel and to increase the safety of navigation. The breakwater may also serve to carry a roadway to Naos Island. These changes involve some additional expense.

Relocation of Panama Railroad.

The alignment of the Panama railroad has been materially changed south of Gatun. This change was made because it was found that the swamp near the Gatunillo River would not support the very high railroad embankment required, if made with ordinary slopes, and a line crossing at a point higher up the river was selected, which does not, however, materially increase the length of the railroad. The construction of the railroad will cost much more than was estimated by the minority of the Board of Consulting Engineers, who were unable to procure surveys of the proposed location. The recent change in location affords more ample and convenient anchorage immediately above the locks.

Other Changes.

Some further changes or additions which have not yet been fully worked out have been mentioned to us as likely to be made as the work progresses, namely, the dredging out of a broad anchorage basin immediately downstream from the Gatun Locks, another for anchorage and room for turning of long ships near La Boca, and possibly another just below the Miraflores Locks. These can all be delayed until the completion of the main work of canal excavation and lock building, and then executed by the dredges that have done the main work. The work can thus be done without additional equipment, and at a low price per cubic yard.

PRESENT CONDITION OF WORK.

It has been suggested that we report upon the condition of the work and the progress being made, and, if found possible in the time at our disposal, upon the probable time of completion.

Organization.

We have seen the work under way on all parts of the Canal. We have become acquainted with the engineers in responsible positions and have noted the organization and equipment.

It is our impression that the work is well organized and is being conducted energetically and well.

The work is done by day labor and not by the contract system.

The men are well paid, well housed, well fed, and well cared for in case of sickness or accident. Houses, furniture, fuel, water, drainage, and lights are furnished to employes without cost. Roads are built, schools supported, and Young Men's Christian Association buildings provided, which are practically club buildings. Parts of the running expenses are also paid. The premises are cleared and drained and the grass kept cut. The climate is especially adapted to outdoor life, and the ample porches, entirely enclosed by bronze-wire screens, give the greatest facility for this. We are especially pleased with the architectural arrangements of the houses. They are admirably adapted to the climatic conditions.

Bachelor quarters and hotels furnishing meals at moderate prices are also provided by the Government.

Hospitals are provided, free medical attendance is furnished to employes, and medical attendance at low rates is supplied to families of employes.

A limited amount of free transportation, namely, one excursion trip each month to any station, is fur-

nished on the Panama railroad to employes, and half rates are given in all other cases, and also half rates to families of employes. Free transportation in some cases, and in all other cases transportation at reduced rates to and from the Isthmus, is provided to employes and their families.

Six weeks' leave of absence each year, with full pay, is given to all monthly employes, and this includes not only office and engineering forces, but also the mechanical forces on the monthly basis.

The medical and sanitary department is especially to be commended for its success in exterminating yellow fever and controlling malaria, and for other measures which have made the Isthmus a thoroughly healthful place in which to live.

The cost of the sanitary department, which represents the cost of keeping the Isthmus healthful, amounts to about \$2,000,000 per year. This is a large sum, but the work is well done, and any decrease in the efficiency of the sanitary service might readily prove disastrous to the prosecution of the main work.

We believe that in no other great construction work has so much been done for employes in the way of furnishing necessities, comforts, and luxuries of life at the cost of the work as has been done in this case. This is one reason for the high cost of the Canal.

Progress and Time of Completion.

We have examined diagrams and statistics showing the amount of work accomplished by years and by months since the work was taken over by the United States, and showing the amounts of the various classes of work remaining to be done and the estimated rates of progress and times required for completion. It has been impossible for us to check these in detail, but we have compared them with other estimates, and with the work obviously done, and they seem reasonable to us. In the light of this showing, we see no reason why the Canal should not be completed, as estimated by the Chief Engineer, by January 1, 1915; in fact, it seems that a somewhat earlier completion is probable if all goes well, but in view of possible contingencies it is not prudent at this time to count on an earlier date.

Cost of Work.

In examining the expenditures thus far made it must be borne in mind that large sums have been paid for steamships, dredges, steam shovels, locomotives, cars, tracks, shops, and all the equipment that is necessary to prosecute a work of this magnitude, and also that large sums have been spent for dwellings, offices, buildings of various kinds, for waterworks, sewers, paving, and other equipment, and that these expenditures have been made, in large measure, for the whole work, and that corresponding disbursements hereafter will be very much less in proportion than they have been to date.

Colonel Goethals has presented to us an estimate of the quantities of materials and the cost involved in the construction of the Canal as now planned, including all disbursements thus far made and the estimated amounts required for completion. These cover the greater width of excavation, the increased size of locks, the extra canal channel required by moving the Pacific Locks from La Boca to Miraflores, the improved harbor arrangements at Colon, and all other changes which have been adopted or which are now seriously contemplated. The payments to the New Panama Canal Company are included, and also the payments to the Republic of Panama and the cost of sanitation and Zone government, for which items the Board of Consulting Engineers of 1905 stated that it presented no estimates.

The estimates and allowances so made seem ample to us. In some items it would seem that considerable reductions could be made, but on the other hand, the work is large and novel and unforeseen contingencies must be expected, so that it may be that the aggregate estimate as presented is not too large.

After deducting \$15,000,000, representing the estimated receipts from the return of money loaned the Panama railroad, and from the collection of water rates to cover the cost of municipal improvements made in Panama and Colon, and from miscellaneous sources, this present estimate of the complete cost of the lock Canal amounts to \$360,000,000.

In making this estimate no reduction has been made for whatever savings may be realized from the construction plant at the termination of the work, which plant has cost to date about \$30,000,000.

The cost of the Canal as estimated in 1905, is frequently stated to be \$140,000,000, but this is incorrect, as the minority report expressly excluded sanitation and Zone government, and the payments to Panama and the French company had already been made. Adding these amounts, using the present estimates of sanitation and Zone government, we have in round numbers the following:

Estimate of the minority of the Board of Consulting Engineers for the cost of construction, exclusive of sanitation and Zone government.....	\$140,000,000
Payments made to the Republic of Panama and to the New Panama Canal Company.....	50,000,000
Sanitation and Zone government, as now estimated.....	27,000,000
Total.....	\$217,000,000

The difference between this cost and the total cost as now estimated is therefore \$143,000,000. Of this amount nearly one-half can be accounted for by the changes in the Canal and appurtenant works to which we have already referred, and the remainder is to be attributed mainly to the higher unit cost of the different items of the work, caused in part by the higher prices for plant, supplies, and labor which have prevailed in the United States since the estimate of 1905 was made, and which made it necessary to offer very high wages and special inducements in order to obtain the requisite force in a locality where the reputation for health was not good in the earlier years, in part to the adoption of an eight-hour day for most of the work instead of a ten-hour day, in part to the much greater expenditure for housing and care of employes and for auxiliary works than was anticipated, and in part in our opinion, to the evident purpose to make the estimates ample and to provide liberally for contingencies.

When the work at Panama is completed, in addition to having the Canal, the United States will own the Panama railroad and the steamship line operated in connection therewith.

TYPE OF CANAL.

In view of the fact that the cost of the lock canal, as now proposed, will largely overrun the estimate of the minority of the Board of Consulting Engineers of 1905, and that the excavation in the Culebra Cut is being made somewhat more rapidly than was anticipated, we have considered in a very general way the relative cost and time of construction of a sea-level canal.

Most of the factors which have operated to increase the cost of the lock canal would operate with similar effect to increase the cost of the sea-level canal, and at the present time there are additional factors of even greater importance to be considered as affecting the time of completion and cost of a sea-level canal. One of these is to be found in the Gamboa dam, proposed to be nearly 200 feet in height above its foundations, which would be about 60 feet below the normal river level. Prior to the construction of this dam a long and deep diversion channel must be provided of far greater magnitude than that for the Gatun Dam which has been about two years in progress, and is not yet completed.

Judging by the time required for the construction of dams of similar magnitude in the United States, it is probable that were work on the Gamboa dam to be started as soon as possible this one feature of the sea-level project of the Board of Consulting Engineers of 1905 could not be completed until after the time required for the completion of the lock canal. The construction of this dam at Gamboa for the control of the Chagres is an essential preliminary to the excavation of the sea-level canal for the 13 miles from Bohio to Bas Obispo.

Furthermore, in addition to the Gamboa dam, the sea-level project provides for building for the control of tributary streams three large dams, the sites of which have not been examined.

Work is already far advanced on nearly all parts of the lock Canal, and a change in the type would result in abandoning work done which represents large expenditure.

Under the plan now being carried out, the River Chagres and each of the other rivers on the Isthmus tributary thereto is made an ally of the project. The waters of these rivers are handled economically and in such a way as to facilitate the operation of the Canal. With the sea-level project, these rivers instead of being allies would be enemies of the Canal, and floods in them would greatly interfere with the work.

The excavation of the Canal would be carried to 40 feet or more below sea-level and to a much greater depth below the bottoms of the valleys in which the upper streams now flow.

It would further be necessary to cut long and large diversion channels on each side of the canal for streams entering the Chagres Valley. The cost of such lateral channels to protect the Culebra Cut alone from the comparatively small streams formerly entering it, including work done by the French, has probably been not less than \$2,000,000. The channels required for the lower valley of the Chagres would be necessarily much longer, larger, and far more expensive.

ROCK EXCAVATION UNDER WATER.

Much has been said about the economy of excavating rock under water by modern appliances as compared with the cost of such excavation in the dry with steam shovels after blasting.

We concur in the opinion of those in charge of work at the Isthmus that it is more economical, where the conditions are favorable, to excavate rock in the dry than by any under-water process now in use. Experience is not yet available to us which will justify the belief that, with the depth of cut and the quality of rock found on the Isthmus, the general adoption of subaqueous methods would prove more expeditious or cheaper.

It is probable that more economical subaqueous methods will be sometime developed, but it would

not be wise to base a change in plan of important work upon prospective results to be obtained by any method not yet thoroughly tried.

EARTHQUAKES.

It has been suggested that the Canal region is liable to earthquake shocks and that a sea-level canal would be less subject to injury by earthquakes than a lock canal.

We have seen, in the city of Panama, the ruins of an old church, said to have been destroyed by fire, containing a long and extremely flat arch of great age, which convinces us that there has been no earthquake shock on the Isthmus during the one hundred and fifty years, more or less, that this structure has been in existence, that would have injured the work proposed.

Dams and locks are structures of great stability and little subject to damage by earthquake shocks. The successful resistance of the dams and reservoirs supplying San Francisco with water, even when those structures were located near the line of fault of the earthquake, gives confidence in the ability of well-designed masonry structures and earth embankments to resist earthquake shocks.

We do not regard such shocks as a source of serious damage to any type of canal at the Isthmus, but if they were so their effect on the dams, locks, and regulating works proposed for the sea-level canal would be much the same as upon similar structures of the lock canal. The Gamboa dam for controlling the floods of the Chagres in connection with the sea-level canal provides for a lake having an area of 29 square miles when full, and if this water were suddenly let loose into the sea level canal it would seriously injure large portions thereof and wreck ships therein. A similar result would be reached if the other three dams of the sea-level canal retaining lakes, having an aggregate area of 10 square miles, were to be suddenly destroyed.

WATER SUPPLY.

We believe that the sufficiency of the water supply for a lock canal has never been seriously questioned. It is true that during the dry season the natural flow of the streams would not be sufficient to furnish the water required for numerous lockages. There would even be times when the natural flow would not suffice to make good the loss by evaporation from the surface of the water in Gatun Lake. During the rainy season there is a great excess of water which can be readily stored in Gatun Lake with its area of 163 square miles. It is proposed to fill this lake during the rainy season 2 feet above its normal level, and to draw it as needed during the dry season. It is computed that by drawing it 5 feet below normal level, which draft would leave 41 feet of water through Culebra Cut, the supply in a dry year would be sufficient to serve from 30 to 40 lockages up and an equal number of lockages down daily. Each lockage might consist of a single large vessel or a fleet of smaller vessels capable of being in the lock at one time, as is common at Sault Ste. Marie. For comparison the published record shows that an average of only 1 ship per day passed through the Suez Canal in 1907.

Ultimately, if needed for increased traffic additional water may be held from wet seasons and made available in dry ones. This may be accomplished either by raising further the high-water level in Gatun Lake or by lowering the low water level in the lake, this lowering being accompanied if necessary, by the deepening of the Canal, or storage may be provided by an entirely independent reservoir, for which there are excellent sites.

From our examinations in the neighborhood of Gatun Dam, we can find no reason to apprehend important loss of water by seepage through the ridges surrounding the lake, while in our judgment the bed of the lake will be practically impervious to water.

The water supply in sight is so much greater than any need that can be reasonably anticipated that the best method of securing more water when the time of need arrives does not require to be considered now.

CONCLUSIONS.

Your board is satisfied that the dams and locks, the lock gates, and all other engineering structures involved in the lock canal project are feasible and safe, and that they can be depended upon to perform with certainty their respective functions.

We do not find any occasion for changing the type of Canal that has been adopted.

A change to a sea-level plan at the present time would add greatly to the cost and time of construction, without compensating advantages, either in capacity of canal or safety of navigation, and hence would be a public misfortune.

We do find in the detailed designs that have been adopted, or that are under consideration, some matters where other arrangements than those now considered seem worthy of study. As these proposed changes are of a tentative nature and do not in any case affect the main questions herein discussed, they are not taken up in this report.

Very respectfully,

FREDERIC P. STEARNS, JAMES D. SCHUYLER,
ARTHUR P. DAVIS, ISHAM RANDOLPHE,
HENRY A. ALLEN, JOHN R. FREEMAN,
ALLEN HAZEN.

The President.

COMPARISON OF WORK AND COST, AS ESTIMATED IN 1906 AND IN 1908—ATLANTIC DIVISION.

A summary of the amount of work and the cost, as estimated by the Board of Consulting Engineers in 1906 and by the Isthmian Canal Commission in December, 1908, and the details of the Board's estimate and that of the Commission for the Central Division were published in THE CANAL RECORD of February 24. The summary includes, in addition to a comparison of the amounts required for construction, an estimate of the amount that will be required for sanitation, for the Department of Civil Administration, the amounts paid to the New French Canal Company and the Republic of Panama, and an estimate of reimbursements to the United States Treasury from various sources. The details of the estimate for work and costs in the Pacific Division will be published on March 10, and for the Panama Railroad relocation, loans to the Panama Railroad, general expenses, construction and repair of buildings and municipal improvements, in the issue of March 17.

BOARD OF CONSULTING ENGINEERS, 1906.

ISTHMIAN CANAL COMMISSION, DECEMBER, 1908.

BREAKWATER IN LIMON BAY.

From Mile 0 to Mile 3.30 as per estimate of the Board.....	\$5,000,000
Extension from Mile 3.30 to head of bay (Mile 4.45), 400,000 cubic yards, at 75 cents per yard.....	300,000
Total.....	\$5,300,000
The breakwater contemplated by the Minority consisted of—	
An east jetty (extending from deep water to Manzanilla Point).....	0.95 miles
A west jetty, extending from deep water to head of Limon Bay, practically parallel to the axis of the Canal.....	4.55 miles
Total.....	5.50 miles
No quantities were given by the Board for the first 3.30 miles.	

BREAKWATER IN LIMON BAY.

4,234,000 cubic yards, at \$2.70 per yard.....	\$11,432,000
The breakwater upon which this estimate has been made consists of—	
A west jetty with outer end in 44 feet of water and trending toward Toro Point.....	1.96 miles
An east jetty from 41 feet of water and extending eastwardly parallel to a line drawn between the light houses at Manzanilla and Toro Point.....	1.00 miles
Total.....	2.96 miles

The difference in money between the estimate of the Minority and the present estimate is largely because of the difference in unit prices. The estimate made in 1906 by the Minority of the Board of Consulting Engineers was based upon a breakwater, the foundations largely to be of material taken from the Canal prism. The estimate of 1908 is based upon all material for the breakwater being obtained from Porto Bello. The present excavation from the Canal cannot be used economically, as the breakwater now contemplated is not in close proximity to the excavation, and there is also a lack of suitable material from the Canal excavation.

CHANNEL FROM MILE 0 TO GATUN LOCKS—500 Feet Wide.

Dredging Mile 0 to Mile 4.55—Mud and sand, 8,300,000 cubic yards, at 15 cents per yard.....	\$1,245,000
Dredging Mile 4.55 to Gatun Locks—Soft material, suction dredges, 10,000,000 cubic yards, at 25 cents per yard.....	2,500,000
Indurated clay suction dredges without cutters, 2,030,000 cubic yards, at 70 cents per yard.....	1,421,000
Total, 20,330,000 cubic yards, at 25.4 cents per yard.....	\$5,166,000

CHANNEL FROM MILE 0 TO GATUN LOCKS—500 Feet Wide.

Dredging—	
Mud and sand, 13,260,682 cubic yards, at 20 cents per yard.....	\$2,652,000
Earth requiring cutting and some blasting, 6,862,000 cubic yards, at 45 cents per yard.....	3,088,000
Rock blasted and dredged, 1,105,313 cubic yards, at \$1.50 per yd..	1,658,000
Rock under water, 851,267 cubic yards, at \$2.50 per yard.....	2,128,000
Excavation—	
Earth in dry, 152,234 cubic yards, at 45 cents per yard.....	69,000
Earth in dry blasted, 608,895 cubic yards, at 60 cents per yard....	365,000
Rock, 3,078,596 cubic yards, at \$1.55 per yard.....	4,772,000
Total, 25,918,987 cubic yards, at 56.8 cents per yard.....	\$14,732,000
Maintenance of channel after July 1, 1909, 6,500,000 cubic yards, at 20 cents per yard.....	1,300,000
Total, 32,418,987 cubic yards at 49.4 cents per yard.....	\$16,032,000
Widening channel north of Gatun Locks, from 500 feet wide to 1,000 feet for a distance of 4,000 feet.	
Excavation—Dredging, earth, 3,786,137 cubic yards, at 45 cts. per yd..	1,704,000
Grand total, 36,205,124 cubic yards, at 48.9 cents per yard.....	\$17,736,000

Excess of present estimate over Minority, 1906—

By reason of maintenance.....	\$1,300,000
By reason of widening channel north of Gatun Locks.....	1,704,000
By reason of increase in quantities, 5,588,987 cubic yards, at 56.8 cents per yard.....	3,178,000
By increase in unit prices due largely to rock, 20,330,000 cubic yards, at 31.4 cents per yard.....	6,388,000
Total.....	\$12,570,000

The widening of the channel at the entrance to Gatun Locks is necessary to provide a basin for mooring and handling vessels.

GATUN LOCKS—Flight of three twin locks 95 feet by 900 feet usable dimensions; total lift 85 feet.

Excavation—	
Earth, 920,000 cubic yards, at 40 cents per yard.....	\$368,000
Indurated clay (rock), 2,740,000 cubic yards, at 70 cents per yard.....	1,918,000
Total, 3,660,000 cubic yards, at 60 cents per yard.....	\$2,286,000
Locks, exclusive of excavation and approach walls.....	\$13,075,000
Emergency gate.....	1,000,000
Approach walls.....	500,000
Total.....	14,575,000
Back fill and embankment, 660,000 cubic yards.....	330,000
Grand total.....	\$17,191,000

GATUN LOCKS—Flight of three twin locks 110 feet by 1,000 feet usable dimensions; total lift 85 feet.

Excavation—	
Earth, 837,667 cubic yards, at 35 cents per yard.....	\$293,000
Rock, (indurated clay), 2,948,237 cubic yards, at 65 cents per yard.....	2,211,000
Rock by hand, preparing foundations, 100,000 cubic yards, at \$2 per yard.....	200,000
Rock for curtain walls, 103,400 cubic yards, at \$5.50 per yard.....	599,000
Dredging, 1,150,000 cubic yards, at 33 cents per yard.....	280,000
Total, 5,139,304 cubic yards, at 69.1 cents per yard.....	\$3,553,000
Concrete, including approach walls, 2,096,000 cubic yards, at \$7.75 per yard.....	\$16,244,000
Emergency dam, gates, valves, operating machinery, electric capstans, etc.....	5,220,000
Total.....	21,464,000
Back fill, 949,000 cubic yards, at 85 cents per yard.....	807,000
Grand total.....	\$25,824,000

Present estimate exceeds Minority estimate of 1906 by \$8,633,000. The following are:

Due to increased size of locks and change in plans:	
Excavation—Curtain walls, 103,400 cubic yards, at \$5.50 per yard.....	\$569,000
Other excavation, 1,375,994 cubic yards, at 50.7 cents per yard.....	698,000
Increase.....	\$1,267,000
Concrete—Present estimate, 2,096,000 cubic yards, at \$7.75 per yard.....	\$16,244,000
Minority estimate, 1,300,000 cubic yards, at \$8 per yard.....	10,400,000
Increase.....	5,844,000
Gates, operating machinery, etc—Present est. mate.....	\$5,220,000
Minority estimate.....	4,175,000
Increase (due principally to furnishing 6 intermediate lock gates).....	1,045,000
Back fill.....	477,000
Total increase.....	\$8,633,000

BOARD OF CONSULTING ENGINEERS, 1906.

ISTHMIAN CANAL COMMISSION, DECEMBER, 1908.

GATUN DAM.

Earth embankment—	
Below elevation +50 dredged material pumped into dam, 12,170,000 cubic yards, at 20 cents per yard.....	\$2,434,000
Between elevation +50 and elevation +80, dredged material pumped into dam, 5,770,000 cubic yards, at 30 cents per yard.....	1,731,000
Above elevation +80, material from excavation placed in dam, 3,260,000 cubic yards, at 25 cents per yard.....	815,000
Total, 21,200,000 cubic yards, at 23.4 cents per yard.....	\$4,980,000
Excavation for diversion channel and regulating works (spillway):	
Earth, 1,100,000 cubic yards, at 40 cents per yard.....	\$440,000
Indurated clay (rock), 480,000 cubic yards, at 70 cents per yard.....	336,000
Total, 1,580,000 cubic yards, at 49.1 cents per yard.....	776,000
Concrete in regulating works and diversion channel, 189,000 cubic yards, at \$8 per yard.....	\$1,512,000
Regulating gates and machinery.....	320,000
Preparatory and miscellaneous.....	1,832,000
Concrete.....	200,000
Grand total.....	\$7,788,000

GATUN DAM.

Earth embankment.	
Dredged material pumped into dam—	
7,000,000 cubic yards, at 20 cents per yard.....	\$1,400,000
7,000,000 cubic yards, at 30 cents per yard.....	2,100,000
7,000,000 cubic yards, at 45 cents per yard.....	3,150,000
Rock fill, 3,400,000 cubic yards, at 20 cents per yard.....	680,000
Total, 24,400,000 cubic yards, at 30 cents per yard.....	\$7,330,000
NOTE—Since this estimate was made the proposed height of the dam has been reduced from 135 feet above sea-level to 115 feet, and the estimated amount of fill necessary has been reduced 2,600,000 cubic yards.	
Excavation—	
For spillway, etc., 1,312,882 cubic yards, at 70 cts. per yd.	\$919,000
For sheet piling, and stripping, 350,000 cubic yards, at \$1.20 per yard.....	422,000
For curtain walls of regulating works, 60,000 cubic yards, at \$2.10 per yard.....	126,000
Total, 1,732,882 cubic yards, at \$5.2 cents per yard.....	1,477,000
Concrete, 200,000 cubic yards, at \$8.25 per yard.....	\$1,650,000
Regulating gates and machinery.....	320,000
Sodding.....	1,970,000
Sheet piling, linear feet, 7,000, at \$60 per foot.....	420,000
Rip-rap, 700,000 cubic yards, at \$2 per yard.....	1,400,000
Miscellaneous (includes filling trestles, pumping out old channels, etc.).....	875,000
Grand total.....	\$13,572,000

Present estimate exceeds Minority estimate of 1906 by \$5,784,000, as follows:

Embankment—Due to rock fill (new item), 3,400,000 cubic yards, at 20 cents per yard.....	\$680,000	
Due to increase in unit prices.....	1,670,000	\$2,350,000
Spillway excavation—For curtain walls (new item), 60,000 cubic yards, at \$2.10 per yard.....	\$126,000	
For other excavation, 92,882 cubic yards.....	575,000	701,000
Concrete.....		135,000
New items—Sodding, sheet piling, rip-rap, etc.....		2,595,000
Grand total.....		\$5,784,000

SUMMARY.

Breakwater.....	\$5,300,000
Channel Mile 0 to Gatun Locks.....	5,166,000
Gatun Locks.....	17,191,000
Gatun Dam.....	7,788,000
Total.....	\$35,445,000

SUMMARY.

Breakwater.....	\$11,432,000
Channel Mile 0 to Gatun Locks.....	16,032,000
Widening channel north of Gatun Locks.....	1,704,000
Gatun Locks.....	25,824,000
Gatun Dam.....	13,572,000
Total.....	\$68,564,000

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Gatun Woman's Club discussed the merits of long school hours and home study as against shorter hours and a longer period of school life, at its meeting on February 26. The committee appointed to procure rooms for regular meetings of the club expects that a satisfactory meeting place will soon be obtained. The meeting on Friday, March 5, will be at the home of Mrs. H. C. Oersted, house No. 13, and on March 12, with Mrs. A. L. Kerr, house No. 10.

The social meeting of the Las Cascadas Woman's Club, held at the home of Mrs. Charles Lingo, February 25, was well attended. Games were played, the prize in progressive euchre being won by the president. Some weeks ago the club took up the matter of convenience in purchasing at the commissary and the request made by the committee that negro servants be obliged to purchase on the "silver side," was granted. The regular business meeting will be held at the lodge rooms on Thursday, March 4.

The Bas Obispo Volunteer Fire Company, gave its first annual ball on the evening of February 20, in the I. C. C. hotel, which was artistically decorated with flags, bunting, fire axes, brass lanterns, flowers and palms. Steamers of fire hose were tastefully arranged from the ceiling to which were knotted a profusion of tropical flowers tied with red, white and blue ribbon. The arrangements were in charge of Mr. M. Williuer, secretary of the company. Luncheon and soft drinks were served to the three hun-

dred guests, who represented every part of the Canal Zone. Music was furnished by the Gorgona orchestra, and dancing continued until 1 o'clock in the morning.

Red Cross Meeting.

The general meeting of the Canal Zone Branch of the Red Cross called by the president, was held at the Hotel Tivoli on Sunday afternoon, February 28, at 3 o'clock. Delegates were present from the twelve stations in the Zone where local committees have been authorized.

Col. W. C. Gorgas was elected vice-president and Mrs. Lorin C. Collins, Lieut.-Col. John L. Phillips, Maj. Chester Harding and Mr. A. Bruce Minear members of the executive committee. A committee on the organization of First Aid lectures appointed by the president consisted of Colonel Gorgas, Colonel Phillips, and Mr. H. D. Reed. Mr. W. W. Warwick was elected auditor of accounts for the branch. The treasurer reported 1,020 paid memberships. In connection with the emergency fund three entertainments have been given at Corozal, Las Cascadas and Ancon.

Fire Department Race and Banquet.

Members of the Gatun Fire Company will be guests of the Las Cascadas Fire Company at a banquet to be held in the Washington Hotel, Colon, on the evening of March 6. Eighty-five covers will be laid. The banquet is the outcome of a hub-to-hub race held at Cristobal on Washington's Birthday between these two volunteer companies, in which the challenging company, Gatun, won

the race, a pennant presented by the Chief of the Division of Fire Protection, and the privilege of being guests at the banquet to be given by the losing team. The race was run on Front street, Cristobal, over a course measuring 118 yards. The Gatun company ran the full distance with a hose-cart carrying 200 feet of hose, laid 150 feet and connected it with a hydrant, broke the hose from three full threads, put on the pipe and had water from the nozzle in 40½ seconds. Two minor contests were also won by the Gatun company.

Personal.

Mr. Henry Savage Landor, the well known English traveler and author, is on a visit to the Isthmus with a view of informing himself thoroughly in regard to the various phases of Canal work.

Missing Men.

Information is wanted in regard to Charles E. Miller, age 18, height 5 feet 11 inches, dark gray eyes, and dark hair, who formerly lived in Indiana. He left home May 3, 1908. Anyone having knowledge concerning him is requested to communicate with Benjamin F. Miller, R. F. D. No. 2, Montgomery, Alabama.

Information is desired as to the present whereabouts of the following men: Matthew Campbell, Will R. Primm, Otto A. Jansson, Harkens J. Porter, George B. Wehmeyer, G. E. Marshall, P. L. Hardin, William G. or James G. Brady.

Any one having knowledge concerning any of these men is requested to communicate with the American Consul General, Panama, R. P.

OFFICIAL CIRCULARS.

Request on Panama Railroad Company.

CULEBRA, C. Z., February 17, 1909. CIRCULAR No. 197-B.

Hereafter nine (9) copies of requests on the Panama Railroad Company for work to be performed, Form 159-C. E., will be required, instead of eight (8) as heretofore.

H. F. HODGES, Acting Chairman and Chief Engineer.

Passes for Laborers and Foremen.

CULEBRA, C. Z., February 26, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

When second-class transportation is issued for gangs of laborers, accompanied by foremen who desire to ride first-class, separate passes must be issued covering the two classes of transportation.

H. F. HODGES, Acting Chairman and Chief Engineer.

Requests for Leaves of Absence.

CULEBRA, C. Z., February 26, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

In future, when submitting requests for leave of absence, please state on the form used for that purpose the employe's place of residence on the Isthmus, and whether occupying bachelor or family quarters. By direction of the Chairman.

M. B. DEPUTRON, Assistant to the Chairman.

Requests for Sixty-Trip Tickets.

CULEBRA, C. Z., February 27, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

In the future, when requesting sixty-trip tickets, please fill out Form 17-C. E. in triplicate instead of in duplicate as heretofore.

By direction of the Acting Chairman.

M. B. DEPUTRON, Assistant to the Chairman.

Inspector of Corrals.

CULEBRA, C. Z., February 25, 1909.

TO ALL CONCERNED:

Veterinarian H. M. Lanchlin is hereby designated as Inspector of Corrals pertaining to the Quartermaster's Department on the Canal Zone.

His duties as Inspector will include all general matters relating to the administration of corrals, and as Veterinarian apply particularly to pathology and duties of farriers.

C. A. DEVOL, Chief Quartermaster.

Pedro Miguel and Paraiso Quartermaster.

CULEBRA, C. Z., February 27, 1909.

TO WHOM CONCERNED:

Effective March 1, 1909: The Pedro Miguel and Paraiso Districts of the Quartermaster's Department will be consolidated, and placed in charge of Mr. Roy R. Watson, District Quartermaster, with headquarters at Pedro Miguel.

Mr. Harry Dundas will be Assistant District Quartermaster, and will be located at Paraiso.

C. A. DEVOL, Chief Quartermaster.

Cristobal Laundry Work

To all I, C. C. and P. R. R. Departments, and individuals having charge accounts:

Effective March 1, 1909: No laundry work, the cost for the laundering of which amounts to less than 25 cents for one job will be accepted from departments or individuals having charge accounts.

JOHN BURKE, Manager.

Approved:

EUGENE T. WILSON, Subsistence Officer.

LEGAL NOTICE.

EMPIRE, C. Z., February, 27, 1909.

Circuit Court, Second Judicial Circuit, Canal Zone.

The last will and testament of Lee J. Putnam have been presented to the Court for probate, notice is hereby given that on Friday, the 19th day of March, 1909, at two o'clock in the afternoon, in the Circuit Court house at Empire, there will be a hearing when all concerned shall appear to contest the allowance of the will.

E. M. GOOLSBY, Circuit Court Clerk.

SALE OF REAL PROPERTY.

By virtue of a decree of foreclosure of real property, to me directed from the Circuit Court in and for the Second Judicial Circuit, Canal Zone in favor of Pascal Canavaggio against A. Rome, I shall sell at public auction, to the highest bidder for cash, at the east door of the court house of the Circuit Court, in the city of Empire, Canal Zone on the 4th day of March, 1909, at three o'clock in the afternoon of said day, the following described property situated in the city of Empire, Canal Zone and more particularly described as follows: A certain three-story frame building, together with all the appurtenances there-

unto belonging, known as the Pennsylvania Hotel, and designated as by number 163, more particularly described as bounded on the north by the property of Muller, on the south by the property of Jose Garavel, on the east by the Panama railroad tracks, and on the west by the property of the Panama Banking Co., and Fishbaugh, respectively.

The above described property is to be sold at public auction as above described by virtue of a decree of foreclosure issued by the Circuit Court in and for the Second Judicial Circuit, Canal Zone, in which said cause, I, L. Toledano was the plaintiff, and A. Rome, Pascal Canavaggio, and F. P. Peterson were the defendants.

GROSVENOR A. PORTER, Marshal.

NOTICE OF SALE.

United States of America, In the matter of John Chong Wing & Co., Bankrupts.

By virtue of authority vested in me by the Court of the Second Judicial Circuit on the 27th day of February, 1909, I shall receive sealed bids for the stock of dry goods, boots, shoes, silks, groceries, fixtures, of John Chong Wing & Co., situated in Culebra, Canal Zone. Said bids must be addressed to me at Ancon, Canal Zone, accompanied with a deposit of \$100 by not later than the 18th day of March, 1909, 12 m., the receiver reserving the right to reject any and all bids. A copy of the inventory of the said stock can be seen either at my office in Panama, or on file in the Circuit Court at Empire, Canal Zone.

SAM B. DANNIS, Receiver.

PANAMA, March 1, 1909.

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., March 3, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- Barrow, R. L.
Bed, R.
Bowling, Tom
Boyd, Blair N.
Brook, Michael T.
Brown, Paul
Brown, Mrs. Ethel
Brown, Mrs. D. C.
Browder, Walter S.
Brumby, Miss Ellen
Bachan, Mrs. Geo.
Barton, S. Muel
Caldwell, Frank M.
Connell, T. O.
Corbett, Warren
Courteney, Peter
Cowzill, S. C. (2)
Dalrymple, W. H.
Dauter, Fred H.
Davis, Heber J. (2)
Davis, George H. A.
Ellis, Guy I.
Elmore, L.
Fischer, Chas.
Flint, Frank
Gernell, L. J.
Guinness, Hugh M.
Graham, Mrs. Sarah
Hall, Arthur
Hansen, C.
Harlow, Jas. B.
Haywood, Mrs. Harry
Heming, Orval
Hills, Fred C.
Hogan, Andrew V.
Hudd, Walter G.
Jennings, Mr. and Mrs. Alan
Kay, Mrs. Margaret
Kelly, Charles
Knyon, Wm.
Kinder, Elmer
King, J. H.
Kirby, C. M.
Maloney, Pat
Mansfield, J. S.
Maranta, T.
Mason, A. S.
Matthews, E. L.
Mullimore, H. B.
McCulloch, J. A.
McGunsey, J. V.
Michelbaugh, Bernard
Mitchell, C. L.
Monahan, Mrs. Mary
Munroe, Robt.
Nelson, Chas.
Pedersen, H. C.
Pendleton, A. B.
Pinckney, V. H.
Pixley, Erwin C.
Pritchard, E.
Randall, Mrs.
Ryan, Thomas
Scheib, Edwin C.
Schneider, B. B.
Schrimer, Don Frank
Shea, Wm.
Spangle, Geo. M.
Stephens, A. H.
Stephens, Frank W.
Strom, Charley
Strong, Wm. M.
Toopin, Aubrey
Todd, C. S.
Wade, Wm.
Wainwright, R.
Walker, Mrs. Mary
Watkins, Frank
Weigil, Wm.
Wilber, D. H.
Wood, Stanley W.
Wright, E. A.
Wyer, Mrs. Nannie
Zimmer, William
Zimmerman, William

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight February 27, 1909:

Table with 7 columns: Stations (Vigita, Abaquetta, Gambaor, Bohio, Gatun (Canal), Gatun (W. Diver), Diver) and rows for Height of low water above mean sea level, Maximum height above low water, and dates from Sunday, Feb. 21 to Saturday, Feb. 27.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Table listing ship names and departure dates for New York to Colon routes, including Panama, Prinz Aug. Wilhelm, Advance, Prinz Joachim, Colon, Tagus, and Oruba.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Table listing ship names and departure dates for Colon to New York routes, including Colon, Panama, Tagus, Advance, Prinz Aug. Wilhelm, Allianca, Prinz Joachim, Panama, Orinoco, Atrato, and others.

NEW ORLEANS TO COLON.

Table listing ship names and departure dates for New Orleans to Colon routes, including Ellis, Parismina, Boundbrook, and Cartago.

COLON TO NEW ORLEANS.

Table listing ship names and departure dates for Colon to New Orleans routes, including Boundbrook, Ellis, Parismina, and Cartago.

COLON TO BARBADOS, CALLING AT TRINIDAD.

Table listing ship names and departure dates for Colon to Barbados routes, including Oruba, Tagus, Magdalena, Orinoco, and Atrato.

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

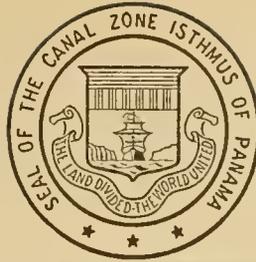
All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, calling at Puerto Barrios, and from Colon at 1.30 p. m., via Port Limon and Puerto Barrios, for New Orleans.

Sailings of the French line (Cie. Generale Trans atlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailings of the Leyland Line for New Orleans via Kingston, Ja., will be as follows: Steamship Memphis about March 6; Asian about March 27.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, MARCH 10, 1909.

No. 28.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employers of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

February Excavation.

The grand total of excavation during the month of February was 3,148,879 cubic yards, 224,328 more than were taken out in January, although there were only 23 working days in February as compared with 25 in the previous month. All of this amount except 124,175 cubic yards was taken from the Canal prism. Of the grand total for February, 1,879,480 cubic yards were removed by steam shovels and 1,269,399 by dredges. The mean rainfall for the month in the territory in which excavation was in progress, was 2.85 inches as compared with 4.39 inches in January and with 1.15 inches in February, 1908.

The average daily excavation in February was 136,908 cubic yards, the highest since American occupation. The highest previous daily average, 133,856 cubic yards, was made in March, 1908, when the highest record of monthly excavation was also made. The daily average for each month for the past twelve months is as follows:

	Cubic Yards.
March, 1908.....	133,856
April, 1908.....	131,844
May, 1908.....	108,157
June, 1908.....	117,704
July, 1908.....	121,878
August, 1908.....	125,096
September, 1908.....	126,355
October, 1908.....	119,431
November, 1908.....	126,978
December, 1908.....	127,533
January, 1909.....	116,982
February, 1909.....	136,908

In the Atlantic Division the total excavation was 702,485 cubic yards, which is 49,480 cubic yards less than that of January. Of this amount 125,284 cubic yards were taken out by steam shovels and 577,201 by dredges.

All previous records in the territory now included in the Central Division were broken by an excavation of 1,644,636 cubic yards, an average of 71,506 cubic yards per day. The highest previous monthly record was

made in March, 1908, when 1,624,900 cubic yards were removed, a daily average of 62,496. The number of shovels at work during each month was about the same. Of the 1,644,636 cubic yards removed, 1,095,826 cubic yards were taken from the Culebra Cut, 450,182 cubic yards from the Canal prism elsewhere than in the Cut, and 98,628 cubic yards from the Obispo Diversion, which is outside the Canal prism.

In the Pacific Division the total excavation was 801,758 cubic yards, which is 168,820 cubic yards more than was taken out in January. Of this amount 109,560 cubic yards were removed by steam shovels and 692,198 by dredges. The detailed statement of excavation in the three divisions follows:

ATLANTIC DIVISION.

LOCALITY.	From Canal Prism	Outside Canal Prism	Total excavation
<i>Dry excavation—</i>	<i>cu. yds.</i>	<i>cu. yds.</i>	<i>cu. yds.</i>
Gatun spillway.....	5,690		5,690
Gatun Locks.....	61,819	11,729	73,548
Miudi.....	46,016		46,016
Total.....	107,865	17,419	125,284
<i>Wet excavation—</i>			
Colon dredging.....	444,910		444,910
Gatun Locks.....	132,291		132,291
Total.....	577,201		577,201
Total wet and dry excavation.....	685,066	17,419	702,485

CENTRAL DIVISION.

<i>All dry excavation—</i>			
Chagres section.....	450,182		450,182
Culebra section.....	1,095,826	98,628	1,194,454
Total.....	1,546,008	98,628	1,644,636

PACIFIC DIVISION.

<i>Dry excavation—</i>			
Miraflores Locks.....	44,294	8,128	52,422
Pedro Miguel Locks.....	57,135		57,135
Total.....	101,432	8,128	109,560
<i>Wet excavation—</i>			
Pacific entrance.....	671,477		671,477
Miraflores Locks.....	20,721		20,721
Total.....	692,198		692,198
Total wet and dry excavation.....	793,630	8,128	801,758

TOTAL EXCAVATION, ENTIRE CANAL.

Dry excavation.....	1,755,305	124,175	1,879,480
Wet excavation.....	1,269,399		1,269,399
Total.....	3,024,704	124,175	3,148,879

Mean rainfall along Canal (eleven stations) 2.85 inches.

Crushed Rock from Porto Bello.

Rock was crushed at Porto Bello in the new crusher plant on March 2. The plant is practically completed and deliveries of crushed stone can now be made at any time and in any quantities that may be desired. The quarries are about fifteen miles distant from Colon on the Caribbean sea, and the rock will be conveyed to Cristobal, and thence through the old French canal to Gatun, in barges towed by tugs. The tugs and barges are ready for the service. Crushed rock for

the concrete work in Gatun spillway will be delivered in a few days.

The sand service from Nombre de Dios will also open in a few days.

February Rainfall for Three Years.

Stations.	1907.	1908.	1909.	Av'ge No. since sta. est. rainy previous days. to 1909.
<i>Atlantic Division</i>				
Nombre de Dios.....		8.64		23
Porto Bello.....		6.82		25
Cristobal.....	1.37	1.08	1.92	1.39
Brazos Brook.....	.91	1.17	4.13	1.04
Gatun.....	2.60	1.29	4.12	1.80
Gatuncillo.....		1.38	5.69	1.38
Trinidad.....		.87	4.27	.87
Bohio.....	1.12	1.18	3.74	1.64
<i>Central Division</i>				
Tabernilla.....		.35	2.87	.35
San Pablo.....		.09	1.76	.09
Gamboia.....	.29	.04	4.07	.67
Bas Obispo.....	.47	.11	4.72	.38
Empire.....	.70	.00	1.50	.23
Camacho.....		.01	2.16	.11
Culebra.....	.49	.11	2.46	.43
Rio Grande.....	.00	.00	2.88	.07
<i>Pacific Division</i>				
Pedro Miguel.....		.00	3.26	.00
La Boca.....	.14	.55	1.69	.21
Ancon.....	.04	.24	2.90	.58
<i>Upper Chagres</i>				
El Yagua.....			4.83	12
Alhujuela.....	.06	.18	3.71	.15

Widening Culebra Cut.

Work on the widening of Culebra Cut between Las Cascadas and Paraiso was begun the middle of November and already considerable progress has been made. Authority for the change from a 200-foot to a 300-foot channel at the bottom of the Cut, was given at an advantageous time from the construction point of view, as the steam shovels had not excavated to so low a level that they could not be taken to the higher levels with advantage. Most of the excavation for the widening is to be on the east side of the channel, although cuts are made on each side and in places fifty feet will be taken from both sides. The width of the Cut at the top and at the lowest levels yet reached is not uniform, as it depends on the nature of the material in the upper slopes. The width is 1,000 feet at Gold Hill and other points, and is only 500 feet at the top at Paraiso.

At the angle at Gold Hill little or no additional excavating will be necessary at the present levels, as a 350-foot turning basin is under construction at this tangent.

At the point between Gold Hill and Cucaracha, where there was a small angle in the line of the 200-foot channel, there will be none in the 300-foot canal.

Slides have been taken advantage of in the plan for the 300-foot channel. The slides on the west bank at Culebra had been removed to such an extent that steam shovel No. 205 made only one cut on the widening and this completed the excavation necessary at about elevation 180. At Cucaracha, where the big slide is still creeping into the prism and where several hundred thousand yards of material have already been taken out outside the slopes necessary for the original 200-foot

NOTES OF PROGRESS.

(Continued.)

channel, the line has been turned so as to eliminate the angle mentioned above and to include much of the excavation already done. On the east bank between Empire and Culbra shovel No. 257 is taking out material so unstable that it would have been necessary to remove it even if the width of the Canal at the bottom had not been increased, and the widening does not make it necessary to remove any more material from this point than would have been removed for the 200-foot canal. Shovels Nos. 205, 220, 225, and 232, working on the east slope of the Cut, and shovels Nos. 257, 206, and 211, working on the west slope, are all engaged on the widening.

Highest Daily Excavation.

The record for daily excavation in the Central Division was broken on February 27, 1909, for the fifth time during the month. On that date, 59 shovels excavated 77,064 cubic yards, an average of 1,306 cubic yards per shovel for the eight hour day. The material excavated was loaded in 2,177 Lidgerwood flats, 352 large Western dump cars and 2,754 small Western and Oliver dump cars, a total of 5,283 car loads.

Width of the Canal.

Through nearly 80 per cent of the whole length of the Canal at present under construction, ships will steam in a channel at least 500 feet wide, and through nearly one-third of the whole distance they will be in a channel at least 1,000 feet wide, this broad channel being through part of Gatun Lake. The average width will be 647 feet. A statement showing the width of the channel from the Atlantic to the Pacific follows:

LOCATION.	Width.	Miles.	Per cent.
Atlantic entrance channel.....	500	6.00	11.8
Gatun basin.....	1,000	0.76	1.5
Locks and approaches (Gatun, Pedro Miguel, and Miraflores Locks).....	110	2.82	5.6
Between Gatun Locks and Tabernilla.....	1,000	15.82	31.3
Between Tabernilla and Mamei.....	800	3.25	6.4
At Mamei.....	700	0.50	1.0
South of Mamei to Bas Obispo.....	500	4.02	8.0
Bas Obispo to Pedro Miguel.....	300	8.11	16.1
Miraflores Lake.....	500	0.97	1.9
Pacific entrance channel.....	500	8.31	16.4
Total.....		50.56	100.0

Gatun Handling Plant.

The unloading dock for sand and stone at the Gatun locks is finished. Barges will tie up at this dock and the unloading cableways will take out the rock and sand, and carry them to their respective storage piles.

The substructure of the cement dock is also completed. There yet remain, before the whole dock is completed, the building of a storehouse for cement and the installation of machinery to handle the cement from barges to the warehouse, and from the warehouse to the cars on which it will be hauled to the mixing plant.

U. S. Mine Planters.

The U. S. Mine Planters, *Colonel George Armistead*, Capt. F. K. Fergusson, C. A. C., commanding, and *Major Samuel Ringgold*, Lieut. Clifford L. Corbin, C. A. C. com-

manding, arrived in Panama Bay on March 5. These vessels are operated by the Coast Artillery Corps of the Army and are used in placing mines for the defense of harbors in time of war. They are on their way to San Francisco and have come around South America, having sailed from Norfolk on December 1.

Physician's Certificate of Illness.

THE CANAL RECORD:

Will you kindly republish the following notice of the Chairman's Office, dated December 27, 1907:

Employees do not seem to understand that in order to receive payment on account of illness or injury under the regulations of the Commission, it is necessary to present themselves at a dispensary for treatment, or have a physician visit them in quarters in all cases where they are detained from their duties. Under the Chairman's circular, No. 144, which was published in THE CANAL RECORD of October 2, 1907, the physician's certificate must state specifically that the illness was contracted through no fault of the employe, and it is obvious that such certificate cannot be given unless the physician has personal knowledge of the employe's condition.

This is published for the information of all employes in view of the criticism to which physicians have been unjustly subjected for refusing to furnish certificates in cases where they were not consulted by the employes.

It has been construed that the "personal knowledge" of disability, mentioned above, means that the physicians shall see the patient each day for which he gives a certificate, and for this purpose either the patient should present himself at the dispensary at the time appointed by the physician, or, if unable to do this, should notify the physician, who will visit him at his quarters.

The time (the hour) at which a patient is first seen by, or calls upon, the physician is the first hour that will be covered by a certificate of disability.

H. R. CARTER,
Director of Hospitals.

Ancon, C. Z., March 6, 1909.

Employees Who Eat at Gatun.

Thirty-eight per cent of all the negro laborers, twenty-two per cent of the European laborers, and ten per cent of the American employes eating at Commission kitchens, messes, and hotels, take their meals at Gatun. The number of employes taking their meals at Commission hotels, messes and kitchens, and the number eating at Gatun, are as follows:

	Total.	At Gatun.
Americans.....	1,850	10
Europeans.....	3,200	700
Negroes.....	3,000	1,150
Total.....	8,050	2,030

Two kitchens for negro laborers, two mess halls for European laborers, and one hotel are in operation at Gatun.

United Fruit Company's Steamers.

The agent of the United Fruit Company announces that the steamers of that line will discontinue stopping at Puerto Barrios,

Guatemala, either north or south bound, after the sailing of the *Parismina* from New Orleans on March 6. Steamers will sail from New Orleans every Saturday at 11 a. m. direct to Colon. North bound steamers will sail from Colon every Tuesday at 2 p. m., putting in at Port Limon for about ten hours, whence they will sail direct for New Orleans, making the trip from Port Limon in about four days.

For the information of employes who contemplate taking their annual leave in Costa Rica the agent of the company also announces that the railroad from Port Limon to San Jose is now in operation. Trains are run between these points without the necessity of transferring either passengers or baggage.

Tariff for Special Trains.

The General Manager of the Panama railroad announces that the tariff for the movement of special passenger trains is as follows:

The regular tariff rate for each movement of a special train is \$100 gold.

Trains consuming more than eight hours on week days or four hours on Sundays will be counted as two movements.

Trains turning with midnight intervening will be counted as two movements.

The regular tariff rate for each special car on a regular passenger train is \$10 gold, switching extra.

Payments must be made in advance to the agent at the point of departure.

Each passenger on train or car must be provided with regular form of ticket or pass.

Special tariffs for Isthmian Canal Commission will not apply, unless authorized by the office of the Chairman and Chief Engineer, after which arrangements of details may be taken up, in accordance with the foregoing.

Tivoli Lawn Tennis Club.

The Tivoli Lawn Tennis Club was organized at a meeting held at the Hotel Tivoli on Friday evening, February 19, when the following board of governors was elected: B. C. Poole, chairman; W. S. Crocker, J. O. Meadows, Dr. T. R. Brown, George H. Bartholomew, and Harry E. Bovay, secretary and treasurer.

It was decided that the entrance fee should be \$2.00, and the board of governors is authorized to make assessments from time to time to cover necessary expenses for equipment. Gold employes of the Isthmian Canal Commission and Panama Railroad Company are eligible to membership. Anyone wishing to join the club is asked to communicate with the secretary at Ancon.

Preparing for the Lock Foundations.

In the lock chambers at Gatun a force of men is at work stripping the loose earth from the slopes so as to insure the safety of the hand laborers who will presently begin excavating for the foundations of the walls.

WEATHER CONDITIONS, CANAL ZONE, FEBRUARY, 1909.

Stations.	Pressure (reduced to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.			
		Mean.	Maximum.	Date.	Minimum.	Date.		Total.	Station average per month.	Number of rainy days.	Total movement in miles.)	Prevailing direction.	Max. velocity (in miles.)	Date.
Cristobal.....	29.890	78.9	81	12	72	16	82	1.92	1.39	17	9.459	N.	32	1
Bas Obispo.....	29.884	77.5	89	21	76	26	92	4.72	.38	10	3.792	N.W.	18	1
Ancon.....	29.868	80.3	92	11	70	25	84	7.60	.58	8	6.070	N.W.	23	14

LIST OF EMPLOYES WHO ARE ENTITLED TO CANAL MEDALS.

The publication of names of employes of the Isthmian Canal Commission and Panama Railroad Company who have earned Canal Medals, up to December 31, 1903, which was begun in THE CANAL RECORD of February 10, is continued in this issue. The publication of names of employes of the Isthmian Canal Commission is completed in this number and that of the names of employes of the Panama Railroad Company is begun. Address all communications relating to corrections in the Medal list in writing to the Assistant to the Chairman, Culebra, C. Z.

Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.
1906.									
Major, Bessie.....	Sept. 17	Swartwout, Robert B.....	Oct. 9	Seeht, John F.....	Oct. 26	Jennings, Allen H.....	Nov. 16	Palmer, James W.....	Nov. 30
Morris, George.....	Sept. 17	Wassel, Harden E.....	Oct. 9	Westcott, Fred M.....	Oct. 26	Kennedy, Maurice.....	Nov. 16	Smith, Arman.....	Nov. 30
Ree, Martin.....	Sept. 17	Pelton, Henry.....	Oct. 10	Woodman, Frank R.....	Oct. 26	Kneeland, J.....	Nov. 16	Stevens, Edward B.....	Nov. 30
Sweet, Arthur J.....	Sept. 17	Bincham, John.....	Oct. 14	McKeever, John F.....	Oct. 27	Newdick, Alton H.....	Nov. 16	Unterberg, Mayer.....	Nov. 30
Twombly, Henry M.....	Sept. 17	Condon, John.....	Oct. 14	Neal, John P.....	Oct. 27	Pettoletti, Lauritz.....	Nov. 16	Wolnitzek, Oscar T.....	Nov. 30
Undeck, John P.....	Sept. 17	Cooper, Charles W.....	Oct. 14	Graham, John.....	Oct. 30	Taylor, William D.....	Nov. 16	Cohen, Harry K.....	Dec. 1
Vernon, Charles D.....	Sept. 17	Greendau, Homer.....	Oct. 14	Graham, William F.....	Oct. 30	Lillie, Charles D.....	Nov. 18	Sprague, Edwin F.....	Dec. 1
Weidman, Frank.....	Sept. 17	Heinigh, Charles G.....	Oct. 14	Hayes, Harry S.....	Oct. 31	Strock, William T.....	Nov. 18	Wagner, George D.....	Dec. 1
Atkins, Morlen J.....	Sept. 18	June, Robert F.....	Oct. 14	O'Connell, Thomas.....	Nov. 1	Fey, William L.....	Nov. 19	Halstead, William M.....	Dec. 3
Graham, Luzella G.....	Sept. 18	McNeil, Thomas A.....	Oct. 14	Brundage, Fred H.....	Nov. 2	Boroto, Reginald F.....	Nov. 20	Monaghan, Mathew.....	Dec. 3
Elliott, Madeline.....	Sept. 21	Peterson, Julius M.....	Oct. 14	Carlson, Joseph.....	Nov. 2	Bressie, Philip N.....	Nov. 20	Boettner, Jr., John J.....	Dec. 5
William, James C.....	Sept. 20	Swain, Henry C.....	Oct. 14	Ch-lf, Fielding M.....	Nov. 2	Davis, Frank J.....	Nov. 20	Brown, Harry T.....	Dec. 5
Delano, Fred E.....	Sept. 21	Thaxton, Cullen D.....	Oct. 14	Erdman, Roger S.....	Nov. 2	Dybbro, Fred.....	Nov. 20	Bryant, Edward J.....	Dec. 5
Babbitt, Richard W.....	Sept. 23	Vandenber, Harry.....	Oct. 14	Haynes, John N.....	Nov. 2	Etowski, Joseph.....	Nov. 20	Ca'on, Armisted T.....	Dec. 5
Crosby, Frank J.....	Sept. 23	Jones, Charles H.....	Oct. 15	Lankin, George.....	Nov. 2	Fagan, Samuel.....	Nov. 20	Greene, Walter T.....	Dec. 5
Lutz, Henry W.....	Sept. 23	Reynolds, William T.....	Oct. 15	Michalsen, Robert.....	Nov. 2	Farrell, James H.....	Nov. 20	Marstrand, Otto T.....	Dec. 5
Malloy, Francis.....	Sept. 23	Tenn-hill, John W.....	Oct. 15	Pendry, Charles A.....	Nov. 2	Fessler, Arthur L.....	Nov. 20	War ^d , Jr., William H.....	Dec. 5
Watson, William.....	Sept. 23	Alford Corridon A.....	Oct. 17	Perry, Robert E.....	Nov. 2	Fox, Maurice W.....	Nov. 20	Bill, George P.....	Dec. 7
Williamson, Thomas G.....	Sept. 23	Beetham, Charles H.....	Oct. 17	Piper, William T.....	Nov. 2	Joyner, Charles K.....	Nov. 20	Strong, James M.....	Dec. 7
Jack, Gavin H.....	Sept. 25	Byram, Fred B.....	Oct. 18	Reclor, Josephine.....	Nov. 2	Milligan, William O.....	Nov. 20	Butler, William H.....	Dec. 10
Adams, Wayne O.....	Sept. 25	Conard, Robert A.....	Oct. 18	Richenbach, George E.....	Nov. 2	Murtagh, John.....	Nov. 20	Carson, George B.....	Dec. 10
Bandy, Edward L.....	Sept. 25	Erdman, Daniel J.....	Oct. 18	Roberts, Patrick W.....	Nov. 2	Nickerson, Frank W.....	Nov. 20	Perlin, Morris.....	Dec. 10
Barstrom, Conrad.....	Sept. 25	Long, William H.....	Oct. 18	Spencer, Charles.....	Nov. 2	Nims, Willard W.....	Nov. 20	Brown, Robert H.....	Dec. 11
Dunkle, Geneva L.....	Sept. 25	McMahon, Terr nce J.....	Oct. 18	Therson, Edward D.....	Nov. 2	Quinn, James F.....	Nov. 20	Holz, Theodore.....	Dec. 11
Eason, Alex.....	Sept. 25	Sickler, Albert F.....	Oct. 18	Watkins, William.....	Nov. 2	Smith, Lewis A.....	Nov. 20	Ramsey, Horace E.....	Dec. 11
Hohg, Walton H.....	Sept. 25	Smith, Stephen H.....	Oct. 18	Whitehead, George.....	Nov. 2	Stoddard, Richard J.....	Nov. 20	Arthur, Robert T.....	Dec. 13
John, William W.....	Sept. 25	Benn, Walter I.....	Oct. 19	Soar, Charles H.....	Nov. 3	Taylor, Fernando.....	Nov. 20	Haven, Fred B.....	Dec. 13
Koerner, Charles F.....	Sept. 25	Curran, James S.....	Oct. 19	Falkner, Benjamin F.....	Nov. 4	Turner, Edward K.....	Nov. 20	Kerruish, William L.....	Dec. 13
Merry, Charles F.....	Sept. 25	Adams, William J.....	Oct. 21	Falkner, William H.....	Nov. 4	Smallwood, William P.....	Nov. 22	Smith, Marvin W.....	Dec. 13
Nielsen, Christian I.....	Sept. 25	Casper, James P.....	Oct. 21	Montague, Charles H.....	Nov. 4	Hogland, Richard C.....	Nov. 23	Elliott, Joseph W.....	Dec. 14
Nolan, Matthew.....	Sept. 25	Hillett, Charles L.....	Oct. 21	Pickel, Oscar C.....	Nov. 4	Barrows, Arthur C.....	Nov. 26	Berg, William H.....	Dec. 15
Oliker, Ralph H.....	Sept. 25	Huff, Thomas T.....	Oct. 21	Richards, Arthur R.....	Nov. 4	Burdge, Leroy E.....	Nov. 26	Hartwig, Arthur H.....	Dec. 15
Pickett, Ira W.....	Sept. 25	Keegan, John J.....	Oct. 21	Strobridge, Fred L.....	Nov. 4	Burmester, Edward A.....	Nov. 26	Murtha, W. J.....	Dec. 15
Remington, Clarence E.....	Sept. 25	Lucey, James W.....	Oct. 21	Williamson, John.....	Nov. 4	Callizo, Julius.....	Nov. 26	Petry, John H.....	Dec. 17
Rowland, Bertrun F.....	Sept. 25	Lyon, William E.....	Oct. 21	Hobson, Clarence O.....	Nov. 5	Colchester, Cecil C.....	Nov. 26	Erskine, William A.....	Dec. 17
Seuffert, Anthony.....	Sept. 25	May, Herbert B.....	Oct. 21	Kehn, Herman.....	Nov. 5	Deyo, Daniel B.....	Nov. 26	Whitwood, Leroy.....	Dec. 18
Snedeker, Randolph E.....	Sept. 25	McRobert, William W.....	Oct. 21	Speicher, John.....	Nov. 5	Kwig, Ora M.....	Nov. 26	Adams, Edgar S.....	Dec. 19
Birrett, Alexander M.....	Oct. 2	Morris, Webster.....	Oct. 21	Abbott, Charles M.....	Nov. 6	Harris, James H.....	Nov. 26	Healy, Edward B.....	Dec. 19
Clapp, William H.....	Oct. 2	Perkins, Samuel M.....	Oct. 21	Bower, William M.....	Nov. 6	Johannes, Guy.....	Nov. 26	James, Fred.....	Dec. 19
Craig, James G.....	Oct. 2	Ploessel, Emanuel M.....	Oct. 21	Campey, George M.....	Nov. 6	Moffat, David H.....	Nov. 26	Mitchell, William C.....	Dec. 19
DeBerry, Wilbert L.....	Oct. 2	Viall, Harry H.....	Oct. 21	Cherry, Dominic F.....	Nov. 6	Rau, Charles R.....	Nov. 26	Poyle, Ransome.....	Dec. 19
Finley, Charles M.....	Oct. 2	Zinn, A. S.....	Oct. 21	Hoobler, Allison C.....	Nov. 6	Shepard, Frank A.....	Nov. 26	Tate, Gilbert M.....	Dec. 19
Forsythe, Luther M.....	Oct. 2	Grout, George H.....	Oct. 23	Monk, Herman B.....	Nov. 6	Sneed, James W.....	Nov. 26	DePaw, Jasper H.....	Dec. 20
Hess, Lewis W.....	Oct. 2	Stanchiff, Charles A.....	Oct. 23	Moran, William A.....	Nov. 6	Cohen, Joshua.....	Nov. 29	Engesser, Courad.....	Dec. 20
Higgins, Arthur S.....	Oct. 2	Brown, Jesse B.....	Oct. 24	Talbot, Fred W.....	Nov. 6	Davoll, Charles E.....	Nov. 29	Ford, Walter G.....	Dec. 21
Kuehule, Bernard F.....	Oct. 2	Bryant, William H.....	Oct. 24	Wales, George W.....	Nov. 6	Deal, Romilus C.....	Nov. 29	Gueb, Harry J.....	Dec. 21
Murphy, Za.....	Oct. 2	Chambers, William R.....	Oct. 24	Wilson, Clarence.....	Nov. 6	Harris, Thomas H.....	Nov. 29	Burch, James L.....	Dec. 22
Owen, Brady R.....	Oct. 2	Dickinson, William E.....	Oct. 24	Wright, Charles.....	Nov. 6	Heverly, Ernest W.....	Nov. 29	Hardy, Ern. st.....	Dec. 22
Proud, Truman C.....	Oct. 2	Griffin, John J.....	Oct. 24	Warren, Edward L.....	Nov. 7	Johnson, Frank E.....	Nov. 29	Bressler, Francis N.....	Dec. 24
Roche, Paul E.....	Oct. 2	Levering, Henry A. S.....	Oct. 24	Pring, Clyde E.....	Nov. 8	McDewitt, Martin.....	Nov. 29	Boyd, Dyer R.....	Dec. 27
Wallendorf, Joseph.....	Oct. 3	Meyers, Forrest J.....	Oct. 24	Shannon, Davis J.....	Nov. 10	Newman, Clarence D.....	Nov. 29	Abbot, Russell F.....	Dec. 28
McComauehy, Harvey.....	Oct. 4	Mosegrum, John H.....	Oct. 24	Ball, Harrison C.....	Nov. 12	Person, John F.....	Nov. 29	Baughuan, Edward H.....	Dec. 28
Carroll, William H.....	Oct. 6	Steen, Ephraim.....	Oct. 24	Boxer, Charles W.....	Nov. 12	Ramey, William.....	Nov. 29	Chidester, Walter S.....	Dec. 28
Cosley, W. Percival.....	Oct. 8	Stevens, Frank C.....	Oct. 24	Dorson, Frank.....	Nov. 12	Sundquist, Theodore.....	Nov. 29	Edmunds, Jr., Wm. H.....	Dec. 28
Campion, John.....	Oct. 9	Swain, Bernie E.....	Oct. 24	Fleischman, Isaac H.....	Nov. 12	Tubert, Edward.....	Nov. 29	Hallowell, Edward.....	Dec. 28
Gere, Mary R.....	Oct. 9	Taylor, Richard B.....	Oct. 24	Helmrichs, Otto.....	Nov. 12	Trnpin, Jere.....	Nov. 29	Hill, Jr., Charles H.....	Dec. 28
Johnson, Jr., Gilbert.....	Oct. 9	Shelton, Oran A.....	Oct. 25	Keating, Raymond O.....	Nov. 12	White, Hugh J.....	Nov. 29	Kidd, Allan R.....	Dec. 28
Kelly, Charles H.....	Oct. 9	Bachler, Frederick V.....	Oct. 26	Martin, J. Wallace.....	Nov. 12	Wigginton, Peter W.....	Nov. 29	King, Mark.....	Dec. 28
Kunk, I. Wdter J.....	Oct. 9	Bath, Edward G.....	Oct. 26	McNeal, George A.....	Nov. 12	Brown, Ed Lee.....	Nov. 30	Kuehule, Adolph G.....	Dec. 28
Lynn, Lewis M.....	Oct. 9	Cook, Nathan H.....	Oct. 26	Oldfield, George W.....	Nov. 12	Calvit, Steven.....	Nov. 30	Loring, Ralph B.....	Dec. 28
Metzger, C. Ule.....	Oct. 9	Grieser, Fred A.....	Oct. 26	Scribner, David W.....	Nov. 12	Euerle, George M.....	Nov. 30	McDonald, Robert C.....	Dec. 28
Parrott, Nettleton.....	Oct. 9	Halligan, Thomas.....	Oct. 26	Van Brocklin, Arthur C.....	Nov. 12	Fields, John B.....	Nov. 30	Pierce, Franklin W.....	Dec. 28
Simonds, Harry P.....	Oct. 9	Hennessy, Walter J.....	Oct. 26	Hanley, Timothy.....	Nov. 14	Foster, Frank.....	Nov. 30	Stolberg, Ernest W.....	Dec. 28
Sprouse, Frances P.....	Oct. 9	Hill, Holly.....	Oct. 26	Stowell, William.....	Nov. 14	Griffin, Herbert E.....	Nov. 30	Stone, Sam.....	Dec. 28
		McDonald, Hugh M.....	Oct. 26	Moore, William J.....	Nov. 15	Landrev, Charles.....	Nov. 30	Vickers, William A.....	Dec. 28
		Moore, Arthur H.....	Oct. 26	Bergstrom, Axel.....	Nov. 16	McPeake, John C.....	Nov. 30	Whitby, Jr., John G.....	Dec. 28
		Maurin, Alvin M.....	Oct. 26	Coalborn, Edward I.....	Nov. 16	Meacham, Fred.....	Nov. 30	Tainsh, Peter.....	Dec. 29

PANAMA RAILROAD COMPANY EMPLOYES.

1904.		1905.	
Anderson, Henry.....	May 4	Gilbert, William.....	May 4
Baker, P. G.....	May 4	Hunt, J. St C.....	May 4
Baile, P. F.....	May 4	Jones, E. D.....	May 4
Belt, Josiah.....	May 4	Jussu A. S.....	May 4
Bergin, R. W.....	May 4	K. Fish, B. A.....	May 4
Brewer, W. T.....	May 4	Koch, Harry E.....	May 4
Chester, W. R.....	May 4	Leds, E. W.....	May 4
Clark, T. H.....	May 4	Malott, Samuel O.....	May 4
Clisbee, A. L.....	May 4	Northrop, C. W.....	May 4
Connelly, M. B.....	May 4	Pratt, M. C.....	May 4
Davies, Thomas J.....	May 4	Skipper, A.....	May 4
Dau, J. W.....	May 4	Turner James M.....	May 4
Deisy, D. J.....	May 4	Wardlaw R. H.....	May 4
Doty, V. D.....	May 4	Warena, J. C.....	May 4
		Wilson, George P.....	May 4
		O'Brien, W. S.....	May 9
		Stevens, J. A.....	May 11
		Karnopp, E. B.....	May 31
		Longan, Edward.....	June 1
		Coyne, F. T.....	June 29
		Hill, George.....	June(?)
		Huntington, L. M.....	Aug. 10
		O'Lovesky, F. W.....	Sept. 1
		Griggs, A. C.....	Sept. 27
		Angel, J. C.....	Nov. 1
		Reilly, James E.....	Nov. 1
		Prescott, R. D.....	Nov. 27
		Laughlin, R. E.....	Nov. 28
		Beakley, C. L.....	Dec. 6
		Smith, Sr., W. H.....	Dec. 27
		Brown, H. W.....	Jan. 4
		Hubbard, E. L.....	Feb. 7
		Hughes, T. P.....	Feb. 8
		Harvey, William.....	Feb. 14
		Dumiger, George.....	Feb. 23
		Archworth, J. T.....	Feb. 23
		Simkius, A. B.....	Mar. 12
		Byers, D. A.....	Mar. 20
		Constantine, John.....	Mar. 29
		Garrig, M.....	Mar. 30
		McCormick, P. C.....	Apr. 7
		Smith, F. T.....	Apr. 7
		Tucker, W. G.....	Apr. 7
		Manassa, P. H.....	Apr. 8
		Wigmore, Robert G.....	Apr. 17
		Ellison, Charles F.....	Apr. 19
		Price, Harvey.....	Apr. 24
		Warren, H. P.....	Apr. 24
		Faherty, Thomas R.....	Apr. 25
		West, J. Y.....	May 2
		Thompson, F. Y.....	May 8
		Lindersmith, W. W.....	May 10
		Slayback, Edward.....	May 11
		Englander, M.....	May 15
		Cannon, Harry F.....	May 15
		Hagan, John.....	May 15
		Purdum, J. A.....	May 15
		Mitchell, E. C.....	May 16
		Beterbenner, H.....	May 23
		Brown, R. L.....	May 26

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION.

MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

Months.		1907*		1908*		1909	
		From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....							
February.....		62,835	45,664				
March.....		65,632	46,046				
April.....		81,850					
May.....		67,436					
June.....		84,333					
July.....		32,022					
August.....		731					
September.....		15,257					
October.....		28,837					
November.....		41,078					
December.....		40,003					
Totals.....		46,945					
Totals.....		172,851	590,955				91,710

Total to March 1, 1909—855,516 cubic yards.
No work done outside of Canal Prism

COLON—DREDGES.

Months.	1907		1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....		111,100	444,403	46,298	521,050	
February.....		110,002	401,887	25,535	444,910	
March.....		84,145	515,223	31,663		
April.....		69,889	496,366			
May.....		133,847	564,356			
June.....		17,000	107,115	572,749		
July.....		189,170	625,497	638,217		
August.....		104,322	5,127	624,776		
September.....		403,842	5,488	505,260		
October.....		409,632	5,500	570,832		
November.....		417,297	14,782	679,604		
December.....		428,053				
Totals.....		1,969,316	652,598	6,639,200	103,796	965,960

Total to March 1, 1909—11,755,335 cubic yards.
In this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906. There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STREAM SHOVELS.

Months.	1907		1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	47,539		193,567	98,588	69,001	19,207
February.....	70,177		176,291	106,506	61,819	17,419
March.....	100,151		202,763	171,835		
April.....	103,459		196,109	177,347		
May.....	70,528		138,815	127,932		
June.....	71,181		116,998	127,953		
July.....	59,537	3,832	116,816	76,543		
August.....	75,357	14,628	130,263	57,999		
September.....	87,423	36,315	104,780	41,210		
October.....	136,777	40,236	109,667	44,397		
November.....	121,635	40,987	83,527	30,695		
December.....	160,795	69,756	65,950	42,334		
Totals.....	1,107,559	232,620	1,655,546	1,103,339	130,820	36,626

Total to March 1, 1909—4,293,158 cubic yards.
In this total are included 76,625 cubic yards excavated from the Canal prism October to December, 1906. In addition there were 237,917 cubic yards removed by dredges from Gatun locks in December, 1908, January and February, 1909.

CENTRAL DIVISION.

Months.		1904		1905		1906		1907		1908		1909	
		From Canal Prism	Outside Canal Prism										
January.....				70,650	120,990	566,750	1,227,022					1,150,249	
February.....				75,200	168,410	639,112	1,248,265					1,194,454	
March.....				132,840	239,178	815,271	1,290,885						
April.....				126,749	213,177	579,527	1,242,574						
May.....				75,935	196,209	690,365	960,840						
June.....				31,599	78,570	624,858	1,134,032						
July.....				78,570	159,789	770,570	1,121,325						
August.....				35,056	244,833	786,866	1,171,927						
September.....				25,020	291,452	753,468	1,122,860						
October.....				19,695	327,009	834,499	1,160,108						
November.....				60,540	221,642	790,632	1,022,576						
December.....				42,935	307,689	1,025,685	1,210,046						
Totals.....				243,472	914,254	2,702,991	9,177,130	13,912,453				2,344,703	

Total to March 1, 1909—29,295,003 cubic yards.

CHAGRES SECTION—STREAM SHOVELS.

Months.	1907*		1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....		169,447			389,399	
February.....		200,145			450,182	
March.....		324,233				
April.....		329,483				
May.....		235,902				
June.....		322,145				
July.....		345,757				
August.....		2,900	366,810	1,873		
September.....		21,546	346,948			
October.....		25,627	424,911			
November.....		44,044	336,390			
December.....		98,652	383,948			
Totals.....		192,769	3,756,119	1,873	839,551	

Total to March 1, 1909—4,820,342 cubic yards.

*No work done outside Canal prism.

CANAL EXCAVATION TO DATE.

By French Companies.....						
By Americans—						
Steam shovels.....						
Dredges.....						
Total.....						
May 4 to December 31, 1904.....						
January 1 to December 31, 1905.....						
January 1 to December 31, 1906.....						
January 1 to December 31, 1907.....						
January 1 to December 31, 1908.....						
January 1 to February 28, 1909.....						
Total.....						
May 4, 1904, to February 28, 1909.....						
DIVISIONS.....						
Atlantic.....						
Dry excavation.....						
Dredges, all dry excavation.....						
Central, all dry excavation.....						
Culebra Cut.....						
All other points.....						
Fatic.....						
Dry excavation.....						
Dredges.....						
Grand total.....						

Cv. Yds.
81,548,000

40,807,114
25,093,659
65,900,803

243,472
1,769,227
4,948,497
15,765,990
37,670,887
6,073,430

Amount excavated.
Cubic yards—Total.

5,148,654 }
12,034,677 } 17,183,331

38,300,677 }
5,814,668 } 34,115,345

1,543,145 }
13,058,982 } 14,602,127

65,900,803

PACIFIC DIVISION.

Months.		1908		1909	
		From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....					
February.....					
March.....					
April.....					
May.....					
June.....					
July.....					
August.....					
September.....					
October.....					
November.....					
December.....					
Totals.....					

Total to March 1, 1909—397,644 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY.

Months.	1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....				
February.....				
March.....				
April.....				
May.....				
June.....				
July.....				
August.....				
September.....				
October.....				
November.....				
December.....				
Totals.....				

Total to March 1, 1909—927,798 cubic yards.
There were also 78,233 cubic yards removed by steam shovels at La Boca locks an dams in 1907; 133,238 cubic yards at Cardenas Hill March to December, 1908, and 41,776 cubic yards by dredges at Miraflores locks in January and February, 1909.

LA BOCA—DREDGES.

Months.	1906*		1907		1908		1909	
	From Canal Prism	Outside Canal Prism						
January.....								
February.....								
March.....								
April.....								
May.....								
June.....								
July.....								
August.....								
September.....								
October.....								
November.....								
December.....								
Totals.....								

Total to March 1, 1909—13,017,06 cubic yards.
There were also 172 cubic yards removed by steam shovels outside of the prism during October, 1908.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The annual meeting of the Canal Zone Federation of Women's Clubs, at which officers will be elected for the ensuing year, will be held in the last week of March.

The work of the Botanical Committee of the Federation has been outlined by the President as follows: In each club there will be a chairman of the local Botanical Committee, who will have a committee of three to assist her. Each member of the club is urged to take active part in the collecting of specimens consisting of flowers and leaves, properly arranged and, when possible, the root of the plant as well. The specimens will be pressed and a description of the locality, and conditions under which it grew will accompany each specimen. The specimens will be forwarded to the Chairman of the Federation Committee, who will send them to the Field Columbian Museum of Chicago.

The report of the delegates to the January convention was read at the business meeting of the Cristobal Woman's Club on February 24, and other reports were also made. The dramatic entertainment arranged for March 3 was postponed, owing to the continuing illness of Mrs. John D. Sherman and the death of Mr. W. J. Roelman, whose wife has been a member of the Club since its organization.

The Gatun Woman's Club is planning for outdoor entertainments, including lawn tennis and croquet. Plans were discussed at the meeting on March 5, when the subject of an entertainment by the club was also considered. Mrs. A. B. Hillerman, of Empire, was the guest of the occasion and gave an informal talk on club work. The next meeting will be held at the home of Mrs. A. L. Kerr, House No. 10, on March 12, and a meeting will be held at the home of Mrs. Lorin A. Clark on March 19.

The committees of Las Cascadas Woman's Club for the month of March are: Entertainment—Mrs. W. B. Green, Mrs. T. F. Stocchini, Mrs. Garret and Mrs. C. F. Merry. Visiting—Mrs. R. M. Naylor and Mrs. T. C. Williamson. The Botanical Committee of this club consists of Mrs. W. D. Stanton, Mrs. C. W. Decker, Mrs. W. L. Kaiser and Mrs. J. E. Martin.

Mr. H. F. Schultz, horticulturist, gave an address on the "Fruits of the Isthmus" at the meeting of the Empire Woman's Club, March 4, and an exhibition of native fruits was given in the Club rooms. The attendance was large and included several guests from along the Line. Refreshments were served.

An entertainment will be given, under the auspices of the Culebra Woman's Club, during the first week of April, by Mr. J. W. Holland, impersonator, and Arthur Howard, pianist. The Club listened to a program of readings at its meeting on March 4.

"The Pottery of Old Spain" was the subject of a talk given by Miss Marie G. Le Prince at the meeting of the Ancon Woman's Club on March 3. The talk was illustrated with clay modelings and studies. At the meeting on March 17, Col. W. C. Gorgas will speak on "A Trip Through Chili."

The Bas Obispo Dancing Club held its first informal dance on Saturday evening, March 6, at the I. C. C. Hotel, Bas Obispo.

A number of out of town people attended. The next regular dance will be given on Saturday, March 20.

Personal.

Major Eugene T. Wilson left on March 5 for the States where he will be occupied for several days with business connected with the Subsistence Department.

Obituary.

James P. Murphy was killed by a Panama railroad train near Tabernilla sometime during the night of February 28. He had been ten months on the Isthmus, residing at San Pablo, and was working as a locomotive engineer. He is survived by his mother, Mrs. Catherine Heenan, of Wheeling, W. Va.

Missing Men.

Information is desired in regard to Leandro Fernandez Crespo, a contract laborer who, in September, 1903, was employed in the Pacific Division. Anyone having knowledge concerning him is requested to communicate with M. B. DePutron, Assistant to the Chairman, Culebra, C. Z.

Mr. Harry Fowler is requested to send his address to B. F. Falkner, Las Cascadas, C. Z., who has something of interest to communicate to him.

Information is desired with regard to the whereabouts of Axel Edward Bring, a blacksmith of Fredriksdat, Sweden, who left that country in September, 1907, and is supposed to have come to the Canal Zone from Chicago in March, 1903, in search of work. Information should be addressed to THE CANAL RECORD.

THE CANAL RECORD:

I have the honor to request that you cause to be inserted in the next issue of THE CANAL RECORD, the following:

The commanding officer of marines, Camp Elliott, C. Z., Panama, desires an interview with J. P. Egan, who during the months of January, 1903, and February, 1904, conducted a canteen in Haute Obispo.

B. H. FULLER,

Major, U. S. Marine Corps, Commanding.

Camp Elliott, March 3, 1909.

Sunday Schools.

An undenominational Sunday school has been opened at Corozal. The attendance is large and regular sessions are held in any available vacant house at present, but steps have been taken to secure a regular meeting place. Mr. Moore is the superintendent.

The Union Sunday School at Empire has a membership of ninety and the attendance is regular.

Mrs. Abbie B. Hillerman, of Empire, entertained the members of her bible class at her home on the evening of March 2. About twenty persons were present. At the close of the evening a meeting was held at which class work was discussed and a class organization was effected.

School Gardens.

A garden has been planted by the school children at Gatun and so much interest has been evinced in it that a larger plot of ground has been granted for this purpose. In Gorgona the public school has also taken up the matter. The Gorgona Woman's Club is co-operating with the school authorities in establishing a garden and will make an effort to have Arbor Day observed.

COMMISSION CLUBHOUSES

Activities of the Young Men's Christian Association.

The concerts of the Lyric Glee Club of Chicago, which is giving entertainments under the auspices of the Y. M. C. A., will be given as follows: Gatun, Wednesday, March 10; Las Cascadas, Friday, 12; Camp Elliott, Saturday, 13; Culebra, Monday, 15; Porto Bello, Tuesday, 16; Paraiso, Wednesday, 17; Gorgona, Thursday, 18; Empire, Friday, 19; Cristobal, Saturday, 20.

The men of the Pacific squadron under command of Rear Admiral W. T. Swinburne, who were granted shore leave, were extended the same entertainment and courtesies by the Young Men's Christian Association and Citizens' Committee, as upon their visit in December. They arrived here at noon, February 22, and remained until March 4. The activities carried on at the Y. M. C. A. headquarters, in Panama, were the same as described in THE CANAL RECORD of December 30, 1908.

CRISTOBAL.

The number of members of this association for March is 427. This is larger than for any preceding month since the association was organized.

Entertainments are scheduled: Wednesday, March 10, entertainment by the Women's Club; Saturday, March 13, basketball Y. M. C. A. vs Lincoln House; Wednesday, March 17, St. Patrick's Day, entertainment by Machinists' organization; Saturday, March 20, tournament, duck pins, Culebra vs. Cristobal; Saturday, March 20, return engagement Lyric Glee Club; Saturday, April 3, moonlight athletic meet on the new cinder track.

The winners in the local duck pin tournament are as follows: Butte, 1785 pins, average 80%; Lauch, 1733 pins, average, 86.13-20; Thatcher, 1696 pins, average 84%; Corbill, 1660 pins, average, 83; Burke, 1652 pins, average 82; W. Russ, 1161 pins, average, 80.45.

The first meet on the new Y. M. C. A. 138 1/2 yard cinder track was held on Friday night, March 5, by moonlight. Following are the winners: One lap race—Hertz first; Weller's cond; Luce third. Three lap race—Bessler first; Sinka second; Bailey third. Six on race—Luce first; Smith second; Bart third. Twelve lap race—Sinka first; Copeland second; Smith third. Relay race—won by Tuttle, Berte, Hertz, and Faulbee. Total score: P. R. R. 2,100 points, I. C. C., 20 points. Judges: Lieutenant Barber, Arthur Richards, and Harry Bell. Another meet will be held during the next full moon on Saturday, April 3.

A local chessfest is held each Saturday night. On Saturday, April 13, Mr. Sourin, from Culebra, will play 11 corners in simultaneous games.

Concert by the I. C. C. Band

EMPIRE, C. Z.

Sunday, March 14, 1909, at 6 p. m.

PROGRAM.

- 1 March—To the Front.....Baines
- 2 Selection—A Gay Musician.....Edwards
- 3 Porto Rican Dance—Rosita.....Missud
- 4 Moroccan—Narcissus.....Nevin
- 5 Paraphrase on *Neaver, My God, to Thee*.....Reeves
- 6 With mariabaphone solo performed by Wm. G. Howe.
- 6 1 fantasia—Gems of Stephen Foster.....Tobani
- 7 Waltz—American Student.....Missud
- Introducing several college songs.
- 8 Overture—Schauspiel.....Bach
- 9 March—Old Faithful.....Holzman

CHAS. E. JENNINGS, Musical Director.

The next concert will be given at Tabernilla, Sunday, March 21.

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., March 10, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- | | |
|-------------------------|----------------------|
| Aldis, Floyd | Mannoil, James |
| Anderson, Louis | McElroy, G. Normaa |
| Anderson, Miss Lucille | Morrow, J. C. |
| Archer, Mrs. E | Moss, J. W. |
| Bates, William | O'Neally, B. J. |
| Baughner, Robert | O'Null, William |
| Brewster, Dr. Norman H. | Parker, Supt. |
| Brown, J. R. | Peitz, Amions |
| Callahan, John | Peyser, Mrs. R. |
| Drees, Lieutenant | Sarmenito, Pete |
| Edwards, William | Sukisa, Frederick |
| Gibbs, William | Shepherd, Victor |
| Gomberg, Miss Clara A. | Spinney, Robert A. |
| Harris, Mrs. Charles | Stewart, Gordon A. |
| Keeney, H. L. (pkg.) | Thompson, Newton |
| Keeney, John J. | Vickers, Miss Nettie |
| Lucas, Captain | Wannamaker, C. W. |
| Manion, James E. | |

COMPARISON OF WORK AND COST, AS ESTIMATED IN 1905 AND IN 1908—PACIFIC DIVISION.

A summary of the amount of work and the cost, as estimated by the Board of Consulting Engineers in 1905 and by the Isthmian Canal Commission in December, 1908, and the details of the Board's estimate and that of the Commission for the Central Division were published in THE CANAL RECORD of February 24. The summary includes, in addition to a comparison of the amounts required for construction, an estimate of the amounts that will be required for the Department of Civil Administration, the amounts to be paid to the New French Canal Company and the Republic of Panama and an estimate of reimbursements to the United States Treasury from various sources. The details of the estimate for work and cost in the Atlantic Division were published in the issue of March 3, and details for the Panama Railroad relocation, loans to the Panama Railroad, general expenses, construction and repair of buildings and municipal improvements, will be published in the issue of March 17.

BOARD OF CONSULTING ENGINEERS, 1905.

ISTHMIAN CANAL COMMISSION, DECEMBER, 1908.

PEDRO MIGUEL LOCKS—One Twin Lock, 95 feet by 900 feet usable dimensions 30 foot lift:

Excavation—Earth, 650,000 cubic yards, at 40 cents per yard.....	\$251,000
Rock, 520,000 cubic yards, at \$1.15 per yard.....	598,000
Total, 1,170,000 cubic yards.....	\$855,000
Back filling, 390,000 cubic yards, at 50 cents per yard.....	195,000
Locks, exclusive of excavation and approach walls.....	5,945,000
Emergency gate.....	1,000,000
Approach walls.....	300,000
Total.....	\$8,285,000

PEDRO MIGUEL DAM:

Earth embankment, 1,100,000 cubic yards, at 25 cents per yard.....	\$275,000
Preparatory work.....	50,000
Total.....	\$325,000

PEDRO MIGUEL LOCKS—One Twin Lock, 110 feet by 1,000 feet usable dimensions 30 foot lift:

Excavation, 950,000 cubic yards, at \$1.15 per yard.....	\$1,111,000
Excavation, 270,000 cubic yards, at \$1.30 per yard.....	351,000
Total, 1,250,000 cubic yards, at \$1.15 cents per yard.....	\$1,500,000
Back filling, 830,000 cubic yards, at 55 cents per yard.....	456,500
Concrete, 922,600 cubic yards, at \$3.25 cents per yard.....	7,611,000
Emergency dam, gates, valves, operating machinery, electric capstans, etc.....	3,100,000
Miscellaneous.....	250,000
Total.....	\$12,998,500

PEDRO MIGUEL DAM:

Excavation and rubble core, 21,200 cubic yards, at \$1.20 cts. per yd.,	\$25,440
Embankment—Earth, 230,500 cubic yards, at 95 cents per yard.....	219,475
Miscellaneous.....	7,000
Total.....	\$251,915

The increase of the present estimate for Pedro Miguel Locks over the Minority estimate of 1905, is due to increase in size of locks and changes in plans, and amounts to \$4,405,000, as follows:

Increase due to excavation, 97,900 cubic yards.....	\$645,000
Increase due to back fill, 444,000 cubic yards.....	264,000
Increase in concrete due to increase in size of locks, 221,000 cubic yards at \$3.25 per yard.....	1,818,000
Due to change of plans, 100,000 cubic yards at \$3.25 per yard.....	825,000
Increase due to gates, operating machinery, etc., including intermediate gates added.....	825,000
Total.....	\$4,405,000

CHANNEL, PEDRO MIGUEL TO DEEP WATER—1.87 miles, 500 feet wide, Pedro Miguel to new Miraflores; 3.61 miles not less than 1,000 feet wide in Sosa Lake; 1.23 miles, 300 feet wide, in Panama Bay:

Pedro Miguel to La Boca:

Excavation—Dredging, 1,680,000 cubic yards, at 25 cts. per yard.....	\$420,000
--	-----------

La Boca to deep water:

Excavation—Dredging, 4,760,000 cubic yards, at 15 cts. per yard.....	714,000
Rock under water, 200,000 cu. yds., at \$1.50 per yd.....	300,000
Rock under water, 370,000 cu. yds., at \$2.50 per yd.....	925,000
Total, 7,010,000 cubic yards, at 33 cents per yard.....	\$2,359,000

CHANNEL, PEDRO MIGUEL TO DEEP WATER—500 Feet Wide:

Excavation—Dredging, 32,763,051 cubic yards, at 20 cents per yd.....	\$6,553,000
Rock under water, 1,630,000 cu. yds., at \$2.50 per yd.....	4,075,000
Dry, 2,141,548 cubic yards, at \$1 per yard.....	2,141,500
Total, 35,534,599 cubic yards, at 35 cents per yard.....	\$12,770,000
Removing wrecks.....	100,000
Breakwater to Naos Island.....	300,000
Grand total.....	\$13,170,000

From Pedro Miguel Locks to the Pacific, the estimates of the Minority of the Board are not comparable, item for item, with present estimates, on account of change in plan.

The Minority's plan contemplated the formation of a lake on the Pacific side by the construction of earth dams at the Pacific entrance, with a flight of two locks on the west side of Sosa Hill. Their estimates for the dams did not include the removal of the soft material overlying the rock. Subsequent investigation showed that this would be necessary, and that the dams would have to be built of selected material. This would treble the cost of the dams as estimated by the Minority. A report was made in December, 1907, giving estimated cost as of that date of different plans based on different location for the Pacific locks, and showing that the most suitable and economical location was at Miraflores. This change in location, of the Pacific locks from La Boca to Miraflores was approved by the President December 20, 1907. The cost of the locks at Miraflores as compared with the Minority estimate of locks at La Boca is greater on account of both increased size of the locks and increased cost of foundations. The increased cost of channel work from Miraflores to the Pacific by present estimate, over the Minority estimate for the earth dams, modified so as to represent the cost of the dams as they would have to be constructed, is due largely to change in location and dimensions of channel, as from east to west of Naos Island, etc.

The increased quantity of work itemized above, therefore, is due both to extending the sea-level channel from La Boca to Miraflores, and to shifting the position of the channel between La Boca and deep water.

PACIFIC LOCKS AND DAMS:

LA BOCA LOCKS—Flight of two twin locks, 95 feet by 900 feet usable length; total maximum lift, 64.7 feet.

Excavation—Earth, 480,000 cubic yards, at 40 cents per yard.....	\$192,000
Rock, 950,000 cubic yards, at \$1.50 per yard.....	1,425,000
Total, 1,430,000 cubic yards, at \$1.13 per yard.....	\$1,617,000
Back fill and embankment.....	475,000
Locks, exclusive of excavation and approach walls.....	11,000,000
Approach walls.....	450,000
Total.....	\$13,542,000

DAMS:

Embankment, Ancon-Sosa and Ancon-Corozal dams, 5,940,000 cubic yards, at 25 cents per yard.....	\$1,485,000
Embankment, La Boca dam, 6,300,000 cubic yards at 25 cents per yard.....	1,575,000
Shutting off the tidal flow at La Boca.....	100,000
Diversion channel and regulating works between Sosa and Ancon.....	275,000
Preparation of sites, etc.....	150,000
Total.....	\$3,595,000

PACIFIC LOCKS AND DAMS—

MIRAFLORES LOCKS—Flight of two twin locks, 150 feet by 1,000 feet usable length; total maximum lift, 64.7 feet:

Excavation—Dry, 1,132,587 cubic yards, at \$1.15 per yard.....	\$1,215,000
Dry, rock, 258,850 cubic yards, at \$1.50 per yard.....	388,000
Dry, rock, 845,345 cubic yards, at \$2.25 per yard.....	1,902,000
Dredging, 1,611,161 cubic yards, at 25 cents per yard.....	402,750
Total, 3,701,172 cubic yards, at \$1.05 per yard.....	\$3,900,000
Back fill, 1,924,400 cubic yards, at 45 cents per yard.....	865,100
Piling, 121,900 linear feet, at 50 cents per foot.....	60,950
Rip-rap, 43,000 cubic yards, at 40 cents per yard.....	17,200
Concrete, 61,500 cubic yards, at \$6.50 per yard.....	400,000
Concrete, 1,258,800 cubic yards, at \$4.25 per yard.....	10,355,000
Emergency dam, gates, valves, operating machinery, electric capstans, etc.....	3,500,000
Miscellaneous.....	330,000
Total.....	\$24,715,000

MIRAFLORES DAMS—

Excavation, 131,686 cubic yards, at \$1 per yard.....	\$131,686
Filling, 1,015,900 cubic yards, at 50 cents per yard.....	507,950
Concrete, 68,500 cubic yards, at \$1.1 per yard.....	75,350
Regulating works.....	325,000
Miscellaneous.....	300,000
Total.....	\$2,156,000

The present estimate for locks at Miraflores exceeds the Minority estimate for locks at La Boca. The increase is due principally to increased work from changing size of locks from 95 feet by 90 feet to 110 feet by 100 feet, and also to changes in plans, such as providing intermediate gates, etc., viz:

Increased excavation, 2,278,172 cubic yards.....	\$2,287,000
Increased back fill.....	300,000
Piling, rip-rap and miscellaneous (new items).....	409,000
Increased concrete due to deeper foundation required at Miraflores, 69,500 cubic yards, at \$5.50 per yard.....	452,000
Increased concrete due to changes in plans, 210,000 cubic yards, at \$8.25 per yard.....	1,980,000
Increase due to gates, operating machinery, etc.....	655,000
Total.....	\$6,173,000

The Minority estimate for the Pacific dams as given above is not comparable with the estimate of December, 1908, for Miraflores dams, as the work is not in the same location, and dams as proposed by the Minority, if built, would have had to be modified in plan with largely increased cost.

BOARD OF CONSULTING ENGINEERS, 1906.

ISTHMIAN CANAL COMMISSION, DECEMBER, 1908.

SUMMARY.

Pedro Miguel Locks.....	\$8,288,000
Pedro Miguel Dam.....	325,000
Channel, Pedro Miguel to deep water.....	2,359,000
Pacific Locks (La Boca).....	13,542,000
Pacific Dams (La Boca).....	3,595,000
Total.....	\$28,109,000

SUMMARY.

Pedro Miguel Locks.....	\$12,693,000
Pedro Miguel Dam.....	251,000
Channel, Pedro Miguel to deep water.....	13,170,000
Pacific Locks (Miraflores).....	19,715,000
Pacific Dams (Miraflores).....	2,156,000
Total.....	\$47,985,000

CANAL ZONE HEALTH IN 1908.

Lowest Death Rate Since American Occupation—Disease Decreasing.

OFFICE OF CHIEF SANITARY OFFICER,

ANCON, C. Z., February 25, 1909.

To the Acting Chairman Isthmian Canal Commission, Colon, C. Z.

Sir: I herewith forward report of the Department of Sanitation for the calendar year 1908:

I would like to call your attention to several points in this report. In the first place, to the low death rate among employes. The figures for the past five years are as follows:

YEAR.	Force.	Deaths.	Rate per thousand
1907.....	62,333	82	13.26
1905.....	16,511	427	25.86
1904.....	26,703	1,105	41.37
1907.....	39,343	1,182	18.77
1908.....	43,890	571	13.01

This means that out of every thousand employes, we had in 1908 one-third the number die that we had die in 1905, and one-half the number that we had die in 1907.

In this connection, it is particularly interesting to note how the death rate among the blacks has fallen:

YEAR.	Force.	Deaths.	Rate per thousand
1905.....	13,482	354	26.25
1908.....	11,441	1,013	47.24
1907.....	28,634	953	33.28
1908.....	31,507	402	12.76

This means that in 1908, out of every thousand blacks on our rolls, 47 died, whereas in 1905, out of every thousand on our rolls, only 12 died. The black death rate was slightly less in 1908 than the white death rate. This is the first year, since we have been on the Isthmus, that the black death rate has been smaller than the white death rate. In 1905 the death rate among the blacks was nearly three times as high as that among the whites.

Considering the total population of Panama, Colon and the Canal Zone, we have the following:

YEAR.	Population.	No. of deaths.	Rate per thousand
1904.....	35,000	1,224	52.45
1905.....	42,699	2,793	65.41
1906.....	66,011	3,544	49.10
1907.....	102,133	3,435	33.63
1908.....	120,097	2,983	24.83

This means that out of every thousand

people on the Zone considerably less than one-half as many died in 1908 as died in 1905.

Taking special diseases, we find that in 1906 we had among the 26,705 employes, 69 deaths from dysentery; in 1907, with 39,343 employes, 48 deaths; and in 1908, with 43,890 employes, 16 death. That is, with 43,890 employes in 1908 we had less than one-quarter the number of deaths from dysentery than we had among 26,705 employes in 1905.

In 1905, we had from malaria 233 deaths; in 1907, 154 deaths; and in 1908, 73 deaths. That is, with a force more than one-third larger in 1908, we had, from malaria, less than one-third the deaths that we had in 1905.

In 1907, we had from typhoid fever 98 deaths, and in 1908, with a larger force, we had only 19 deaths.

In the number of deaths from pneumonia there has also been a great fall. In 1906 we had 431 deaths from this disease; in 1907, 328 deaths, and in 1908, 93 deaths.

Among white Americans from the United States we had 42 deaths during the year. Exactly one-half of these were from violence. Our death rate, from disease, among this class, was 3.84 per thousand, about the same rate as occurred in the year 1907 in our Army.

During the year we had on the Isthmus 2,674 American women and children connected with the Commission. The death rate among these was 9.72 per thousand. This is an exceptionally small rate for this class of population.

I consider malaria the best measure of the sanitary work done. In 1906, out of every thousand employes, we admitted to our Hospitals, from malaria, 821; in 1907, 424; and in 1908, 282. That is, we now have only about one-third the amount of malaria among our employes that we had three years ago.

Beriberi is also a disease that has considerably decreased in the past three years. In 1905 we had 63 deaths in the total population from this disease; in 1907, we had 53 deaths; and in 1908, 38 deaths.

It has been more than three years now since a case of yellow fever has developed on the Isthmus. The last occurred in November, 1905. The last case of plague occurred in August, 1905. No case of smallpox occurred during the year.

Taken as a whole, the health report for 1908 shows very much better conditions than have occurred in any previous year since we have been on the Isthmus, and the death rates and sick rates among our employes will compare favorable with those of most parts of the United States.

Very respectfully,
WM. C. GORGAS,
Chief Sanitary Officer.

Stages of the Chagres.

Maximum height of Chagres above low water for the week ending midnight March 6, 1909:

	STATIONS.					
	Vigia.	Alhajuella	Gambuco	Bohio.	Gatun (Canal)	Gatun (W. Diver n.)
Height of low water above mean sea level, feet.....	125	92	16	1	0	0
Maximum height above low water, feet:						
Sunday, Feb. 28.....	.85	1.10	1.80	2.3	1.3	1.2
Monday, Mar. 1.....	.0	1.10	1.80	2.2	1.3	1.2
Tuesday, Mar. 2.....	.75	1.08	1.80	2.1	1.2	1.0
Wednesday, Mar. 3.....	.70	1.42	1.80	2.1	1.2	1.1
Thursday, Mar. 4.....	.55	1.42	1.80	2.0	1.1	1.0
Friday, Mar. 5.....	.50	1.42	1.75	1.9	1.1	1.0
Saturday, Mar. 6.....	2.30	1.20	1.75	2.0	0.9	0.8

An error of 3 feet was discovered in the elevation of the benchmark at Vigia, and the 'Height of Low Water' heretofore published in the THE CANAL RECORD should be 126 feet above sea level instead of 129 feet above sea level. The river at this point has recently fallen below what was assumed as the low water plane, and this is, therefore, now fixed at 175 feet above sea-level. The heights above low water previous to February 28 are referred to the 126-foot level instead of the 129-foot, and those since that date are referred to the 125-foot level.

Rainfall, March 1 to 6, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	.82	.90
Brazos Brook.....	.69	.56
Gatun.....	1.28	1.38
Bohio.....	3.24	3.33
<i>Central Division—</i>		
Tabernilla.....	.66	.78
San Pablo.....	.15	.17
Bas Obispo.....	.36	.36
Gamboa.....	.34	.34
Empire.....	.17	.17
Camacho.....	.21	.21
Culebra.....	.14	.14
<i>Pacific Division—</i>		
Rio Grande.....	.15	.15
Pedro Miguel.....	.01	.01
La Boca.....	.01	.01
Ancon.....	T	T
<i>Atlantic Coast—</i>		
Porto Bello, (to 5 p. m. Mar. 6)...	.40	.60
Nomhre de Dios.....	.28	.29
<i>Upper Chagres</i>		
El Vigia.....	T	T
Alhajuella.....	.01	.01

LEGAL NOTICE.

EMPIRE, C. Z., February, 27, 1909.
Circuit Court, Second Judicial Circuit, Canal Zone.
The last will and testament of Lee J. Putnam having been presented to the Court for probate, notice is hereby given that on Friday, the 19th day of March, 1909, at two o'clock in the afternoon, in the Circuit Court house at Empire there will be a hearing when all concerned shall appear to contest the allowance of the will.
E. M. GOOLSBY,
Circuit Court Clerk.

OFFICIAL CIRCULARS.

Volunteer Fire Companies.

CULEBRA, C. Z., March 1, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

The following letter from the Head of the Department of Civil Administration to the Acting Chairman, is brought to the attention of all concerned.

It is estimated that the property of the Commission and railroad on the Isthmus protected by the Division of Fire Protection maintained by the Commission reaches in value about \$22,000,000. Paid fire companies are maintained at Cristobal, Gorgona Empire, Culebra, and Ancon. At all other places the work of protecting Commission and railroad property against fire devolves entirely upon companies of volunteer firemen recruited from the employes of the Commission and railroad.

The duties of the Fire Chief, in connection with the work of the volunteer companies are to keep membership up to the necessary strength to see that they drill at regularly appointed times, and in case of fire to have a paid fireman, if one is available, direct their efforts. The volunteer firemen have shown commendable efficiency when they have been called upon to save Government property from destruction by fire. Under authority of the Chairman employes who are members of volunteer companies are excused from their work for one hour twice a month to attend drill. The time of drill is usually from four to five in the afternoon.

At times the attendance of employes at fire drill causes more or less inconvenience to the regular work on which they are engaged. Some time ago the Chairman directed that transportation and excavation men should not be required to attend drill during work hours. In other cases department and division heads have requested individual employes to resign from membership in volunteer companies, or have requested me to relieve individual employes from such membership.

These conditions indicate that the serious character of the work of volunteer fire companies, the necessity for their existence, and for the cooperation of all officials of the Commission in the maintenance of their efficiency, are not sufficiently understood. While the men themselves are interested in the volunteer fire service, their efficiency in that service depends on the support of their superiors. It is to be expected that some inconvenience will result from the absence of employes while attending fire drill, but only in exceptional cases is such inconvenience sufficient to justify refusal to permit the employes to attend drill. It is also to be expected that employes who can ordinarily be spared from their usual work to attend drill will at times be unable to do so. Their occasional inability to be present at drill does not seriously impair their efficiency as firemen. But unless the general efficiency of the volunteer fire service can be maintained by the cooperation of department and division heads, and, at times, by some sacrifice on their part, it will be necessary for the Commission to install paid companies at many places in the Zone where such companies do not now exist, and to enlarge the present paid companies. This will result in considerable increase in the cost of fire protection.

It might be well to bring this matter to the attention of department and division heads, with a request that they will submit lists of the classes of employes whose duties, in their opinion, are such that they cannot be spared for fire drill without serious inconvenience to the service. Such lists could then be approved by you so far as you think they should be approved. The subject is submitted to you for this or such other action as you may think proper.

The suggestion contained in the last paragraph of the foregoing letter is approved, and heads of departments and divisions are requested to submit the lists mentioned, at an early date, for consideration.

H. F. HODGES, Acting Chairman and Chief Engineer.

Compensation for Injuries.

CULEBRA, C. Z., March 1, 1909.

CIRCULAR No. 235.

By the Act of Congress approved May 30, 1908, which took effect on August 1, 1908, it is provided that any person employed as an artisan or laborer in hazardous employment under the Isthmian Canal Commission who is injured in the course of such employment shall be entitled to receive for one year thereafter unless sooner able to resume work, the same pay as if he continued to be employed. This law requires the approval by the Secretary of Commerce and Labor of a claim for compensation before payment can be made, and prohibits payment of compensation when injury is due to the negligence or misconduct of the employes injured, and in all cases where such injury does not continue for more than fifteen days.

By the Act of February 24, 1909, it is provided that

nothing contained in the Act of May 30, 1908, shall prevent the Isthmian Canal Commission, under rules to be fixed by the Commission, from granting to its injured employes, whether engaged in hazardous employment or otherwise, leave of absence with pay for time necessarily lost as the result of injuries received in the course of employment, not exceeding in the aggregate thirty days per annum.

Effective February 24, 1909, the following rule will apply to payment of all injured employes whether engaged in hazardous or other employment.

An employe may be granted, in the discretion of the head of the department or division in which employed, with the approval of the Chairman, pay for time necessarily lost as a result of injuries received in the course of employment, not exceeding in the aggregate, thirty days in any calendar year. The amount of compensation to be paid an employe for time lost on account of injury will be calculated on the basis of an eight hour day for consecutive days, including Sundays and holidays. Leave on account of injury shall not be cumulative, and payment for same will be made on the first pay roll following its authorization.

The foregoing rule will also cover cases of injury which occurred prior to February 24, 1909, so far as time lost on and after that date is concerned.

The following instructions will govern in the case of all employes:

When an employe is injured in the performance of duty, the preliminary report of accident now in use (Form C. E. 177) will be immediately sent by his foreman, or other superior officer, to the office of the head of the department or division in which he is employed. It will there be held in suspense until the employe returns to duty, or until fifteen days have elapsed from the date of the accident.

If the time lost on account of injury does not exceed fifteen calendar days, or, regardless of the time lost, if the injured employe is not entitled to compensation under the Act of May 30, 1908, Form 206-C. E., will be prepared by the head of the department or division, and forwarded in triplicate to the Chairman for his action, accompanied by the certificate of the attending physician. Upon the return of this form approved, payment will be made on the regular pay roll as "meritorious sick leave" in the manner provided for in the foregoing rule.

Should the employe be in the class of employes covered by the Act of May 30, 1908, and be still incapacitated on the fifteenth day after the accident, an "Immediate Report of Accidental Injury" (Form C. A. 1) will be prepared by the head of the department or division and forwarded in duplicate not later than the sixteenth day after the accident, to the Claim Officer, Empire, Canal Zone, who will prepare claim for compensation and transmit it to the Department of Commerce and Labor.

When an employe whose claim has been forwarded as provided in the preceding paragraph returns to duty, Forms C. A.-2, "Report of Return to Work" and C. A.-7, "Certificate of Disability" shall be immediately sent in duplicate to the Claim Officer.

All cases of accidental death shall be reported on Forms C. A.-1A and C. A.-3, through the Claim Officer, in accordance with the present practice.

H. F. HODGES, Acting Chairman and Chief Engineer.

CULEBRA, C. Z., March 8, 1909.

CORRECTION TO CIRCULAR No. 235.

A typographical error was made in some of the copies sent out of Circular No. 235. The concluding words of the first sentence of paragraph 4 should be "calendar year" instead of "calendar month." Please make correction.

By direction of the Acting Chairman.

M. B. DEPUTRON, Assistant to the Chairman.

Acting Subsistence Officer.

CULEBRA, C. Z., March 5, 1909.

CIRCULAR No. 236.

In the absence from the Isthmus of Maj. E. T. Wilson, Subsistence Officer, Isthmian Canal Commission, all his duties in connection with the Subsistence Department, Isthmian Canal Commission, and the Commissary Department, Panama Railroad Company, will be performed by Lieut. F. O. Whitlock, Assistant Subsistence Officer, Isthmian Canal Commission.

H. F. HODGES, Acting Chairman and Chief Engineer.

H. J. SLIFER, Assistant to the President, P. R. R. Co.

LOST—From car window, left side of car from Panama to Colon, in the vicinity of the corral near Corozal, one pair of oval-shaped nose glasses. Finder will be suitably rewarded if glasses are delivered to Felix E. Porter, Disbursing Office, Empire, C. Z.

LOST—Fraternity pin, gold anchor with a white enamel shield and cross bar inscribed with Greek letters, marked with name and S. W., 1902. Reward for return to Mrs. W. D. Stanton, Las Cascadas, C. Z.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Table listing ship names, companies, and departure dates for New York to Colon routes. Includes ships like Advance, Oruba, Allianca, Prinz Joachim, Colon, Tagus, Panama, and Orinoco.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingstons en route to Colon.

COLON TO NEW YORK.

Table listing ship names, companies, and departure dates for Colon to New York routes. Includes ships like Panama, Tagus, Advance, Prinz Aug. Wilhelm, Allianca, Magdalena, Colon, Prinz Joachim, Orinoco, and Prinz Aug. Wilhelm.

NEW ORLEANS TO COLON.

Table listing ship names, companies, and departure dates for New Orleans to Colon routes. Includes ships like Parismina, Boundbrook, and Cartago.

COLON TO NEW ORLEANS.

Table listing ship names, companies, and departure dates for Colon to New Orleans routes. Includes ships like Ellis, Parismina, and Cartago.

COLON TO BARBADOS, CALLING AT TRINIDAD.

Table listing ship names, companies, and departure dates for Colon to Barbados routes. Includes ships like Oruba, Tagus, Magdalena, Orinoco, and Atrato.

Sailings of the French line (Cie. Générale Trans atlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailings of the Leyland Line for New Orleans via Kingstons, Ja., will be as follows: Steamship Asian about March 27.

NOTICE OF SALE.

United States of America, In the matter of John and Judicial Circuit, Sec. Chong Wing & Co., and Bankrupts. Empire, Canal Zone.

By virtue of authority vested in me by the Court of the Second Judicial Circuit on the 27th day of February, 1909, I shall receive sealed bids for the stock of dry goods, boots, shoes, silks, groceries, fixtures, of John Chong Wing & Co., situated in Culebra, Canal Zone. Said bids must be addressed to me at Ancon, Canal Zone, accompanied with a deposit of \$100 by not later than the 15th day of March, 1909, 12 m., the receiver reserving the right to reject any and all bids. A copy of the inventory of the said stock can be seen either at my office in Panama, or on file in the Circuit Court at Empire, Canal Zone.

SAM B. DANNIS, Receiver

Panama, March 1, 1909



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

President Taft on the Canal.

The Panama Canal will have a most important bearing upon the trade between the Eastern and far Western sections of our country and will greatly increase the facilities for transportation between the eastern and the western seaboard, and may possibly revolutionize the transcontinental rates with respect to bulky merchandise. It will also have a most beneficial effect to increase the trade between the eastern seaboard of the United States and the western coast of South America, and indeed with some of the important ports of the east coast of South America reached by rail from the west coast. The work on the Canal is making most satisfactory progress. The type of the Canal as a lock canal was fixed by Congress after a full consideration of the conflicting reports of the majority and minority of the Consulting Board and after the recommendation of the War Department and the Executive upon those reports. Recent suggestion that something had occurred on the Isthmus to make the lock type of the Canal less feasible than it was supposed to be when the reports were made and the policy determined on, led to a visit to the Isthmus of a board of competent engineers to examine the Gatun dam and locks, which are the key of the lock type. The report of that board shows that nothing had occurred in the nature of newly revealed evidence which should change the views once formed in the original discussion. The construction will go on under a most effective organization controlled by Col. Goethals and his fellow army engineers associated with him, and will certainly be completed early in the next administration, if not before.

Some type of canal must be constructed. The lock type has been selected. We are all in favor of having it built as promptly as possible. We must not now therefore keep

up a fire in the rear of the agents whom we have authorized to do our work on the Isthmus. We must hold up their hands, and speaking for the incoming Administration, I wish to say that I propose to devote all the energy possible and under my control to the pushing of this work on the plans which have been adopted and to stand behind the men who are doing faithful hard work to bring about the early completion of this the greatest constructive enterprise of modern times.—From Mr. Taft's Inaugural address.

American-made Dredge Buckets.

The first American-made dredge buckets to be used in the construction of the Canal have been delivered at La Boca and will presently be tested on one of the old Scotch ladder dredges left here by the French and utilized by the Americans. The buckets are made of cast steel and have lips and bushings of manganese steel. Unlike the buckets on the old Scotch dredges they are in one piece. They have a capacity of about one-half a cubic yard. The buckets hitherto used were left on the Isthmus by the French.

New Pacific Quarantine Station.

The new quarantine station at Culebra Island was opened on March 1, when a case of yellow fever brought from Gnayaquil was placed in one of the isolation pavilions. Passengers are now detained at this station, the old station at La Boca in the house known as "La Folie Dingler" having been turned over to the Quartermaster's Department. Ships coming from ports against which quarantine has been declared are not allowed to land their passengers until the prescribed period has elapsed. Passengers are transferred in a tug to Culebra Island. A description of the accommodations afforded at the new station appeared in THE CANAL RECORD Vol. I., pages 307, 345. Visitors are not allowed on the island except by special permission. While any one is detained in quarantine a yellow flag flies over the island as an indication that no one, excepting those on official business, will be allowed to land.

Recruiting Laborers for P. R. R.

During the month of February a call was received from the Panama Railroad Company for 250 West Indian laborers. This number of idle laborers was easily found in the Canal Zone, and in the cities of Panama and Colon, but few of them would accept the class of work offered. While it is true that there is a large surplus population of laborers on the Isthmus, many of them are of the idle and worthless class who cannot be depended upon to work as common laborers at the 20-cent silver rate. The Panama Railroad Company requires a large number of additional men in connection with the relocation work, and the Commission's agent in Barbados has been instructed to recruit

1,000 men to arrive on the Isthmus in two shipments—500 on March 18 and 500 on April 15. No difficulty is anticipated by the Chief Quartermaster in securing any additional number of West Indian laborers that may be required.

Highest Single Shovel Day Record.

All records for a single day's excavation by one shovel were surpassed, on March 2, in the Empire Construction District, Central Division, when shovel No. 220 removed 3,941 cubic yards of rock and earth in a working day of eight hours. The shovel was actually at work 6 hours and 50 minutes of this time and was waiting for cars one hour and ten minutes.

Wireless Station at Porto Bello.

A wireless telegraph station to be operated under the Navy Department will soon be opened at Porto Bello. A contract for the equipment has been let and the materials are on the way to the Isthmus. A mast 130 feet high will be erected on one of the hills at the entrance to the harbor. The work is being done under the supervision of Major Fuller of the Marine Corps, in command at Camp Elliott. The station will be used for general naval purposes and, in addition, official messages of the Isthmian Canal Commission will be transmitted between Porto Bello and the wireless station at Colon.

La Boca Landing Stage.

A landing stage for transferring the crews of the dredges has been erected at La Boca between the machine shop and the docks. It consists of a pontoon which floats in the water and a permanent caisson connected by a swinging bridge 126 feet long. The permanent caisson is built of two diving bells left at La Boca by the French, and the swinging bridge is part of the conveyor mechanism of an old French excavator which was found in the storeyard at Tabernilla. The bridge is so attached to the caisson and the pontoon that it rises and falls with the tide. This is the bridge that was originally intended for a landing stage at the Culebra Island Quarantine Station.

February Money Order Business.

During the month of February, 1909, the 16 post-offices in the Canal Zone at which money order business is done sold 14,473 money orders, aggregating \$416,149.81, an increase of \$6,909.77 over the amount reported for January. Of the \$416,149.81 in February, \$302,828.17 was drawn in orders payable in the United States and elsewhere, and \$113,321.64 in orders payable in the Canal Zone. The fees collected amounted to \$1,744.02, and the amount paid and repaid was \$111,712.65.

In the number of orders drawn, Cristobal was first with 2,817, Empire was second with 1,750, and Ancon third with 1,740. In the

NOTES OF PROGRESS.

(Continued.)

total amount issued, Cristobal was first with \$80,677.44, Empire second with \$44,969.22, and Gorgona third with \$43,471.59. Of the amount payable in the United States, Cristobal was first with \$67,300.95, Empire second with \$36,183.34, and Ancon third with \$34,420.15. In orders payable in the Canal Zone, Gorgona was first with 17,928.45, Cristobal was second with \$13,376.49, and Pedro Miguel was third with \$11,886.70. In the amount paid and repaid, Cristobal was first with \$19,271.26, Empire second with \$15,458.14, and Gorgona third with \$12,920.28.

The average of all the orders issued was \$28.75, the highest being at Corozal, where 278 orders amounting to \$10,181.20 were sold, an average of \$36.62, and the lowest was at Ancon, where orders aggregating \$39,268.67 were sold, an average of \$22.57.

Lidgerwood Unloaders in February.

The eleven Lidgerwood unloaders in the Central Division, during the month of February, unloaded a total of 2,692 trains, composed of a total of 47,129 cars. Of this number, 1,327 trains, composed of 22,559 cars, were unloaded by five unloaders at Tabernilla; 583 trains, composed of 10,494 cars, were unloaded by three unloaders at the Miraflores dumps, and 782 trains, composed of 14,076 cars, were unloaded by three unloaders at La Boca. As all the cars were of 20-yard capacity, the material unloaded represented about 942,580 cubic yards.

Dredging in February.

Dredging for the hydraulic fill of Gatun Dam is not considered as Canal excavation, and, therefore, is not included in the excavation report published in THE CANAL RECORD of March 10. Including dredging for the dam and from the old French canal at Gatun, the excavation by dredges in February amounted to 1,420,820 cubic yards, of which the Atlantic Division did 728,622 cubic yards, and the Pacific Division 692,198.

In the Atlantic Division suction dredge No. 85 excavated from the lower lock 132,291 cubic yards. At this rate the excavation in that lock chamber will be completed by the first week in May. The dredge is doing more work than two steam shovels would in similar material, and is doing it at about one tenth the cost. A total of 115,732 cubic yards was excavated by suction dredges Nos. 82 and 83 and pumped into Gatun Dam during the month. Dredge No. 82 worked 15 days and excavated 59,860 cubic yards. On February 20 it was sent to the Cristobal marine shops for repairs, and dredge No. 83 substituted. The February record of the dredges in the Atlantic Division is as follows:

DREDGES.	CUBIC YARDS.		
	Earth.	Rock.	Total.
20-inch suction, No. 85.	132,291	.....	132,291
20-inch suction No. 83.	55,872	.....	55,872
20-inch suction, No. 82.	59,860	.....	59,860
Dipper, Mudi.	23,714	5,975	35,689
Ladder, No. 1.	90,634	.....	90,634
Ladder, No. 6.	52,751	16,315	69,096
Sea-going suction, Ancon.	285,180	.....	285,180
Total.....	706,332	22,290	728,622

The dredges of the Pacific Division excavated 692,198 cubic yards in February, all

but 24,222 yards of which were taken from the Canal prism. The sea-going suction dredge *Culebra* was working in the outer end of the channel near deep water, excavating mud and some small rock. The marine ladder dredge *Mole* put in part of the month working in the Canal prism opposite the wharf, and spent several days in the channel leading up to the machine shop. In the latter work it was greatly hampered by a large amount of wire cable, iron rods, anchors, chain, and other old iron which had been dropped into the channel at various times in the past, and which clogged the buckets. The marine ladder dredge *Gopher* was working on the east bank of the channel about three miles from deep water excavating the channel at this point to its final width of 500 feet. Ladder dredge No. 14 was excavating in the old French canal, in the prism of the present canal, between La Boca and Miraflores. The dipper dredge was taking out mud and clay in the prism of the Canal opposite the machine shop. At Miraflores the 20-inch suction dredge *Sandpiper* continued excavating in the site of the lower locks. The work was greatly hampered by the large amount of rock encountered, a class of material for which this dredge is not adapted. The record of the Pacific Division dredges follows:

DREDGES.	CUBIC YARDS.		
	In prism.	Outside prism.	Total.
Ladder, No. 14.....	111,468	.....	111,468
Ladder, Gopher.....	125,958	.....	125,958
Ladder, Mole.....	39,669	24,222	63,891
Dipper Dredge.....	84,743	.....	84,743
Sea-going suction, Culebra.....	285,417	.....	285,417
20-inch suction, Sandpiper.....	20,721	.....	20,721
Total.....	667,976	24,222	692,198

February Record of Track Shifters.

The seven track shifting machines in the Central Division moved a total of 572,847 feet, or 108.5 miles of track during February. In the Tabernilla District track shifter No. 5 moved 41,800 feet, or 7.9 miles and No. 7 moved 145,700 feet, or 27.6 miles, a total of 187,500 feet or 35.5 miles for the district. At San Pablo and Caimito shifter No. 6 moved 91,914 feet, or 17.4 miles. At Matachin and Tower C. (Empire) No. 9 moved 109,199 feet, or 20.7 miles. At Santa Cruz No. 1 moved 40,450 feet or 7.7 miles. At Miraflores No. 8 moved 50,239 feet, or 9.5

miles, and at the La Boca and Big Tree dumps, track shifter No. 2 moved 93,545 feet, or 17.7 miles.

Canal Zone Lands.

The following is the full text of the Act passed at the recent session of Congress and approved by the President, relating to the use, control, and ownership of lands in the Canal Zone:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the President is hereby authorized to grant leases of the public lands in the Canal Zone, Isthmus of Panama, for such period, not exceeding twenty-five years, and upon such terms and conditions as he may deem advisable. No lease, however, shall be granted for a tract of land in excess of fifty hectares, nor to any person who shall not have first established, by affidavit and by such other proof as may be required, that such person is the head a family or over the age of twenty-one years, and that the application for a lease is made in a good faith for the purposes of actual settlement and cultivation, and not for the benefit of any other person whatsoever, and that such person will faithfully comply with all the requirements of law as to settlement, residence, and cultivation. In granting such leases preference shall be accorded to actual occupants of lands in good faith.

SEC. 2. That no portion of the lands of the United States within the Canal Zone shall be leased hereunder unless it shall first be made to appear, by a statement or plat filed by the Isthmian Canal Commission with the Collector of Revenues for the Canal Zone, that it is not contemplated to use such lands in the work of Canal construction or to set the same aside as a town site; and all leases shall be made subject to the provision that if at any time it shall become necessary, notwithstanding, for the United States to occupy or use any portion of the leased lands, it shall have the right to so do without further compensation to the lessee than for the reasonable value of the necessary improvements made upon said tracts by the lessee, the same to be determined by the courts of the Canal Zone.

SEC. 3. That all leases of lands hereunder shall reserve to the United States all mineral, oil, and gas rights in the lands leased.

SEC. 4. That the President may, in his discretion, require a land survey to be made of the Canal Zone.

SEC. 5. That the powers conferred upon the President under this Act may be exercised by him through the Isthmian Canal Commission or in such other manner as he may designate.

Approved, February 27, 1909.

Concert by the I. C. C. Band.

TABERNILLA, C. Z.

Sunday, March 21, 1909, at 2.30 p. m.

PROGRAM.

- 1 March—Boys of the Militia.....Boehnlein
- 2 Selection—A Gay Musician.....Edwards
- 3 a Intermezzo—Rainbow.....Wenrich
- 3 b Southern novelty—Moonlight in Diva.....Clement
- 4 1st—The Glow Worm.....Lincke
- 5 Selection—Huts of the Day.....Remick
- 6 Chilian Dance—Manana.....Missud
- 7 Waltz—Autumn Smiles.....Bagley
- 8 Fantasia—Gems of Stephen Foster.....Tobani
- 9 Patrol—American.....Mecham
- 10 March—Old Faithful.....Holzman

CHAS. E. JENNINGS, Musical Director.
The next concert will be given at Gorgona, Sunday March 28

STATEMENT OF CLASSIFIED EXPENDITURES TO DECEMBER 31, 1908.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1908. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Civil Administration.	Sanitation.	Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.....	\$1,446,407.73	\$4,636,630.37	\$13,410,795.01	\$4,296,732.98	\$19,345,697.87	\$43,136,263.96
Fiscal year 1908.....	704,610.15	2,310,212.01	16,680,660.46	1,494,956.41	11,684,215.15	32,874,654.18
Fiscal year 1909:						
July, 1908.....	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August, 1908.....	77,019.80	145,870.37	1,599,556.90	60,798.76	517,046.09	2,401,291.92
September, 1908.....	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
October, 1908.....	59,612.51	155,676.68	1,448,614.64	67,696.17	727,544.14	2,859,144.14
November, 1908.....	59,374.12	147,957.24	1,369,805.86	77,406.64	480,139.10	2,134,682.96
December, 1908.....	65,526.32	166,321.70	1,500,404.77	70,936.43	893,337.24	2,696,526.46
Total.....	\$2,567,315.81	7,890,356.54	39,098,789.69	6,213,237.76	34,895,695.91	90,665,396.01

BUILDING GATUN DAM.

Work Advancing on All Parts of It.

In the construction of the great dam at Gatun three features are prominent—the building of the toes, the placing of the impermeable core or hydraulic fill, and the construction of the spillway. Work on all of these features has reached the stage where, in spite of the magnitude of the project, the labor of each week marks a noticeable stage in the progress of the construction. At present efforts are confined almost wholly to the spillway and the part of the dam between the lock site and the spillway, although the trestles for the toes have been partly driven west of the spillway and the enrockment of the south toe between the spillway and the west diversion is well under way.

The purpose of the rock toes is to enclose and protect the hydraulic material of the interior of the dam. These toes will extend clear across the valley and in the space between them will be deposited the material of the hydraulic fill. The south or upstream toe has been built to a height of 60 feet for over half the distance from the lock site to the spillway, with inclines at each end to enable trains to reach this height. The dumping of spoil and rock continues and the toe is daily becoming heavier. It was in this ridge of rock, in the spot where it crosses the old French canal, that a slide occurred in November, causing some anxiety to people not familiar with the work. Dumping has been resumed at this point and the enrockment carried to within five feet of its former elevation. No further sliding has occurred.

The north or downstream toe is to be only half as high as the upstream, and the material is miscellaneous spoil, like that of the other toe. Bas Obispo rock has been used on both toes for facing purposes. Along the north of the dam site the toe has reached an elevation of 24 feet, the old channel of the Chagres and the French canal have been closed, and the ridge of earth and rock extends from the Panama railroad tracks to the spillway.

In the space between the toes on the north and south, and the spillway and the lock site on the west and east, two steam shovels and several gangs of men are stripping the surface soil, preparing the foundation for a close connection with the hydraulic material. On the level where the stripping is now in progress a strip 800 feet wide is being cleared, as that is the width determined upon for the hydraulic fill at this elevation. The channel of the French canal was stripped by dredging, and the banks graded to a slope by sluicing before the fill was begun on December 24; and now, between the toes of the dam, there is only a slight depression where the canal used to be. Into this ditch dug by the French 225,000 cubic yards of sand and clay were pumped, which practically filled it.

The old canal is one of three channels that run through the dam site. Another is the old channel of the Chagres River, and the third is the west diversion, through which the river now flows. The loose earth on the sides of the old river channel is being sluiced off, all debris is being removed from the bottom and the banks, and a discharge pipe for the suction dredge has been laid so that the filling of the channel may begin as soon as the bed is prepared.

The 20-inch pipe-line suction dredges that

have been tried out in the hydraulic fill are doing good work. Between the 1st and 17th of February, dredge No. 82 pumped 59,860 cubic yards into the dam, an average of 3,991 cubic yards a working day of two shifts. This dredge is now being overhauled and its sister, No. 83, is pumping from the old French canal near the north toe of the dam and depositing the material into a marsh within the limits of the north toe. It excavated 55,872 cubic yards in the six working days from February 20, to the close of the month, an average of 9.321 cubic yards a day. It is too early to give a fair statement of the cost of the hydraulic fill per cubic yard at the present level, but the indications are that it is considerably below the 15-cent estimate made in December, 1908.

Work has been stopped on the line of sheet piling that was being driven along the axis of the dam across the valley. The line of sheeting has been completed across the old channel of the Chagres, and had been started in two other places. It is probable this work will not be resumed.

Concrete will be laid in the spillway this week. The mixing plant is ready, the cement is in the storehouse, and rock from Porto Bello and sand from Nombre de Dios will be delivered in as large quantities as desired. The handling plant for the spillway materials has been ready for some time, the railroad from the mixer to the spillway channel has been completed, the cars for the concrete have arrived and are set up, and the forms are ready for use. The work to be done on the spillway is the lining of the channel that runs from the point where the regulating works will be built to the north toe of the dam, a distance of 1,200 feet. Through this channel, which when finished will be 285 feet wide, at elevation 10 feet above sea-level, with side walls 20 feet higher, the Chagres River will be diverted within a year, thereby allowing construction of the west end of the dam to proceed to completion. The concrete mixing and handling plant has been designed to place an average of 300 cubic yards per day, the maximum probable output in any day being estimated at 500 cubic yards.

Injured Canal Employees.

The Mann bill, relative to compensation for injured Canal employees, the full text of which was published in THE CANAL RECORD of December 23 last, passed the House of Representatives on January 5, was passed without amendment by the Senate on February 19, and approved by the President on February 24, 1909.

The United States-Panama Treaty.

Following is the text of the resolution adopted by the United States Senate at the time the new Treaty with the Republic of Panama was ratified:

Resolved (two-thirds of the Senators present concurring therein). That the Senate advise and consent to the ratification of a Treaty between the United States and the Republic of Panama relating to the Panama Canal signed on January 9, 1909.

Resolved. As a part of this ratification that the United States approves the Treaty between the United States and Panama, with the understanding that, so far as the United States is concerned, no question shall be submitted to arbitration herein provided for which in any way affects the vital interests of the United States in the construction, operation, maintenance, sanitation, and protection of the Panama Canal, and that this understanding will be mentioned in the ratifications of the Treaty and will, in effect, form part of the Treaty.

FEBRUARY HEALTH REPORT.

Excellent General Health Conditions.

ANCON, C. Z., March 10, 1909.

To the Acting Chairman, Isthmian Canal Commission, Culebra, C. Z.

Sir: I herewith forward the report of the Department of Sanitation for the month of February, 1908:

I would like to call attention to the following death rates among employes:

Year.	Rate.
February, 1906.....	43.00 per thousand.
February, 1907.....	25.62 per thousand.
February, 1908.....	12.72 per thousand.
February, 1909.....	10.98 per thousand.

You will see that this is the lowest death rate among employes for any February since we have been on the Isthmus.

If we consider the total population, we have the following death rates:

Year.	Rate.
February, 1905.....	40.20 per thousand.
February, 1906.....	38.09 per thousand.
February, 1907.....	36.07 per thousand.
February, 1908.....	21.40 per thousand.
February, 1909.....	18.59 per thousand.

This is also the smallest death rate among the total population that we have had for any February since we have been on the Isthmus.

There has been a large decrease in the amount of sickness among employes during February as compared with January. During January we had sick every day among our employes 1,116 men; during February this average was reduced to 951.

During the month of January we admitted to our hospitals 1,258 cases of malaria among employes; during February only 852.

During the month no case of yellow fever, plague or smallpox occurred on the Isthmus.

The general health of the Isthmus I consider excellent, and the health of our laboring force is about as good as it would be at home.

Very respectfully,
W. C. GORGAS,
Chief Sanitary Officer.

February Police Report.

The February report of the Chief of the Division of Police and Prisons shows that 472 persons, representing 35 nationalities, were arrested in the Canal Zone during the month. This is a decrease of 52 for the month there having been 524 arrests in January. Of the 472 persons arrested, 444 were men and 28 were women, and they were charged with 51 different offenses. They were divided among the towns of the Zone as follows: Ancon, 30; Las Sabanas, 2; La Boca, 31; Corozal, 5; Miraflores, 21; Pedro Miguel, 19; Paraiso, 11; Culebra, 59; Empire, 70; Las Cascadas, 14; Bas Obispo, 14; Gorgona, 46; San Pablo, 10; Tabernilla, 12; Bohio, 10; Gatun, 59; and Cristobal, 59. The total effective police force on February 28 was 188 and the pay roll amounted to \$20,237.30.

Ninety seven cases were tried in the Circuit Courts, 22 of which were dismissed, 62 continued, and 13 in which convictions were secured. Of the 13 persons convicted, one was fined, one received a jail sentence, 10 were sentenced to the penitentiary, and one man was sentenced to be hanged. Seventeen convicts were discharged from the penitentiary during the month, leaving a total of 117 in the penitentiary on February 28. The number of district prisoners on the same date was 134, a decrease of 4 for the month. The value of work performed by the convicts on roads, etc., amounted to \$1,605.60. There were 4 deaths by violence requiring action by the coroner in February. One of these deaths was caused by a railroad accident, and one by drowning.

COMPARISON OF WORK AND COST, AS ESTIMATED IN 1906 AND IN 1908—PANAMA RAILROAD AND OTHER ITEMS.

A summary of the amount of work and the cost, as estimated by the Board of Consulting Engineers in 1906 and by the Isthmian Canal Commission in December, 1908, and the details of the Board's estimate and that of the Commission for the Central Division were published in THE CANAL RECORD of February 24. The summary includes, in addition to a comparison of the amounts required for construction, an estimate of the amounts that will be required for the Department of Civil Administration, the amounts to be paid to the New French Canal Company and the Republic of Panama, and an estimate of reimbursements to the United States Treasury from various sources. The details of the estimate for work and costs in the Atlantic and Pacific Divisions were published in the issues of March 3 and March 10, respectively.

ISTHMIAN CANAL COMMISSION, DECEMBER 1908. GENERAL EXPENSES.

This includes all general expenses and over-head charges of the Commission not properly chargeable directly to any one item of construction work, and includes the following:—

All expenses in the United States, all expenditures in the Office of the Chairman and Chief Engineer, Office of the Examiner of Accounts, and the Disbursing Office. It includes certain expenses of the Subsistence Department borne by the Commission, expenditures for telegraph and telephone service, transportation on the Isthmus, meteorological work, Young Men's Christian Association work, etc.

Expenditures to October 1, 1908.....	\$4,980,000
After October 1, 1908, 6½ years at \$3,000,000.....	18,750,000
	\$23,730,000

The estimate of \$3,000,000 a year or \$250,000 a month is based on the following:

Office of Chairman and Chief Engineer.....	\$20,000
Office Secretary of Commission.....	2,000
Engineering and technical force, attached to office of Chief Engineer.....	9,000
Meteorological and river hydraulic work, experimental work and general surveys.....	6,000
Salaries of Y. M. C. A. secretaries and expenses in connection therewith.....	3,000
Quartermaster's department.....	125,000
Office Examiner of Accounts.....	20,400
Office Disbursing Officer.....	7,500
Proportion of expenses of Subsistence Department.....	8,500
All expenses in the United States, including those of Washington Office and elsewhere.....	27,000
Transportation on the Isthmus (paid to P. R. R.).....	15,000
Telephone and telegraph service (paid to P. R. R.).....	7,000
	\$250,000

CONSTRUCTION AND REPAIR OF BUILDINGS FOR THE DEPARTMENT OF CONSTRUCTION AND ENGINEERING, ISTHMIAN CANAL COMMISSION, DECEMBER, 1908.

Expenditures to October 1908 (including over \$1,000,000 for Departments of Civil Administration and Sanitation, for which the Department of Construction and Engineering has not yet been credited).....	\$9,951,000
Estimate from October 1, 1908 to July 1, 1909.....	900,000
Estimate after July 1, 1909—Atlantic Division.....	535,000
Central Division.....	965,000
Pacific Division.....	1,000,000
Quartermaster's Department.....	1,300,000
	\$14,651,000

Total

Of the above amount, about \$10,000,000 is for new construction, the remainder being for improvements, maintenance and repair to old French and new American buildings.

About 3,500 buildings of all classes are covered by the estimate. The above expenditures up to October 1, 1908, include over \$1,000,000 for the Departments of Sanitation and Civil Administration prior to July 1, 1907, for which the appropriations for the Department of Construction and Engineering cannot be credited without special provision by law.

For expenditures after July 1, 1909, amounting to \$3,800,000, as above, it has been assumed that work under the head of "Repairs" will amount to 5 per cent per annum on the first cost of the buildings, to take care of deterioration of paint, woodwork, screening, etc. due largely to climatic conditions. The balance is inserted as a contingent item to provide for any new construction that may be found necessary.

RELOCATION OF THE PANAMA RAILROAD.

BOARD OF CONSULTING ENGINEERS, 1906.

ISTHMIAN CANAL COMMISSION, DECEMBER, 1908.

Gatun to Bohio.....	\$2,000,000
Bohio to Pedro Miguel.....	1,300,000
Pedro Miguel to Panama.....	400,000
	\$3,700,000
Land damages in Gatun and Sosa Lakes.....	\$300,000

Before October 1, 1908.....	\$1,783,000
October 1, 1908, to July 1, 1909.....	1,020,000
After July 1, 1909:	
Engineering.....	\$90,000
Real estate and right of way.....	20,000
Grading:	
Earth excavation, 330,000 cubic yards, at 40 cents per yard.....	\$132,000
Rock excavation, 405,500 cubic yards, at \$1 per yard.....	405,500
Borrow, 4,800,500 cubic yards, at 40 cents per yard.....	1,920,200
	2,457,700
Bridges and culverts, 63,960 cubic yards concrete, at \$10 per yard.....	639,600
Temporary trestles and structures.....	395,000
Temporary track, 48,720 feet at \$2 per foot.....	97,400
Permanent track:	
35 miles ties, (spaced 21 inches.) 105,600 ties, at \$1.25 per tie.....	\$132,000
70 miles 70-lb. rail and fastenings, at \$1 per foot of track.....	184,800
35 miles of ballast at \$4.752 per mile.....	166,320
35 miles of track laying and surfacing at 50 cents per foot.....	92,400
	575,520
Fencing.....	30,000
Interlocking and signals.....	30,000
Telegraph and telephone lines.....	50,000
Station buildings and section houses.....	75,000
Water stations.....	10,000
Fuel stations.....	20,000
Miscellaneous structures.....	10,000
General expenses.....	75,000
Tools.....	120,000
	4,695,000
Maintenance: 37 miles for two years, at \$9,000 per mile per annum.....	666,000
	\$3,164,000
Land damages in Gatun Lake.....	\$500,000

MUNICIPAL IMPROVEMENTS, ISTHMIAN CANAL COMMISSION, DECEMBER, 1908.

Expenditures under this head include everything for the construction, operating maintenance, and repair of roads, walks, water works, pumping plants, reservoirs, sewers, special grading, etc., required for Canal construction work proper, in the Canal Zone; *i. e.*, for its employees, and also for the above work performed in the cities of Panama and Colon for sanitation, under Article VIII of the Treaty.

These expenditures in and for the cities of Panama and Colon have amounted to about \$2,500,000 to date, and this will be returned to the United States Treasury by water rates collected by the United States. For further improvements in Panama and Colon for sanitation, a supplementary estimate of \$1,200,000 was forwarded to Congress in December, 1908, which if appropriated, will likewise be returned to the United States Treasury.

Expenditures for these purposes in the Canal Zone for the benefit of native villages and those not employed by the Commission, are not paid from Congressional appropriations, but from the Canal Zone funds, derived from taxes collected by the District Tax Collectors and no allowance for same is made in figures given below:

Expenditures to October 1, 1908.....	\$5,932,000
Estimates from October 1, 1908, to July 1, 1909.....	700,000
Estimates after July 1, 1909.....	
Atlantic Division—Construction.....	\$535,000
Maintenance.....	575,000
Central Division.....	1,160,000
Pacific Division.....	1,800,000
Quartermaster's Department.....	822,000
Cities of Panama and Colon—grading, paving, waterworks, sewers and sanitation.....	450,000
Cities of Panama and Colon—grading, paving, waterworks, sewers and sanitation.....	1,200,000
Total.....	\$12,114,000

LOANS TO PANAMA RAILROAD.

This item includes appropriations to date, amounting to about \$4,200,000 for the reconstruction and re-equipment of the Panama Railroad, which has been expended for the purchase of new equipment and other improvements properly classed as "betterments and renewals," and for which the resources of the railroad were insufficient.

In accordance with the Appropriation Acts, the repayment of the above sums to the United States has been secured by notes bearing 4 per cent interest, deposited in the United States Treasury.

It is estimated that additional appropriations amounting to \$4,100,000 will be required for similar purposes as a loan to the Panama railroad before the completion of the Canal for improved and enlarged dock and wharf facilities at La Boca and Cristobal, viz:

Expenditures to July 1, 1909, for reconstruction and re-equipment of Panama railroad.....	\$4,200,000
Estimate for year 1909-1910—Construction and extension of docks.....	\$700,000
Year 1910-1911—Reconstruction and extension of docks.....	1,400,000
Year 1911-1912—New coal-handling plant and reconstruction of docks.....	2,000,000
Grand total.....	\$4,100,000
Grand total.....	\$8,300,000

LIST OF EMPLOYES WHO ARE ENTITLED TO CANAL MEDALS.

The publication of names of employes of the Isthmian Canal Commission and Panama Railroad Company who have earned Canal Medals, up to December 31, 1908, which was begun in THE CANAL RECORD of February 10, is concluded in this issue. The publication of names of employes of the Isthmian Canal Commission was completed in the issue of March 10. The publication of the names of employes of the Panama Railroad Company which was begun on that date is completed in this number. Address all communications relating to corrections in the Medal list in writing to the Assistant to the Chairman, Culebra, C. Z.

Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.	Name.	Medal service begins.
1905.									
Beckel, W. O.....	May 29	Patterson, W. O.....	Sept. 23	Jones, C. G.....	Jan. 15	Underhill, P. H.....	June 9	Gifford, H. L.....	Sept. 17
Trasher, Leon C.....	May 31	Colip, E. H.....	Sept. 30	Brown, Henry M.....	Jan. 16	Johnson, H. E.....	June 15	Johnson, James S.....	Sept. 24
Nelson, Clyde A.....	June 5	Hamilton, C. J.....	Oct. 3	Woodside, J.....	Jan. 16	Gransberry, O. E.....	June 19	Kratz, A. B.....	Oct. 2
Patterson, A. C.....	June 5	Bedell, W. H.....	Oct. 7	Mohrman, Harry.....	Jan. 17	Luce, R. H.....	June 20	Walker, R. B.....	Oct. 2
Malsbury, O. E.....	June 13	Tysinger, J. D.....	Oct. 20	Clark, O. M.....	Jan. 18	Fennell, B. M.....	June 24	Stuntz, H. L.....	Oct. 3
Townsend, J. L.....	June 17	Bowater, G. W.....	Oct. 30	Surles, J. C.....	Jan. 20	Hoffmark, H. F.....	June 24	Wood, George W.....	Oct. 15
Gardiner, Ralph.....	June 24	Carroll, L. N.....	Oct. 31	Edwards, A. B.....	Feb. 1	Budd, R.....	June 28	Moore, J. A.....	Oct. 16
Coburn, W. T.....	June 25	McCaun, W. E.....	Oct. 31	McScott, James.....	Feb. 1	Williams, Minnie.....	July 1	Readie, William H.....	Oct. 16
Evelyn, George E.....	June 28	Strine, E. H.....	Oct. 31	Thornton, E. B.....	Feb. 1	Heath, W. H.....	July 5	Leetra, A. D.....	Oct. 17
Nunn, Numa.....	July 1	Crowell, C. A.....	Nov. 7	Graeser, W. H.....	Feb. 12	Cady, Leo M.....	July 14	Hall, John H.....	Oct. 20
Dawson, A. J.....	July 5	Smith, Thomas H.....	Nov. 8	Grant, James.....	Feb. 12	Ford, James R.....	July 14	Spencer, A. E.....	Oct. 23
Perry, W. S.....	July 6	Connors, Neil.....	Nov. 13	Clisbee, F. A.....	Feb. 13	Pratt, John C.....	July 14	Walbey, H. W.....	Oct. 23
Blum, Robert.....	July 11	Dovell, J. P.....	Nov. 13	Moss, J. S.....	Feb. 21	Luther, J. H.....	July 15	Stover, D. Z.....	Oct. 24
Clary, John W.....	July 12	Herman, A. O.....	Nov. 13	Silvey, John.....	Feb. 21	Shurtleff, M. W.....	July 23	Carter, C. H.....	Oct. 26
Huntington, G. M.....	July 12	Wilson, H. S.....	Nov. 14	Walcott, W. E.....	Feb. 23	Lester, Clarence A.....	July 25	Dawson, B. J.....	Oct. 26
Bushnell, H. H.....	July 24	Campion, R. G.....	Nov. 25	Reynolds, F. M.....	Feb. 26	Slater, A. A.....	Aug. 2	Marsh, William H.....	Oct. 26
DeCaen, R.....	Aug. 3	Culbertson, X. W.....	Nov. 26	Raymond, F.....	Mar. 8	Kilgour, O. C.....	Aug. 5	Womack, L. L.....	Oct. 26
Roark, Fred M.....	Aug. 10	Owen, H. C.....	Nov. 26	Hall, H. F.....	Mar. 9	Moore, C. Jr.....	Aug. 5	Robinson, Charles W.....	Nov. 2
Farrington, W. H.....	Aug. 11	Chamberlain, D. T.....	Dec. 2	Nichols, W. C.....	Mar. 11	Hill, J. C.....	Aug. 7	Germardt, M.....	Nov. 6
Paulat, E. W.....	Aug. 14	Drexel, W. R.....	Dec. 2	McGilliuddy, J. J.....	Mar. 16	Richards, D. E.....	Aug. 14	McLean, Neal.....	Nov. 6
Hunter, Charles D.....	Aug. 15	Reader, W. E.....	Dec. 2	Blair, C. A.....	Mar. 22	Purcell, R. L.....	Aug. 18	Goodenow, A. B.....	Nov. 12
Whitney, G. A.....	Aug. 15	Nottee, John G.....	Dec. 10	Hornor, Benjamin F.....	Mar. 22	Hiltabidle, Charles T.....	Aug. 20	Moore, M. W.....	Nov. 16
Larcom, Birdette L.....	Aug. 16	Potts, S. C.....	Dec. 16	Murray, J. J.....	Mar. 22	Miller, John.....	Aug. 22	Johnson, A. S.....	Nov. 20
Boggs, J. W.....	Aug. 30	Swan, Allan.....	Dec. 16	Butler, James E.....	Mar. 26	O'Donnell James.....	Aug. 23	Donaldson, W. J.....	Nov. 30
Toll, L.....	Sept. 1	Webster, I. E.....	Dec. 16	Goerlich, Samuel E.....	Mar. 26	Letts, Charles G.....	Aug. 24	Ducey, William J.....	Dec. 3
Rodman, W. J.....	Sept. 4	Wentworth, E. A.....	Dec. 16	Fernstrom, Thomas O.....	Apr. 17	Bliefeld, W.....	Aug. 27	Bain, W. H.....	Dec. 5
Fernandez, F.....	Sept. 11	Wyman, C. A.....	Dec. 16	Strine, A.....	May 7	Stewart, A. H.....	Aug. 29	Hunter, George.....	Dec. 5
Cappers, W. F.....	Sept. 12	Moak, Bert H.....	Dec. 17	Baxter, H.....	May 10	Thayer, J. P.....	Sept. 1	Spears, A. T.....	Dec. 7
Marshall, R. S.....	Sept. 13	Jameson, H.....	Dec. 29	Mears, F.....	May 11	Crop, Charles D.....	Sept. 4	Lee, C. W.....	Dec. 10
Donovan, S.....	Sept. 16	1906.							
Vifquain, B. M.....	Sept. 15	Whitmore, J. E.....	Jan. 1	Allen, W.....	May 12	Gilmore, M. E.....	Sept. 4	Andrews, G. W.....	Dec. 13
Dedge, Graham.....	Sept. 19	Hoyt, P. G.....	Jan. 4	Bryant, Joseph H.....	May 21	Gorsuch, Jacob.....	Sept. 4	Raymond, V. Vincent.....	Dec. 16
Hawley, G. I.....	Sept. 23	Kemp, I.....	Jan. 6	Keefer, P. B.....	May 21	Johnson, G. S.....	Sept. 4	Zook, E.....	Dec. 16
		Arthur, A.....	Jan. 15	Seaborn, R. B.....	May 31	Orr, E. F.....	Sept. 4	Parker, F. E.....	Dec. 17
				Stewart, John R.....	May 31	Bigler, P. A.....	Sept. 17	Hayes, D. E.....	Dec. 19
				Rutherford, V. A.....	June 5	Collins, H. S.....	Sept. 17	Stumm, Charles A.....	Dec. 23

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

Large frame pictures of Shoshone Falls and Blue Lakes Farms, Snake River, Idaho, have been hung in each Commission clubhouse. They were presented by Mr. Charles T. Manning of Gooding, Idaho, formerly of Gorgona.

Shuffle boards have just been added to the game equipment of the clubhouses and are proving very popular. Rand-McNally globes of 18-inch diameter have been placed in the reading rooms of all the clubhouses.

CRISTOBAL.

A game of basket-ball between teams from the Y. M. C. A. and Lincoln House on Saturday night, March 13, was won by Y. M. C. A. 33 to 17. A return game will be played at the Lincoln House.

The Y. M. C. A. duck pin team took three straight games from Gorgona Saturday night. Scores: 420 to 395, 404 to 403, 437 to 434.

Mr. V. N. Sourin of Culebra played the Cristobal chess team eight simultaneous games on Saturday evening, March 13, winning all games in one and one-half hour play.

Mr. A. A. Simka has been elected captain of the

basket-ball team. The athletic club has elected the following officers: R. H. Luce, president; G. C. Taulbee, vice-president; L. B. Curdifi, secretary. The physical department schedule is as follows: Monday, indoor baseball; Tuesday, outdoor athletics; Wednesday, basket ball; Thursday, indoor baseball; Friday, outdoor athletics; Saturday, matched games.

A boys' athletic meet between the four associations will be held at Cristobal on Saturday, March 20.

The standing of the Duck Pin League is as follows:

	Played.	Won.	Lost.	Percent.
Cristobal.....	21	14	7	66 2/3
Empire.....	21	14	7	66 2/3
Gorgona.....	21	8	13	380
Culebra.....	21	6	15	285

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The annual meeting of the Canal Zone Federation of Women's Clubs will take place at Cristobal the last week in April and not in March as stated in the last issue of THE CANAL RECORD.

At a recent meeting of the officers of the Canal Zone Humane Society it was decided to make the annual dues for active members one dollar and for junior members fifty cents.

At the regular business meeting of the Cristobal Woman's Club, March 10, Mrs. Claude Passett was appointed treasurer to fill the vacancy left by the resignation of Mrs. W. J. Rodman. The art and literature department gave an open evening on March 10, when a program was given consisting of musical numbers and a farce entitled "Obstination."

An election of officers for the next six months will be held at the meeting of the Gorgona Woman's Club on March 18. At a recent meeting of the club an amendment to the by-laws was adopted, which provides for weekly meetings instead of semi-monthly as heretofore.

The study meeting of the Gatun Woman's Club was held at the home of Mrs. A. L. Kerr, on Friday, March 12, the president in the chair. The meeting on March 19 will be held at the home of Mrs. Lorin A. Clark, and on March 26, at the home of Mrs. Chester Harding.

The Paraiso Woman's Club gave a card party on Friday evening, March 12. The Club rooms were decorated and lighted with Japanese lanterns for the occasion.

The Pedro Miguel club holds its business meeting on each alternate Thursday in the club room, and social meetings are held at the home of members. Mrs. Taylor Curran of Culebra, a member of the club, was the hostess on Thursday, March 11. A number of former residents of Pedro Miguel, who have removed to other stations, still retain their membership in the local club.

The children's service at the Ancon Protestant chapel will be held on Thursday afternoon at four o'clock, instead of Wednesday, as heretofore. A service for children is held during Lent at St. Mary's Church, Empire, on Friday afternoon.

In the Union Church at Cristobal a series of before-Easter sermons is being delivered by the pastor, Rev. Carl H. Elliott. A sermon will be delivered each Sunday night at 7.30 o'clock.

The subordinate and auxiliary lodges of the Independent Order of Odd Fellows have received orders to celebrate the ninetieth anniversary of the institution of the order on April 26. There are three lodges in the Zone, at Cristobal, Gorgona and Culebra, with an approximate membership of 270, and one auxiliary lodge, the Daughters of Rebekah, at Gorgona, with a membership of 53. This lodge is arranging to give a flower dance at the Gorgona clubhouse on April 17, for the purpose of raising money for the benefit fund.

The institution of the Loyal Temperance Legion, or junior auxiliary, of the W. C. T. U. was effected at Empire at the home of Mrs. R. E. Ball, superintendent of the Legion, on Tuesday, March 9, with 15 members. Officers were elected as follows: President, Margaret Hollowell; vice-president,

Eva Williams; secretary, Corinne Browning; treasurer, Florence Benninger. Superintendents for the departments of flowers, missions, and mercy were also elected. The title selected was the Victory Junior Legion of Empire. The hibiscus was selected as the legion emblem. At the meeting of the W. C. T. U., at Empire on March 11, four departments were organized as follows: Mothers', Sunday school, evangelistic, and literature. The next regular meeting will be held in the I. C. C. chapel on Thursday, March 25, at 3 p. m. All members are urgently requested to be present as matters of importance will be discussed, as well as an interesting program provided. All ladies who are not members are cordially invited to attend. On Sunday evening, March 28, the services in the I. C. C. chapel will be under the auspices of the W. C. T. U., and Justice Owen of the Supreme Court of the Canal Zone will be the speaker for the evening. A musical program will be given, and everybody is invited to be present.

American Women on the Isthmus.

THE CANAL RECORD:

I do not wish to be regarded as taking part in the dispute as to the relative value of married and unmarried men at Panama, having seen too many that were of equal merit or lack of it in both classes. Neither would I wish to interfere with any cherished illusions of the ambitious young Cæsars who may be on the Isthmus and who may, like your Gorgona correspondent in your issue of February 17, date the commencement of canal work from a time four years ago, more or less, which I take it must have been not later than his arrival on the Isthmus. I fear that those who had then spent a year at Panama failed to note the arrival of these "Hopeful Young Men" amid "the fearful ravages of yellow fever." As to the extent of these ravages, one can better ascertain the facts by consulting the records of the Sanitary Department than by counting the pine boards in Ancon Cemetery.

In the interest of accuracy, however, and for the benefit of those whose knowledge of the history of the commencement of canal work is as limited as that of "Young America" appears to be, it should be recorded that one of the first employes to die of yellow fever was a married American woman, wife of Mr. Wallace's secretary. In my own party the first one of those who died of yellow fever during the first year of canal work was a married man.

From personal experience I can testify that many men brought their families to the Isthmus before it was possible to "subsist out of the kindness of a beneficent country" and before our young friends of nineteen had cleared a "path of cheerfulness in the Satanic Paradise."

I could give your correspondent many names of American women who came with their husbands to the Isthmus before the present comfortable quarters were provided, when it was necessary either to occupy old French houses inferior to the present negro quarters, or to rent houses or flats in Panama of even worse quality, at rates which would be excessive in New York; not to speak of our predecessors, the employes of the Panama Railroad Company, who during the past 50 years have had their families on the Isthmus without the compensation of

knowing that they were heroes. Particularly I could name to him one lady who was among the first of the wives of the employes to go to the Isthmus, who began her housekeeping in an unscreened shack, now occupied by negroes, but secured in 1904 at an outrageous rental as the only available quarters, and who lived in the city of Panama for three years following, seeing two neighbors in the next house die of yellow fever during the first year, and having as her liveliest distraction at that time, in the intervals in the war on vermin, the pleasure of watching the daily passage of the Ancon hearse and recording the American deaths by the flag draped coffins.

The women on the Isthmus then made homes under conditions far rougher than any encountered now by the energetic young men with whom "Young America" classes himself, and can be proud of having been each more than "a small iota" in the work of making the Isthmus comfortable for their successors.

H. W. DURHAM,

Resident Engineer, 1904 to 1907.

New York, March 2, 1909.

Personal.

Dr. J. F. Leyes, Superintendent of Colon Hospital, Dr. F. M. Shook of Colon Hospital, and Dr. W. F. Shaw, of Ancon Hospital, sailed for the States on the *Panama*, on March 9, on their annual leave of absence.

Missing Men.

Information is desired in regard to Harkens J. Porter, who was in the employe of the Commission during the spring of 1905. Anyone having knowledge concerning him is requested to communicate with THE CANAL RECORD.

Mr. William Jerowe is requested to send his address to A. G. Bedell, Cristobal, C. Z., who has something of interest to communicate to him.

Pacific Masonic Club.

Rev. J. W. Holland will entertain the Pacific Masonic Club and its friends on Saturday night, March 20, at 8 o'clock. Friends of the club are invited. The next meeting of the club will be held March 27.

Steam Shovel and Dredge Men.

Local No. 19, I. B. of S. S. and D. M., will hold their regular meeting in the I. C. C. lodge hall, Empire, on Sunday, March 21, at 2 p. m. Important business.

Dance at La Boca.

The La Boca Bachelor Club will give an informal dance at the I. C. C. hotel, on Saturday evening, March 20. A special train will leave Corozal at 7.30, and Panama at 7.45 p. m., returning after the dance.

Misdirected Letters.

Division of Posts, Customs and Revenues,
Ancon, C. Z., March 17, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Anderson, Blaine	Mathews, E. L.
Bastian, Fred K.	McDonnell, Patrick
Billingsley, J. D.	McLeod, John
Braunring, J. A. (2)	Nicholl, Theophilus A.
Bryushaw, Thomas W.	Parker, Supt.
Brown, Isaac S.	Polk, Tom C.
Bryant, E. J.	Richardson, Johnie
Clark, Nathaniel	Sealey, M. M.
Condon, John	Shelton, Wilmoet
Cotton, Joseph	Slater, Col. J. E.
Ernst, Mrs. Al	Stephens, Fred A.
Flood, James	Stoddard, Richard
Fulman, W.	Tate, William E.
Hitchcock, Wm. P.	Warner, Fred
Lord, Mrs. M.	

GOLD PAY-ROLL ECONOMIES.

Reductions Effected Between July and December, 1908.

Attached to this memorandum are (1) a comparative statement of the gold pay-rolls of the Isthmian Canal Commission for July and December, 1908, and (2) a statement of the net additions to and net separations from the gold forces, from the week ended July 4, 1908, to the week ended January 16, 1909. These statements show (1) a net reduction of 6.53 per cent in the monthly gold pay-rolls, which represents a saving of \$47,303.95 a month or \$567,647.40 a year, and (2) a net decrease in the gold personnel of 497 men.

The following explanation is offered of the decrease or increase of the monthly gold pay-rolls of the various departments and divisions:

Department of Sanitation—A comparison of the gold pay-rolls of this department for the month of December, 1908, with the gold pay-rolls for the month of July, 1908, shows a net decrease of \$6,018.38, or 11.05 per cent. The saving is due to a reorganization of the clerical force, to a reduction of force at Colon Hospital, and in part to the transfer of the work of ditching and draining, grass cutting, and the collection of garbage in the Canal Zone, to the Department of Construction and Engineering and the Quartermaster's Department. The saving to the Department effected by this latter transfer of work is more conspicuous in the silver roll than the gold roll.

Department of Civil Administration—The organization of this Department was not changed during the period covered by this statement, and the pay-roll expenses were practically the same in December as in July.

Mechanical Division (Motive Power and Machinery)—The gold pay-roll of this division has been cut down 19.26 per cent, with a net monthly saving of \$27,349.33. This has been due to a simplification of accounting methods and redistribution of the clerical force, the closing of the Paraiso repair shops, and a general reduction of force which eliminated men whose work was below standard and tended to increase the efficiency of those who were retained.

Central Division—This Division, during the period covered by the attached statement, took over the work of building construction, municipal improvement, and ditching and draining for sanitary purposes, within its territories, and maintained the rate of excavation previously established, with an increase in its monthly gold pay-roll of only 2.62 per cent, or \$5,372.84.

Atlantic Division—The pay-rolls of this Division show an increase of \$34,880.67 a month, or 49.85 per cent. This large in-

crease has been due to construction of handling plants at the site of the Gatun locks and dam, an increased rate of dry excavation, additions to the dredging fleet and subsidiary marine equipment, which involved corresponding increases in the erecting and repair shop at the Cristobal drydock, the development of the quarry at Porto Bello, and the installation of a plant for securing sand at Nombre de Dios. In other words, the work in the Atlantic Division was in an incipient stage at the beginning of the fiscal year, while six months later the necessary preparatory and preliminary work was well under way, and more rapid progress was being made in the actual construction of the locks and dams and the excavation of the sea-level channel.

Pacific Division—The gold rolls of this Division show a monthly increase of \$14,361.71, or 32.53 per cent. The explanation of this increase is similar to that given above for the increase in the Atlantic Division.

Quartermaster's Department—This Department has charge of 90 per cent or more of all buildings belonging to the Isthmian Canal Commission, is responsible for the assignment and maintenance of quarters, receives and distributes all material and supplies, and accounts for property. It has also taken over the work of grass cutting and the collection of garbage formerly handled by the Department of Sanitation, and minor repairs to buildings formerly handled by the Division of Building Construction. The pay-rolls of the Department have been reduced 21.23 per cent, whereby according to the figures furnished, a monthly saving of \$11,027.56 has been effected. A portion of this apparent decrease should, however, be applied to offset an apparent increase in the expenses of the Subsistence Department, since the rolls of the two departments in July were not wholly separated, and the figures appearing in this statement are, on that account, somewhat misleading.

Subsistence Department—The rolls of this Department show an apparent increase of 138.09 per cent, which is equivalent to \$5,025.15 a month, but as explained above, these figures do not accurately represent the facts, owing to the imperfect separation of the Subsistence Department from the Quartermaster's Department in July, 1908. The actual increase in the gold pay-rolls of the Subsistence Department, if there has been any at all, is very slight.

Miscellaneous—This item includes the Chief Engineer's office, the Division of Meteorology and River Hydraulics now incorporated in the Chief Engineer's office, the office of the Disbursing Officer, the office of the Examiner of Accounts, and the I. C. C. band. The monthly increase in the gold pay-rolls of \$6,869.79, or 16.30 per cent, was

entirely in the office of the Chief Engineer, and was due to the transfer of various minor fragments of the organization to the roll of this office, from departments or divisions which were reorganized or abolished. There were transferred to the Chief Engineer's office in this manner, during the period from July to December, 1908, the personnel records formerly in the Department of Labor, Quarters and Subsistence, the employes of the Divisions of Building Construction and Municipal Engineering who were retained after those divisions were abolished, August 1, 1908, to wind up the work; the architect and architectural draftsmen formerly in the Division of Building Construction, the designing engineers and draftsmen engaged on plans for the locks, who were transferred from the Washington office; the entire personnel of the Division of Meteorology and River Hydraulics, with the exception of the Division Engineer formerly in charge of the work; engineering parties engaged on special surveys including the survey of the Chagres River water shed; the Surveying Officer and his assistant.

Economies Due to Reorganization—The economies effected by the reorganization of the Department of Construction and Engineering appear less conspicuous on account of the development of work on the locks and dams in both the Atlantic and Pacific Divisions, which has resulted in material increases in the pay rolls of those Divisions for December, as compared with the pay rolls for July; but, in spite of this development, the statement shows a net reduction in the gold rolls of the Department excluding the office of the Chief Engineer, amounting to \$42,186.63 a month. A part of this is to be ascribed to decrease in the volume of work of a preliminary character—for instance, the construction of buildings, sewers, roads, etc., but material economies have been effected by more concentrated and efficient organization.

Excluding from consideration the Department of Construction and Engineering, the reorganization has been most radical in the Quartermaster's Department, the Division of Material and Supplies (now combined with the Quartermaster's Department), the Subsistence Department, the office of the Examiner of Accounts, and the office of the Disbursing Officer. There has been an entire redistribution and reorganization of the work of these departments, with the result that the work, which in July cost \$80,223.76 in gold salaries, was handled in December for \$69,256.44, a net saving of \$10,967.32 a month.

Silver Rolls—A comparison of the December silver rolls with those for July shows a net reduction of \$12,046.75 (U. S. Currency). In one year this would amount to \$144,561. The economies in gold and silver rolls combined will aggregate \$712,208.40 per annum.

COMPARATIVE STATEMENT OF GOLD PAY-ROLLS, FOR JULY AND DECEMBER, 1908.

Department or Division.	July.	December.	Net increase or decrease.	Percentage of increase or decrease.
Sanitary Department.....	\$54,449.42	\$48,431.04	— \$6,018.38	— 11.05
Civil Administration.....	41,532.90	41,586.58	+ 33.68	+ 0.08
Motive Power and Machinery.....	141,991.80	114,642.47	— 27,349.33	— 19.26
Central Division.....	205,072.33	210,448.17	+ 5,372.84	+ 2.62
Atlantic Division.....	69,964.37	104,845.04	+ 34,880.77	+ 49.85
Pacific Division.....	44,152.47	58,514.18	+ 14,361.71	+ 32.53
Quartermaster's Department, and Material and Supplies.....	51,943.08	40,915.52	— 11,027.56	— 21.23
Subsistence Department.....	3,639.11	8,664.26	+ 5,025.15	+ 138.09
Miscellaneous.....	42,148.12	49,017.91	+ 6,869.79	+ 16.30
Master Builder.....	52,976.08	—	— 52,976.08	— 100.00
Municipal Engineering.....	16,476.44	—	— 16,476.44	— 100.00
Totals.....	\$724,366.12	\$677,062.17	— \$47,303.95	— 6.53

Department or Division	Net Additions.	Net Separations.
Chief Engineer.....	61	.....
Central.....	.....	14
Atlantic.....	223	.....
Pacific.....	83	.....
Mechanical.....	.....	229
Municipal Engineering.....	.....	142
Building.....	.....	397
Meteorology and River Hydraulics.....	.....	6
Civil Administration.....	27	.....
Sanitary.....	.....	28
Quartermaster's.....	.....	153
Subsistence.....	77	.....
Disbursing Office.....	.....	79
Examiner of Accounts.....	60	.....
Total.....	531	1,028
Net separations.....	.....	1,028
Net additions.....	531	.....
Total net separations.....	.....	497

RESOLUTIONS OF SYMPATHY.

Memorial to Willis J. Rodman.

Born, January 23, 1863. Died, February 28, 1909.
 WHEREAS, by the inevitable incident of death, Mr. Willis J. Rodman, who has faithfully performed the duties of Superintendent of Telegraph and Telephones for the Panama Railroad Company since August, 1905, has been removed from the official ranks of the Panama Railroad Company; and
 WHEREAS, in this, his wife and daughter have lost a loving husband and father, and the Panama railroad official family and the American colony on the Isthmus have lost an efficient and much respected member; therefore, be it
 Resolved, That we express to Mrs. Rodman and Miss Rodman our deep sorrow, and extend to them our sincere sympathy in their sad bereavement.
 Hiram J. Slifer, General Manager; J. A. Smith, Superintendent; P. G. Baker, Master Mechanic; R. H. Wardlaw, Cashier; H. L. Stuntz, Local Auditor; John Burke, Manager Commissaries; E. L. Hubbard, Storekeeper; R. Budd, Chief Engineer.
 Conon, R. P., March 1, 1909.

Bert Gamble.

Gorgona Court No. 3, Independent Order of Panamanian Kangaroos, has passed the following resolutions:

Since God in his infinite wisdom, has seen fit to call from this world our beloved brother, Bert Gamble, we now wish to express our heartfelt sympathy to the bereaved family. Brother Gamble was known to many of us as a personal friend and an earnest Kangaroo, who lived up to the principles of the fraternity in his every act. We realize the depth of sorrow of his family and of friends on the Canal Zone, for such gentle souls and living examples of fraternity men are not common.

Whereas, Brother Gamble had those qualities which distinguish a noble life, lived for others, and the good of his fraternity; and

Whereas, it is most fitting that in the departure from us of such a strong, upright and enthusiastic fraternity man as Brother Gamble ever was, that more than passing mention should be recorded in our minutes of his membership in the Independent Order of Panamanian Kangaroos; and

Whereas, The loss of such a high-minded gentleman, is not only a personal loss to those of us who knew and admired him for his kind and gentle disposition, but it is as well a public loss to the community in which he lived; and

Whereas, We deeply feel our great loss occasioned by the death of this noble brother, "and for our lost comradeship we'll sigh with tenderness and tears;" now therefore be it

Resolved, That this Court of Independent Order of Panamanian Kangaroos record its appreciation of the splendid character of Brother Gamble, of his unusual attainments, of his useful life among those with whom he labored, and of his loyal devotion to our fraternity; and be it further

Resolved, That by the official action of this Court of Independent Order of Panamanian Kangaroos, a copy of these resolutions shall be spread upon the minutes and sent to THE CANAL RECORD, and a copy shall be sent to sorrowing family.

A. GEDMAN, E. M. ROBINSON, Committee.
 Gorgona, February 11, 1909.

E. J. Sampson.

Empire Lodge No. 2, Knights of Pythias, adopted the following resolutions at a recent meeting:

WHEREAS, It has pleased Almighty God, to remove from our midst, Brother E. J. Sampson, formerly of Empire, Canal Zone, on January 8, 1909, in whom we have lost a most worthy brother and the bereaved family a kind husband and loving companion; therefore be it

Resolved, That we, his brothers of Empire Lodge No. 2, Knights of Pythias, desire to express our sympathy to his loved ones in this their hour of affliction; and furthermore, be it

Resolved, That our charter be draped in mourning for thirty days and that a copy of these resolutions be spread on our minutes, one copy sent to the bereaved family, one copy each to the local papers, and one copy to the *Alexandria Gazette*.

L. M. FORSYTH, A. E. BRONK, ROBT. E. MURPHY, Committee

Joseph P. Clancy.

At a session of Ancon Court No. 7, Independent Order of Panamanian Kangaroos,

held March 5, 1909, the following resolutions of sympathy were adopted:

WHEREAS, The Great and All Merciful God has seen fit to remove from our midst our esteemed and honored brother, Joseph P. Clancy, be it now

Resolved, That, while our loss has been great, we bow in accordance with the will of the Supreme Being and look forward to the meeting in that world of everlasting sunshine where we shall meet again, never more to part; and be it further

Resolved, That we extend to his dear mother and relatives our sincere sympathy in this their great hour of sorrow, and our regret at his untimely death; and be it further

Resolved, That this hall be draped in mourning for a period of thirty days; and be it further

Resolved, That a copy of these resolutions be spread upon the minutes of this meeting and that a copy be sent to the bereaved mother and relatives, and that a copy be sent to THE CANAL RECORD and the press for publication.

A. T. CUTLER, O. M. EWING, W. H. BERG, Ancon, C. Z., March 6, 1909. Committee.

AUCTION SALE.

There will be sold at public auction, at Ancon Police Station, at 2 o'clock p. m., March 24, 1909 the following described public animal: Sorrel native pony, No. 11. Animal may be seen at Ancon Police Station. Full information may be obtained from the Head of Department of Civil Administration, Ancon, C. Z.

LEGAL NOTICE.

EMPIRE, C. Z., February, 27, 1909.

Circuit Court, Second Judicial Circuit, Canal Zone.
 The last will and testament of Lee J. Putnam having been presented to the Court for probate, notice is hereby given that on Friday, the 19th day of March, 1909, at two o'clock in the afternoon, in the Circuit Court house at Empire, there will be a hearing when all concerned shall appear to contest the allowance of the will.
 E. M. GOOLSBY, Circuit Court Clerk.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight March 13, 1909:

	STATIONS					
	Vieja.	Alhajuela	Gambaea.	Bohio.	Gatun (Canal).	Gatun (W. Diverth).
Height of low water above mean sea level, feet.	125	92	46	1	0	0
Maximum height above mean sea-level, feet.						
Sunday, Mar 7.....	127.5	94.2	49.4	4.6	1.4	1.2
Monday, Mar. 8.....	125.8	93.0	47.7	3.7	1.1	0.9
Tuesday, Mar. 9.....	125.6	92.9	47.5	3.0	0.9	0.7
Wednesday, Mar. 10.....	125.6	92.9	47.5	2.9	0.8	0.6
Thursday, Mar. 11.....	126.0	93.0	47.6	2.8	0.8	0.6
Friday, Mar. 12.....	126.3	93.3	48.1	3.0	0.8	0.7
Saturday, Mar. 13.....	126.0	93.2	48.1	3.5	1.0	0.9

Rainfall, March 1 to 13, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations	Maximum in one day	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	.91	1.12
Brazos Brook.....	.69	1.42
Gatun.....	1.23	1.88
Bohio.....	3.24	3.45
<i>Central Division—</i>		
Puerto Castilla.....	.65	.82
San Pablo.....	.15	.26
Bas Obispo.....	.36	.36
Gambae.....	.31	.35
Empire.....	.17	.17
Camacho.....	.21	.34
Culebra.....	.14	.14
<i>Pacific Division—</i>		
Rio Grande.....	.15	.15
Pedro Miguel.....	.01	.01
La Boca.....	.01	.01
Ancon.....	T	T
<i>Atlantic Coast—</i>		
Porto Bello, (to 5 p. m. Mar. 13).....	.46	1.07
Nombre de Dios, (to 5 p. m. Mar. 6).....	.28	.29
<i>Upper Chagres</i>		
El Viga.....	.02	.02
Alhajuela.....	.06	.10

The following steamers have recently arrived at La Boca: March 6, *Victoria* from Valparaiso; March 9, *Ecuador* from Guayaquil

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.	
Colon.....	P. R. R. Monday..... Mar. 15
Tagus.....	R.-M..... Saturday..... Mar. 20
Panama.....	P. R. R. Monday..... Mar. 22
Advance.....	P. R. R. Saturday..... Mar. 27
Prinz Aug. Wilhelm.....	H.-A..... Saturday..... Mar. 27
Allianza.....	P. R. R. Friday..... Apr. 2
Magdalena.....	R.-M..... Saturday..... Apr. 3
Colon.....	P. R. R. Thursday..... Apr. 8
Prinz Joachim.....	H.-A..... Saturday..... Apr. 10
Panama.....	P. R. R. Wednesday..... Apr. 14
Orinoco.....	R.-M..... Saturday..... Apr. 17
Advance.....	P. R. R. Saturday..... Apr. 20
Prinz Aug. Wilhelm.....	H.-A..... Saturday..... Apr. 24
Allianza.....	P. R. R. Monday..... Apr. 26
Atrato.....	R.-M..... Saturday..... May 1
Colon.....	P. R. R. Monday..... May 3
Panama.....	P. R. R. Saturday..... May 8
Prinz Joachim.....	H.-A..... Saturday..... May 8
Advance.....	P. R. R. Friday..... May 14
Oruba.....	R.-M..... Saturday..... May 15

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.	
Advance.....	P. R. R. Monday..... Mar. 15
Prinz Aug. Wilhelm.....	H.-A..... Tuesday..... Mar. 16
Allianza.....	P. R. R. Sunday..... Mar. 21
Magdalena.....	R.-M..... Tuesday..... Mar. 23
Colon.....	P. R. R. Saturday..... Mar. 27
Prinz Joachim.....	H.-A..... Tuesday..... Mar. 30
Panama.....	P. R. R. Friday..... Apr. 2
Orinoco.....	R.-M..... Tuesday..... Apr. 6
Advance.....	P. R. R. Thursday..... Apr. 8
Prinz Aug. Wilhelm.....	H.-A..... Tuesday..... Apr. 13
Allianza.....	P. R. R. Wednesday..... Apr. 14
Colon.....	P. R. R. Tuesday..... Apr. 20
Atrato.....	R.-M..... Tuesday..... Apr. 20
Panama.....	P. R. R. Monday..... Apr. 26
Prinz Joachim.....	H.-A..... Tuesday..... Apr. 27
Advance.....	P. R. R. Sunday..... May 2
Oruba.....	R.-M..... Tuesday..... May 4
Allianza.....	P. R. R. Saturday..... May 8
Prinz Aug. Wilhelm.....	H.-A..... Tuesday..... May 11
Colon.....	P. R. R. Friday..... May 14
Tagus.....	R.-M..... Tuesday..... May 18
Panama.....	P. R. R. Thursday..... May 20
Prinz Joachim.....	H.-A..... Tuesday..... May 25
Advance.....	P. R. R. Wednesday..... May 26

NEW ORLEANS TO COLON.	
Boundbrook.....	U. F. C. Saturday..... Mar. 13
Cartago.....	U. F. C. Saturday..... Mar. 20

COLON TO NEW ORLEANS.	
Parismina.....	U. F. C. Tuesday..... Mar. 16
Cartago.....	U. F. C. Tuesday..... Mar. 30

COLON TO BARBADOS, CALLING AT TRINIDAD
 Tagus..... R.-M..... Tuesday..... Mar. 30
 Magdalena..... R.-M..... Tuesday..... Apr. 13
 Orinoco..... R.-M..... Tuesday..... Apr. 27
 Atrato..... R.-M..... Tuesday..... May 11

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.
 The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.
 Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailings of the Leyland Line for New Orleans via Kingston, Ja., will be as follows: Steamship *Asian* about March 27.

NOTICE OF SALE.

United States of America, } In the matter of John
 in the Circuit Court, Sec- } Chong Wing & Co.,
 ond Judicial Circuit, at } Bankrupts.
 Empire, Canal Zone.

By virtue of authority vested in me by the Court of the Second Judicial Circuit on the 27th day of February, 1909, I shall receive sealed bids for the stock of dry goods, hoots, shoes, silks, groceries, fixtures, of John Chong Wing & Co., situated in Culebra, Canal Zone. Said bids must be addressed to me at Ancon, Canal Zone, accompanied with a deposit of \$100 by not later than the 15th day of March, 1909, 12 m., the receiver reserving the right to reject any and all bids. A copy of the inventory of the said stock can be seen either at my office in Panama, or on file in the Circuit Court at Empire, Canal Zone.

SAM B. DANNIS, Receiver
 Panama, March 1, 1909.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Acting Chairman of the Isthmian Canal Commission for the month of February is published in other columns of this issue of THE CANAL RECORD. The grand total of excavation for the month was 3,148,879 cubic yards, of which 1,857,315 cubic yards were removed by steam shovels, 1,269,399 cubic yards by dredges, and 22,165 cubic yards by hand and scraper.

Work on the handling plant at Gatun, in the Atlantic Division, is advancing steadily. The unloading cableway dock is practically completed and the cement shed dock is ready for roofing. The timber work on the storage pile tunnels is 99 per cent completed a total of 364,000 feet B. M. of creosoted lumber having been used in these tunnels.

The roadbed for the automatic electric road is 90 per cent completed and work on the cableway towers was actively prosecuted. At the end of the month the walls and turbine foundations at the power house were completed to the level of the main floor and the steel in the east end of the building was in place. The framing of the mixer building and its approach channel, and the foundations for the driving machinery were completed. At Gatun Dam a total of 239,795 cubic yards of material was placed in the dam, 19,772 cubic yards of this amount being rock from Bas Obispo. The erection of the air compressor plant at Porto Bello was completed during the month and compressed air is now being furnished to the rock drills at the quarry. The electric light plant at Porto Bello was put in operation on February 27.

In the Pacific Division work was continued on the handling plants for the Pacific locks and dams. At Pedro Miguel the work of filling the west dam was begun, over that portion of the dam for which the core trench has been completed. At Miraflores the in-

stallation of machinery for laying concrete was begun. The borings along the Canal prism were completed and additional borings were made on the axes of the east and west dams at Pedro Miguel, and of the west dam at Miraflores, to verify the depth of rock at certain points. Work was begun on the sand storage wharf at La Boca.

The average daily number of laborers employed on actual canal construction was 14,330. There were 331.89 tons of explosives used, and 438,270 feet, or 83 miles of rock drilling were accomplished.

On the relocation of the Panama railroad 85,004 cubic yards were excavated and 281,175 cubic yards placed in embankment during the month, making a total of 886,028 cubic yards of excavation and 3,563,464 cubic yards of embankment accomplished to date. A total of 74,138 linear feet, or 14 miles of permanent track has been laid on the relocated line. The average daily force of laborers on this work was 1,487.

During the month a net profit of \$3,131.61 is shown in the operation of the Line hotels, messes, and kitchens, and the Hotel Tivoli showed a profit of \$4,614.41.

The total revenues of the Canal Zone in February aggregated \$19,980.51 and the general revenues amounted to \$12,353.89.

The total enrollment in the white schools during the month was 694, and the average daily attendance was 599. In the colored schools the total enrollment was 1,340 and the average daily attendance 855.

Depth of the Old French Canal.

A hydrographic survey of the old French canal between Cristobal and Gatun Dam has been completed. It shows that the ruling depth from Cristobal to the entrance of the channel which leads up to the handling docks at Gatun locks is 12 feet, and 9 feet up to the spillway docks. In several places the canal is 30 feet deep and throughout the greater part of the distance from Cristobal to Gatun it is over fifteen feet. The survey was made preparatory to placing a dipper dredge at work which will excavate until the least depth is 15 feet. This depth is necessary in transporting rock and sand to Gatun. At present the rock and sand barges coming to Gatun are not loaded to full capacity.

Slide on P. R. R. Relocated Line at Gatun.

Another slide occurred at the Panama railroad embankment near Gatun on Saturday, March 20, when a section of the fill three hundred feet long settled about thirty feet. The embankment had reached practically the final height, 95 feet above sea-level, and was the full width required, throughout nearly its entire length.

The occurrence was identical with the other slides which have taken place in this vicinity, the heavy rock that had been

dumped settling and displacing the soft mud and clay below. In all previous slides at this place the movement has been westward, towards the Chagres valley. In this case the movement was eastward toward the hills of Gatun ridge, indicating that the wide flat slope built along the west side of the embankment had stopped further movement in that direction.

Pile drivers are at work building a trestle across the depression made by the slide, and when finished, more material will be dumped in the embankment until it is again brought up to the proper grade, 95 feet above sea-level. In case other settlements occur, the same process will be repeated until the equilibrium of the embankment is established.

Concrete in Gatun Spillway.

The first concrete to be laid in the Canal work proper was placed in the spillway of Gatun Dam on the morning of March 17. The plant worked well and in less than five hours on the first day 122 cubic yards of concrete were laid. It is not expected that the plant will reach its full capacity this month, but early in April it is probable that between 300 and 400 cubic yards of concrete will be turned out every day of 9 hours. At this rate the lining of the spillway will be completed before the beginning of the rainy season of 1910, when it is proposed to turn the Chagres river through the new channel.

The channel to be lined is 1200 feet long and 300 feet wide, and the width of the completed spillway will be 284 feet. The floor will be from four feet to 18 inches thick, with the surface at 10 feet above sea-level. The walls will be 8 feet thick at the surface of the floor. They will rise on a 1 to 10 slope on the face, and in four steps at the back to 3 feet thick at the top, which will be 20 feet above the floor. The building of the concrete dam and other concrete work in connection with the regulating works will bring the amount of concrete to be laid in the spillway up to about 200,000 cubic yards.

The mixing plant for the spillway concrete is located on the French canal about one hundred yards north of the north toe of Gatun Dam and 4,000 feet from the north end of the spillway. A dock has been built on the canal and barges of rock from Porto Bello, sand from Nombre de Dios, and cement from the ships at Cristobal tie up alongside. On the dock are a storehouse for cement, and storage bins for rock and sand. Two narrow gauge railroads extend under the cement storehouse and storage bins, and on them run the cars that convey the materials to the mixers. These cars are built in two compartments.

A car moves under the cement house and a chute is opened which delivers two barrels of cement into the smaller compartment. The car then moves forward and is stopped under the sand bin, where the compartment

NOTES OF PROGRESS.

(Continued.)

into which the cement has been run is filled with sand, when the car again moves forward and the larger compartment is charged with rock under the rock bin. The proportions are one part of cement, three of sand, and six of rock. The charged car is pulled by a cable up an incline 24 feet high to a platform above the mixers, and when in position to deliver its load into the hopper its side doors are opened automatically, allowing the rock, sand, and cement to fall into the mixers.

The plant is in duplicate; that is, two railroad tracks run from the charging bins to two mixers. The mixers are of the Chicago cube type, of two cubic yards capacity, and are driven by an old French engine supplied with steam from two old French boilers. Each mixer delivers its load into a large iron bucket with moveable bottom. The buckets are carried on flat cars, two on each car, and the cars are hauled to the spillway on a narrow gauge track by 18-ton contractor's engines. When the plant is working at its full capacity four trains, each carrying four cubic yards of concrete, will be running all the time.

In the spillway the buckets are lifted from the cars by a locomotive crane which swings them over the forms in which the concrete is laid. The forms are built of wood and are 30 feet long and 20 feet wide.

Trains between Mindi Junction and Gatun.

Beginning in a few days a shuttle train, which will meet all passenger trains at Mindi Junction, will be operated between the new Gatun station and Mindi Junction for the benefit of first-class passengers to Gatun. A sheltered platform is being built at Mindi Junction for the transfer of passengers. Through passenger trains on the Panama railroad will run on the main line

to a point near the old Gatun passenger station, where they will take the construction track that runs behind the station around the side of the large fill to the Gatun cut-off, following that until the main line is reached again at Tiger Hill. A stop will be made near the Gatun lock site for the accommodation of second-class passengers.

Highest Daily Excavation.

The record for daily excavation in the Central Division was broken on Friday, March 19, when 55 shovels removed 78,033 cubic yards of material, an average of 1,419 cubic yards per shovel for the eight hour day. The highest previous daily record was made on February 27, when 59 shovels excavated 77,064 cubic yards, an average of 1,306 cubic yards per shovel.

On March 19 the shovels were under steam a total of 437 hours, but were actually digging only 291 hours and 45 minutes, being idle from various causes 145 hours and 15 minutes. The material excavated was loaded into 2,314 Lidgerwood flats, 239 large Western Dump cars and 2,769 small Western and Oliver Dump cars.

February Shovel Records.

The steam shovels at work on canal excavation in February, removed 1,857,315 cubic yards of material, all but 116,047 cubic yards of which was taken from the Canal prism.

The high record for the month was made by shovel No. 253 (90-ton shovel) at work in the Tabernilla District, which took out 44,498 cubic yards, in 23 working days, an average of 1,935 cubic yards per day. The best record for shovels in the 70-ton class was made by shovel No. 112, working in the lock site at Gatun, which removed 38,059 cubic yards in 23 days, an average of 1,655 cubic yards per day.

The highest daily record during the month was made by shovel No. 262 (90-ton shovel) in the Empire District on February 27, when 3,225 cubic yards were removed. The

best daily record for a 70-ton shovel was made by shovel No. 131 in the Tabernilla District on February 9, when 2,330 cubic yards were excavated.

The highest daily record of excavation since American occupation, in the Central Division, was broken five times during February. The best record previous to February 1 was made on December 18, 1908, when 50 steam shovels excavated 70,087 cubic yards, an average of 1,402 cubic yards per shovel. That record was surpassed as follows:

DATE.	No. shovels at work.	Total yardage.	Average per shovel.
February 5.....	56	73,412	1,311
February 9.....	56	74,123	1,324
February 10.....	58	76,438	1,318
February 11.....	59	76,920	1,304
February 27.....	59	77,064	1,306

The best montaly and daily records of steam shovels in the three divisions for the month of February is as follows:

Best Records for the Month.
CENTRAL DIVISION.
TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
253.....	36,488	8,010	44,498	23
127.....	34,142	3,794	37,936	23

BAS OBISPO DISTRICT.

122.....	35,987	.....	35,987	21
256.....	1,729	32,860	34,589	22

EMPIRE DISTRICT.

262.....	.....	42,384	42,384	23
225.....	21,006	17,186	38,192	23

CULEBRA DISTRICT.

219.....	37,570	37,570	23
260.....	37,057	37,057	19

OBISPO DIVERSION.

226.....	38,560	38,560	22
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ATLANTIC DIVISION.
GATUN LOCKS.

112.....	16,950	21,109	38,059	23
129.....	18,013	18,013	23

MINDI.

101.....	1,207	24,546	25,753	22
120.....	6,744	13,549	20,293	22

PACIFIC DIVISION.
PEDRO MIGUEL LOCKS.

222.....	20,530	20,530
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MIRAFLORES LOCKS.

151.....	24,396	24,396
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Best Records for One Day.
CENTRAL DIVISION.

Shovel No.	Location.	Date.	Character material excavated.	Cubic yds. excavated.
253	Tabernilla.....	Feb. 20	Rock and earth	2,730
131	Tabernilla.....	Feb. 9	Rock and earth	2,330
256	Bas Obispo.....	Feb. 24	Soft rock.....	2,720
255	Bas Obispo.....	Feb. 15	Earth.....	2,330
262	Empire.....	Feb. 27	Earth.....	3,225
209	Empire.....	Feb. 18	Rock and earth	2,430
213	Culebra.....	Feb. 27	Rock and earth	2,400
230	Culebra.....	Feb. 26	Rock and earth	2,280

ATLANTIC DIVISION.

112	Gatun Locks.....	Feb. 25	Clay and rock..	2,145
129	Gatun Locks.....	Feb. 5	Rock.....	1,560
101	Mindi.....	Feb. 11	Rock.....	1,960
120	Mindi.....	Feb. 9	Rock.....	1,888

PACIFIC DIVISION.

222	P. Miguel Locks	Feb. 19	Rock.....	2,060
157	Miraflores Locks	Feb. 10	Earth.....	1,640

LABOR FORCE FOR FEBRUARY.

The report of the Chief Quartermaster for the month of February shows that the number of Isthmian Canal Commission employes actually at work on February 24, was 25,192, of whom 4,334 were "gold" employes, and the remainder were on the "silver" or labor roll. The Panama railroad force was 5,874, and the Panama railroad commissary force numbered 749. Thus the total number of persons at work on the Canal and railroad on the 24th day of February was 31,815. During the month 131 people were added to the "gold" roll and there were 227 separations, the net decrease in the force being 46. No laborers were imported, as

the supply on the Isthmus was in excess of the demand.

The number of family quarters occupied by "gold" employes was 1,472, and the occupants numbered 4,490; bachelor quarters by "gold" employes, 2,015, and the occupants numbered 3,325. The family quarters occupied by West Indians numbered 968, and the occupants 3,128; bachelor quarters, 276; number of occupants, 4,909. The family quarters occupied by European laborers numbered 343, and the occupants 1,076; bachelor quarters, 147; number of occupants 5,462.

A statement of the force actually at work on February 24, 1909, follows:

DEPARTMENT.	Gold Men.	Mon. thly.	SILVER MEN.						Total Silver.	Total Gold and Silver Men.
			32c. & over.	26c.	40c.	32c.	26c.	20c.		
Construction and Engineering.....	3,186	2,096	4,123	1,562	4,466	256	1,636	2,538	16,677	19,863
Department of Civil Administration.....	351	174	23	.....	.....	.....	.....	.....	197	548
Department of Sanitation.....	345	564	70	.....	4	.....	11	161	810	1,155
Quartermaster's Department.....	241	1,064	278	.....	250	9	322	616	2,539	2,780
Subsistence Department.....	69	619	2	.....	.....	.....	.....	.....	621	690
Disbursements.....	28	9	.....	.....	.....	.....	.....	.....	9	37
Examiner of Accounts.....	114	5	.....	.....	.....	.....	.....	.....	5	119
Totals.....	4,334	4,531	4,496	1,562	4,720	265	1,969	3,315	20,858	25,192

Panama railroad force, 5,874; Panama railroad commissary force, 749

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

At the business meeting of the Gorgona Woman's Club on Thursday afternoon, March 18, the following officers were elected to serve for the ensuing six months: President, Mrs. F. W. Morrison; vice-president, Mrs. C. H. Toberer; secretary, Mrs. J. F. Phillips, re-elected; treasurer, Mrs. B. F. Henckle. The club will probably remain open during the summer months. The art department accepted an invitation to meet at the home of Mrs. B. F. Henckle, Tuesday, March 23.

"The Isthmus—Its People, Its History, Its Arts," was the subject presented by the education department of the Cristobal Woman's Club at its meeting March 17. Papers were read by Mrs. J. J. Jackson and Mr. Tracy Robinson, and exhibits of native needlework and Chiriqui pottery were shown by Mrs. R. W. Fenn, of Ancon, and Mr. Robb, of Cristobal.

A branch of the W. C. T. U. was organized at Gorgona, on Friday, March 12. Officers elected were: President, Miss Minnie Berry; vice-president, Mrs. J. S. McConaughy; recording secretary, Miss Minnie Otis; treasurer, Mrs. George Lowe. The next meeting will be held at the chapel on March 24, at 3 p. m.

Plans for the flower dance to be given at the Gorgona clubhouse, on April 17, for the benefit of Rebekah lodge, are well under way. The hall will be decorated with the colors of the order, pink and green, and flower costumes will be worn by the ladies. Tickets are being sold at \$1 each.

Mrs. R. W. Fenn, of Ancon, was the guest and speaker at the meeting of the Empire Woman's Club on March 18, the subject being Panamanian needlework, arts, and crafts. An exhibit of native work, gold and silver ornaments, beads, musical instruments and other articles was made. Refreshments were served during the social half hour which followed the program. The next meeting, on April 1, will be a social meeting with exercises of an informal character.

A dance was given at the Empire clubhouse on Wednesday, March 17, for the benefit of the Church of the Holy Redeemer, now in course of construction at Culebra.

The Paraiso Woman's Club is holding its meetings regularly with good attendance. Mrs. T. M. McLaughlin has been elected recording secretary in the place of Mrs. William Downs, resigned, and the office of corresponding secretary has been created, Mrs. W. Dorsey being elected to that position. Mrs. A. R. Stroup is chairman of the entertainment committee.

The social meeting of the Pedro Miguel Woman's Club, on March 24, will be held at the home of Mrs. Morley, Ancon. Efforts are being made to revive the activities of the Social and Recreative Club of Pedro Miguel and a dance was given at the club rooms, Saturday evening, March 20.

The social meeting of the Las Cascadas Woman's Club was held, by invitation, at the home of Mrs. O. G. Randall, at Empire, on Thursday, March 18. On March 25 the meeting will be held at the home of Mrs. W. D. Stanton, and the occasion will be in the nature of a farewell reception to Mrs. Randall, Mrs. C. F. Merry and other club members who are leaving the Isthmus.

The formal dedication of the Commission

chapel, Gatun, was held on Sunday, March 6, with appropriate exercises. Addresses were made by Col. W. C. Gorgas and Maj. W. L. Sibert, and Commission Chaplain J. Wesley Holland preached the sermon. The music was rendered by a choir of twelve voices, and Miss Kenshaw sang a solo. The regular session of the Sunday school is held at 9.30 and the Christian Endeavor Society meets on Sunday evening for a service which is preceded by fifteen minutes of song service. It is expected that a regular chaplain will be appointed.

The Gatun Woman's Club met at the home of Mrs. D. A. Clark, March 19, the president in the chair. The club has taken up the matter of securing tennis courts for the town. The program under the literary department, Mrs. C. D. Corp, chairman, consisted of a review of the life and works of the poet Longfellow.

In the absence of the speaker announced for the day, Rev. H. Britton King, of Panama, consented to speak before the Ancon Woman's Club on March 17. Mr. King gave a review of his experience as missionary worker for fifteen years in the West Indian Islands and the Isthmus. The regular monthly excursion of the philanthropy department for March included a visit to the Panama almshouse, of which report was given at this meeting. On April 7 the business meeting of the Club will be held.

The Culebra section of the Canal Zone Branch of the American National Red Cross has effected a permanent organization, Mrs. C. A. Devol having been elected chairman, and Mrs. A. Bruce Minear, secretary and treasurer.

At a meeting of the Ancon section of the Canal Zone Branch of the American National Red Cross, held on March 21, the following officers were elected: Dr. John L. Phillips, chairman; H. D. Reed, treasurer; and Mrs. Henry B. Bryan, Mrs. T. C. Lyster, and Robert Coe, executive committee.

Red Cross Funds.

The question of the use of Zone funds collected by the Canal Zone Branch of the American National Red Cross for the relief of individual cases in the Canal Zone, which was discussed at the last general meeting of the Zone Branch, was presented by Major Devol, the president of the Branch, to the National Red Cross Committee. Major Devol has received from the Secretary of the National Committee the following letters, which indicate that there will be no difficulty in meeting the wishes of the Canal Zone Branch in the use of funds:

March 13, 1909.

Maj. C. A. Devol, President, Canal Zone Branch, American National Red Cross, Culebra, C. Z.

Dear Sir: I have to acknowledge receipt of your letter of March 2, reporting the organization of a Branch of the American National Red Cross in the Canal Zone and quoting the by-laws of the organization and certain resolutions respecting finances, which have been adopted by the Branch Society.

In connection with the resolutions in question, I have to inform you that the Canal Zone Branch under the present Regulations for Branch Societies (paragraph 14, page 19, Regulations for Branch Societies) is authorized to consider the proceeds from entertainments as gifts specially designated for the Branch and to disburse the same in such manner and for such purposes as the Branch

may deem proper and desirable, provided that funds of such character be taken into the regular accounts of the treasurer and included in the annual audit by the War Department official designated to make such audit. Gross receipts for life membership dues and 50 per cent of the gross receipts of annual dues are, of course, to be remitted to the national treasurer in Washington.

This letter is intended to meet fully the wishes of the Canal Zone Branch as expressed in your communication.

Congratulating you in behalf of the national officers upon your large membership and evident interest and efficiency, I am,

Very respectfully yours,

CHAS. L. MAGEE, *Secretary.*

March 13, 1909.

Maj. C. A. Devol, President, Canal Zone Branch, American National Red Cross, Culebra, C. Z.

My Dear Major Devol: Your report of the organization of a Branch Red Cross Society in the Canal Zone was a source of much satisfaction to national headquarters. The large membership especially was an agreeable surprise, as we have I believe only three State Branches whose membership reaches or exceeds 1,000 members.

As you probably know, we desire to furnish free to all Red Cross members copies of the Red Cross Magazine, and if you will kindly send me a list of the names and addresses of your officers and members we shall be glad to mail these magazines quarterly. Sincerely yours,

CHAS. L. MAGEE, *Secretary.*

The membership of the Canal Zone Branch now exceeds 1,200 and is still growing.

Red Cross Ball at Culebra.

The Culebra Section of the Canal Zone Red Cross is making arrangements for a ball to be given at the clubhouse in Culebra on the night of April 16. The Tivoli orchestra has been engaged and further arrangements are in the hands of a committee. The Culebra Section has a membership of about 200, but as only a small proportion of this number will dance and as the clubhouse floor will accommodate 200 people, arrangements will be made to run special trains from both ends of the line in order that people from other villages may take part in the dance.

Personal.

Lieut. R. E. Wood, Assistant Chief Quartermaster, returned to the Isthmus on the *Colon* on March 21, from his annual leave of absence.

Mr. G. B. Strickler, Resident Engineer at Corozal, and Mrs. Strickler, were passengers on the *Allianca*, which sailed from Colon on March 21.

Missing Man.

Information is desired in regard to Robert Millan, Robert Hancock, or Robert Millan Hancock, a chief engineer of seagoing vessels. He is from Kilmarnock, Ayrshire, Scotland, and came to the Isthmus, presumably from New York, about 1905-6. Anyone having knowledge concerning him is requested to communicate with G. G. Dedge, P. O. Box 151, Colon, R. P.

Dedication of Wesleyan Methodist Church.

The dedication of the new Wesleyan Methodist Church in Panama will take place on Thursday, March 25, at 3 p. m. The exercises will be opened by Mr. Claude C. Mallet, British Minister at Panama, and the Rev. A. W. Geddes will preach the sermon. There will be a public meeting at the church in the evening of the same day at 7.30.

WORK AT PEDRO MIGUEL.

Amount and Variety of Work in Progress There on Locks and Dam.

Within a square mile, at Pedro Miguel, five steam shovels are excavating, preparation is being made for the laying of concrete in the locks, and the building of a dam is in progress.

At this point in the valley of the Rio Grande, the Canal will drop from the 85-foot level of Gatun Lake to the 55-foot level, the first step of the descent to sea-level that will be completed at Miraflores. Twin locks of one flight are to be built between the hills that converge at this point, a wing wall is to be run from the northeast end of the locks to the east hill, and an earthen dam from the northwest end of the locks to the west hill. The work has reached the stage where each part shows its relation to the other parts, and the outline of the completed whole appears.

The final plan on which the French worked included a lock at Pedro Miguel, and they did a large amount of excavating to that end. But the American plan involves an additional excavation of over 1,200,000 cubic yards, and all but 200,000 cubic yards of this has already been taken out. At present three shovels are working in trap rock in the lock chamber. One of them, shovel No. 259, is at an elevation 14 feet above mean sea-level and has only four feet more to remove before the level of the bottom of the lock, at elevation 10 feet, is reached. The other shovels in the lock chamber are at higher elevations, but are also nearing the bottom of the cut.

In the south approach a shovel is excavating for the center wall that will divide the twin locks, and is at 8 feet above sea-level. This excavation will be carried only far enough below the level of the lock bottom to insure a stable foundation. The cut that this shovel is making serves also as a drainage ditch for the lock site. The water that now runs out of the excavation under its own head will presently be collected in a sump and then pumped over the dike at the south end of the lock site and wasted into the channel of the Rio Grande.

From the Panama railroad trains can be seen one of the storage trestles in process of construction on the west side of the north approach to the locks. The part that will be used for storage is nearly completed. An incline will connect the trestles with the railroad that has been run along the west side of the lock. Over this railroad will be carried crushed rock from the quarry and crusher at Ancon Hill and sand from Chamé to be run onto the trestle and dumped, the sand on one side and the rock on the other. A similar trestle, to be served in the same way, will be built on the east side of the north approach. Between these two trestles two cantilever cranes will operate which will lift rock and sand from the storage piles and convey them to the concrete mixers. Immediately north of the storage trestles, and served by the same railroad, will be a storehouse for cement.

If it depends on the progress of the construction work the laying of concrete can be begun in August, as was originally anticipated. Work on the concrete foundations for the power plant at Miraflores will be begun in a few days, and this part of the plant

TRAFFIC OVER P. R. R.

Comparison With Railroads of Similar Length in the States.

In reply to a letter requesting a comparison between the Panama railroad and railroads of similar length in the United States, the General Manager of the Panama railroad has compiled data showing the work done by that railroad in 1906, 1907, and 1908. A comparison is made with various railroads in the Central Northern Group, the data for these roads being quoted from Poor's Manual for 1907. Railroads in the United States are operated continuously 24 hours a day, whereas almost all the business of the Panama railroad is done in eight hours, and the figures quoted below are for an eight hour day for that road. The reply to the inquiry contains the following statement:

"I have, as you will note, however, shown the operation of the Panama railroad not only for the fiscal year ended June 30, 1906, but for the two succeeding years, 1907 and 1908.

"The Panama Railroad Company received credit, in 1908, for moving 1,184,649 tons of

commercial freight. In this no figures are shown in connection with moving the dirt trains, the tonnage of which, for the corresponding period, is estimated at 28,097,000 tons; or, in other words, ton miles for the Panama railroad for the year 1908 should read 227,756,224, instead of 26,596,228 as shown in the annual report. It is with a corresponding railroad in the United States handling a corresponding amount of business over corresponding mileage that a comparison should be made, and I am free to confess that I have no knowledge of any such situation.

"For instance, I believe that everybody will admit that the Chicago Junction Railway, which serves the stockyards, must be a very busy line, and I know it was in my time. Statistics for this railroad show: Mileage, 76.34; freight train miles, 223,143; tons moved, 2,871,024; ton miles, 67,146,319; which is only about 30 per cent of the ton miles moved by the Panama railroad.

"Again, the Indiana Harbor Railroad of Illinois, which is a belt line and serves various railroads around Chicago, must be a very busy railroad: Mileage, 32.9; tons moved, 937,766; ton miles, 15,455,755.

Comparison of Miscellaneous Railroads with Panama Railroad Company.
(Central Northern Group Railway Statistics taken from Poor's Manual of Railroads, 1907.)

NAME OF ROAD.	Mileage.	Passenger mileage.	Freight mileage.	Tons freight.	Ton miles.	Passengers.	Passenger miles
Detroit & Charlevoix	54.50	4,520	51,880	370,200	7,033,800	20,100	412,000
Lake Superior & Ishpeming	32.95	16,888	48,844	1,896,515	36,741,758	19,841	322,248
Manistee & Northwestern	127.57	120,771	161,491	602,789	18,410,168	153,312	3,270,287
Manistique, Marquette & Northern	53.00	2,450	35,794	172,542	5,202,443	8,430	193,890
Manistique	78.00	.....	50,875	220,445	5,978,049	14,429	324,652
Marquette & Southern	55.74	20,846	85,050	712,901	13,491,721	45,977	739,017
Copper Range	81.91	178,593	172,691	2,370,973	36,599,259	351,383	3,605,629
Munising Railway	69.81	24,268	105,612	690,974	11,476,297	56,990	827,457
Pontiac, Oxford & Northern	111.44	67,589	126,580	146,732	4,450,497	142,366	3,182,631
Wisconsin & Michigan	131.79	146,479	155,911	50,906	2,138,561	66,522	1,294,218
Panama, 1906	50.11	164,811	172,243	665,710	26,596,228	448,230	6,302,957
Panama, 1907	50.11	143,871	203,560	936,346	36,785,325	882,277	11,254,152
Panama, 1908	50.11	141,169	223,841	1,184,649	45,936,204	1,385,645	18,550,767

In making the estimate for ton miles the data and method used were as follows:

- Cristobal to Gatun—(Six miles single track.)*
4 loaded trains...16 cars...60 tons...6 miles...300 days;
4 empty trains...16 cars...20 tons...6 miles...300 days;
make a total of 9,216,000 ton miles for this district.
- Gatun to Tabernilla—(Fifteen miles double track.)*
6 loaded trains...25 cars...55 tons...15 miles...300 days;
6 empty trains...25 cars...21 tons...15 miles...300 days;
make a total of 51,300,000 ton miles for this district.
- Tabernilla to Las Cascadas—(Eleven miles double track.)*
6 loaded trains...25 cars...55 tons...11 miles...300 days;
6 empty trains...25 cars...21 tons...11 miles...300 days;
40 loaded trains...17 cars...60 tons...11 miles...300 days;

40 empty trains...17 cars...20 tons...11 miles...300 days,
make a total of 217,140,000 ton miles for this district.

Las Cascadas to Miraflores—(Nine miles, three miles double track, six miles single track.)

- 6 loaded trains...17 cars...60 tons...3 miles...300 days;
36 empty trains...17 cars...20 tons...3 miles...300 days;
40 loaded trains...17 cars...60 tons...1 mile...300 days;
10 empty trains...17 cars...20 tons...1 mile...300 days,
make a total of 29,784,000 ton miles for this district.

This makes a total of 281,820,000 ton miles of dirt against 45,936,204 ton miles commercial tonnage, the latter figures being those shown on the Panama Railroad Company's operating sheets for the year 1908.

will also be in readiness. The boilers will be on the Isthmus in April and the turbine generators are already here. Power for handling and mixing concrete at Pedro Miguel will be furnished from this plant. A representative of the Pacific Division is now in the United States consulting with the contractors who are to supply the concrete mixers and the cantilever cranes for handling the concrete. On his return, the latter part of this month, the exact time of the delivery of the handling plant for Pedro Miguel will be known.

Compared with the great barrier that is being built across the Chagres valley at Gatun, the Pedro Miguel dam is small, but it involves a fill of over a quarter million cubic yards, and is being constructed as carefully as the Gatun Dam itself. Instead of the hydraulic fill that will form the impermeable portion of Gatun Dam, a clay core is being placed in the dam at Pedro Miguel.

A trench 20 feet wide and ten feet below the surface of the ground on which the fill is made has been dug along the axis of the dam, in order to make a close connection between the earth and the clay core. Fine yellow clay from the lock site at Miraflores is dumped along the axis and this clay is puddled by a stream of water pumped on it. In this way the same close packing of the core, as characterizes the material pumped into Gatun Dam by suction dredges, is procured. Over twenty thousand cubic yards of selected material will be placed in this core. Meanwhile, the dumping of rock and earth from the lock pit is in progress and each week the dam grows appreciably larger.

The force on the work at Pedro Miguel consists of 50 gold roll men, and 575 silver roll men or laborers. In addition to the five steam shovels mentioned, the equipment includes 11 locomotives and 80 ten-yard dump cars.

PAY WHILE ON LEAVE.

Rules Governing Compensation to Employees Granted Leave of Absence.

THE CANAL RECORD:

I should like to know why a man on leave for 42 days with pay is not entitled to 42 days' pay? I do not see why the 31st day of a month is not counted as a day of pay, as according to the provisional appointment a man gets pay by the day and not by the month while on vacation, therefore, I do not see why the 31st day of a month should not be counted. This gives an employe vacation by days and pay by the month. Please advise me through THE CANAL RECORD about this matter.

EMPLOYEE.

Ancon, C. Z., March 4, 1909.

The above letter was referred to the Examiner of Accounts who makes the following explanation:

An employe on a monthly salary receives the same amount of pay while on leave as he would have received had he been at work. The mistake that is frequently made by employes is, that when granted 42 days' leave and they receive pay for but 41 days, they assume that one-thirtieth of a month's salary is the pay for a day of service. This is not correct. When a man is employed at a monthly salary he has no daily rate of compensation, but the law provides when he serves a fractional part of a month how his proportion of a month's pay shall be calculated.

It is quite evident that there is nothing in the provisional appointment or the regulations of the Commission providing for leave pay of monthly employes on a per day basis. The provisional appointment provides for not exceeding six weeks' leave. This is of course equivalent to 42 days, and in the granting of leave of absence is usually stated to be 42 days. A leave of 42 days cannot of course give a man forty-two-thirtieths of a month's salary. The number of calendar days that he may be absent does not determine his pay. If he were granted 42 days' leave of absence effective February 1, 1909, the leave would expire March 14, and he would receive a month's pay for February and fourteen-thirtieths of a month's pay for March, being a total of forty-two-thirtieths. If he went on 42 days' leave of absence March 1, his leave would expire April 11, and he would receive a month's pay for March and eleven-thirtieths for April, a total of forty-one-thirtieths. He would then receive nineteen-thirtieths for the balance of the month of April, and so receive sixty-thirtieths, or two months' pay for the calendar months of March and April.

I enclose a copy of a circular of July 5, 1906, of the Comptroller of the Treasury upon this subject. The method of calculation is simple when it is examined carefully. Any employe who takes 42 days' leave with pay, will find that in the two or three months into which his leave runs, he will receive the full pay per month if he serves all the time he is not on leave of absence.

The question has been discussed by employes for a long time, and their objection is always due to the fact that they do not receive forty-two-thirtieths of a month's pay for 42 calendar days. This they do not receive at work if one of the months has 31 days, but when a man is receiving what he would have received if at work, he certainly

has not been underpaid, and that is all that is granted by a leave of absence. The practice of giving an employe going on leave, pay for the fractional part of a month served up to the date he goes on leave, is what has caused many employes to get an erroneous impression. If they drew two months' pay on their return and did not have a fractional month's payment before going on leave, they would readily see that they were being paid in full; and so they will in all cases if they will take the trouble to calculate the amount they have received covering services in two or three calendar months during which they had leave of absence.

TREASURY DEPARTMENT,
OFFICE OF COMPTROLLER OF THE TREASURY.
WASHINGTON, July 5, 1906.

1906—DEPARTMENT CIRCULAR No. 67.

To All Disbursing Officers of the United States: All disbursing officers will take notice that hereafter all persons in the Government service receiving a yearly or monthly compensation will be paid for such service under the following Act of Congress, approved June 30, 1906—Sundry Civil Appropriations Act:

SECTION 6. Hereafter, where the compensation of any person in the service of the United States is annual or monthly the following rules for division of time and computation of pay for services rendered are hereby established:

Annual compensation shall be divided into twelve equal installments, one of which shall be the pay for each calendar month, and in making payments for a fractional part of a month one-thirtieth of one of such installments or of a monthly compensation, shall be the daily rate of pay. For the purpose of computing such compensation and for computing time for services rendered during a fractional part of a month in connection with annual or monthly compensation, each and every month shall be held to consist of 30 days, without regard to the actual number of days in any calendar month, thus excluding the 31st of any calendar month from the computation and treating February as if it actually had 30 days. Any person entering the service of the United States during a 31-day month and serving until the end thereof shall be entitled to pay for that month from the date of entry to the 30th day of said month, both days inclusive; and any person entering said service during the month of February and serving until the end thereof shall be entitled to one month's pay, less as many thirtieths thereof as there were days elapsed prior to day of entry: *Provided*, That for one day's unauthorized absence on the 31st day of any calendar month one day's pay shall be forfeited.

1. For pay purposes all months in the year will be reckoned as containing 30 days.

2. Where a promotion or demotion occurs during any month from a place to another place carrying different compensation, service under such promotion or demotion will be considered as fractional service.

3. One-thirtieth of a monthly installment of salary will be deducted for every day's absence in a month, where such absentee is not in a pay status during such absence.

R. J. TRACEWELL,
Comptroller.

Approved: LESLIE M. SHAW,
Secretary of the Treasury.

N. B.—This will be found to confirm supplement No. 11 to Circular No. 3 of July 12, 1906.

Fourth of July Celebration.

THE CANAL RECORD:

In order that the Fourth of July may be properly celebrated it appears to me that preparations cannot be begun any too soon for outlining the principal features of the celebration and the point at which it shall be held, and I respectfully submit the following:

The celebration for prior years has been held as follows: 1905, Corozal; 1906, Cristobal; 1907, Ancon; 1908, Ancon.

I was informed that the understanding was that the next celebration should be held at Empire and I believe that this would be quite in order, Empire being well equipped to care for the crowd and make the celebration a success. Her people are hospitable and generous; the large clubhouse with its many conveniences can be utilized; the ball park, with its grandstand and bleachers, would provide more room than any other park on the Isthmus can to care for the crowds and permit them to see comfortably the various

athletic feats which would naturally take place. The Kangaroo hall and the clubhouse are both very convenient for a dance. In addition is the fact that Empire is more centrally located than either Cristobal or Ancon. Never having had this celebration Empire should be given the preference this time.

As a rough outline of the entertainment I would suggest: A tennis tournament, with entries from the different tennis clubs on the Isthmus, for which Empire will be well equipped with its three double courts, one of which is an old court and the other two in course of construction; parade, speeches, horse races, field meet of the Canal Zone athletes, wall scaling, sack and other novelty races; a meet of the gun clubs of the Isthmus; baseball contest between selected teams and fireworks and balls at night. The crowd could be fed by means of a good old fashioned Texas barbecue, of which there never has been one on the Isthmus, and Empire is well equipped with experienced barbecuers to pull it off.

I believe that Empire can put on a celebration of the Fourth which will be long and enjoyably remembered by the inhabitants of the Isthmus.

W. M. WOOD.

Empire, C. Z., March 20, 1909.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

An accurate count of the attendance at the four Commission clubhouses for the week ending Saturday, March 20, showed a total of 10,720 persons using the buildings, an average of 1,531 per day, or a daily average of 383 for each of the four clubhouses. These figures represent the normal patronage.

The series of entertainments by the Lyric Glee Club of Chicago was attended by about 3,000 persons. In addition to their performances in the clubhouses they gave seven entertainments in other towns, which were under the auspices of the Y. M. C. A.

The Edwin R. Weeks Company has been engaged for a series of entertainments beginning the latter part of May. Mr. and Mrs. Weeks will be remembered by all who witnessed their performances nearly two years ago. Miss Lulu Sinclair will be the third member of the party as accompanist and violinist.

CULEBRA.

A farewell reception was held at the Culebra clubhouse on Friday, March 19, in honor of Mr. W. H. Baxley, the local secretary who will sail for the States on March 27. Musical numbers by Mr. Howard, Mr. Holland and the Lyric Glee Club, readings by Mr. Canady, a guitar and a mandolin duet by Messrs. McFarland and Tragsdorf and short talks by Messrs. Minear, Stokoe, Weaver, Warner, Kirk, Pullen and a reply by Mr. Baxley constituted the program. Mr. Lee, the chairman of the local council, was the chairman of the evening.

The local interdepartmental duck pin tournament is arousing a good deal of interest. Games are bowled every Tuesday and Friday evenings by the following teams: The Chief Engineer's Office, the Quartermaster's, the Meteorology and River Hydraulics, the Cut team, the All Stars, the Miscellaneous, and the Draftsmen.

The result of the local billiard tournament is as follows: C. L. Bayne, first; F. H. Doty and W. E. Tragsdorf, tied for second place.

Concert by the I. C. C. Band.

GORGONA, C. Z.,
Sunday, March 28, 1909, at 6 p. m.

PROGRAM.

- 1 March—*Col. Estey*.....Bagley
- 2 Selection—*A Knight for a Day*.....Hubbell
- 3 { *a* Intermezzo—*Rainbow*.....Wenrich
- { *b* A Southern novelty—*Moonlight in*
- { *Dirie*.....Clement
- 4 Waltz—*Autumn Smiles*.....Bagley
- 5 Medley Selection—*Hits of the Day*.....Remick
- 6 Porto Rican Dance—*Rosita*.....Missud
- 7 Two-Step—*Hoop-e-Kack*.....Allen
- 8 Overture—*Schauspiel*.....Bach
- 9 Patrol—*American*.....Mecham
- 10 March—*Victorious Eagle*.....Rosey

CHAS. E. JENNINGS, Musical Director.

A concert will be given at Hotel Tivoli, Sunday, April 4.

CANAL WORK FOR FEBRUARY.

Monthly Report of the Acting Chairman to the Secretary of War.

CULEBRA, C. Z., March 15, 1909.

The Honorable the Secretary of War, Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of February, 1909:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
<i>Steam Shovel Excavation—</i>					
In prism.....	Cubic yards.....	107,865	1,526,059	101,432	1,735,356
Auxiliary.....	Cubic yards.....	17,419	98,628	5,912	121,959
Total.....	Cubic yards.....	125,284	1,624,687	107,344	1,857,315
<i>Dredge Excavation</i>					
In prism.....	Cubic yards.....	577,201		692,198	1,269,399
<i>Hand and Scraper Excavation—</i>					
In prism.....	Cubic yards.....		19,949		19,949
Auxiliary.....	Cubic yards.....			2,216	2,216
Total.....	Cubic yards.....		19,949	2,216	22,165
Total excavation.....	Cubic yards.....	702,485	1,644,636	501,758	3,148,879
<i>Explosives used.</i>					
Rock drilling.....	Tons (2240 lbs).....	32.38	277.7	21.81	331.89
New track laid.....	Miles.....	55,905	345,591	36,774	438,270
Track removed.....	Miles.....	3,927	10.2	2.79	16,917
Material placed in dams.....	Cubic yards.....	220,023	19,772	29,566	269,361
Rock crushed.....	Cubic yards.....	1,416	6,688.5	5,207	11,895.5
Cement used.....	Barrels.....	1,136		511	1,957
Concrete placed.....	Cubic yards.....	.03	.682	5.25	5.935
New roads built.....	Miles.....				9.1
Water mains laid.....	Feet.....	2,776	2,352	3,124	8,252
Sewers laid.....	Feet.....	3,874	2,016	356	6,246
Open drains and ditches dug.....	Feet.....		1,305	400	1,705
Open drains and ditches cleaned.....	Feet.....			214,739	214,739
Daily average number of laborers.....		3,170	8,112	3,048	14,330
Wash drilling.....	Feet.....	1,100		414.2	1,514.2
Diamond drilling.....	Feet.....			210.2	210.2
House connections made.....					1
Rainfall.....	Inches.....	4.12	1.50	3.26	

Atlantic Division.

GATUN LOCKS.

Unloading Cableway Dock—With the exception of the laying of a small amount of bracing below the floor and a small amount of track above, this dock is completed.

Cement Shed Dock—On this dock 80 piles were driven and 42,000 square feet of decking laid during the month. It is now ready for the erection of the roof. All posts for the cement house have been cut, and the continuation of the framing will be resumed on arrival of the necessary material.

Storage Pile Tunnels—Work on these tunnels was continued, and the timber work is now 99 per cent completed. A total of 364,000 feet B. M. of creosoted timber was used. The broken stone filling over the drains on the sides of the tunnel was continued during the month, and is 90 per cent completed. The remaining work to be done to complete these tunnels consists of placing a small amount of sheathing and broken stone at the sides, and the installation of the valves.

Automatic Electric Road—The excavation for the roadbed of this road was continued, and 5,000 cubic yards of earth and loose rock removed. The excavation and trestles for carrying the Panama railroad tracks in the Gatun yard over this road was completed. Approximately 90 per cent of this roadbed is ready for ballast.

Cableway Towers—During the month four tail towers for the lock cableways were erected and riveting commenced. Riveting on two tail towers for the unloading cableways was completed, and forms for the counterweight placed. The bases for two

unloading head towers were erected, and the main driving machinery placed on one of them.

Power House—Work on the erection of the power house was satisfactorily continued, and at the end of the month the walls and turbine foundations were completed to the level of the main floor. The steel in the east end of the building has been put in place, and about half the bolts put in.

Mixer Building—Framing of the timber work for this building and its approach channels was completed. Approximately 100 cubic yards of excavation for the footings was made, and 83 cubic yards of concrete

placements, and erection of generator and engines was completed and light furnished on February 27. Three locomotives and eight Oliver 6-yard cars were erected, as well as a 15-ton crane one No. 9 and one No. 6 crusher.

Quarry Operation—Three steam shovels cast over from 2½ per cent climbing cut, widening same, and on switch back into quarry, handling 15,092 cubic yards. In ditching and draining, 210 cubic yards were handled. The hydraulic stripping in the quarry amounted to 27,161 cubic yards.

Carpenter Work—Work was continued on the crusher house, shipping bins, conveyor, help quarters, Quartermaster's storehouse, hospital and the railroad trestle east of the crusher house.

NOMBRE DE DIOS

Work progressed satisfactorily at this point, preparatory to taking out sand.

HARBOR AND CHANNEL SECTION.

Dry Excavation Below Sea-level Mindi—Two 70-ton shovels operated at this point during the month, excavating 7,951 cubic yards of earth and 38,095 cubic yards of rock.

Dredging, Ocean to Mindi—Three dredges removed from the prism 428,595 cubic yards of earth and 16,315 cubic yards of rock. In addition, the *Mindi* removed 29,714 cubic yards of earth and 5,975 cubic yards of rock from the approach channel to the Gatun Locks. On February 28, 40 feet of water could be carried from 0 to Mile 2 + 4,550 feet; 30 feet to Mile 3 + 650 feet; 20 feet to Mile 3 + 5,200 feet; and 15 feet to Mile 4 + 4,640 feet, the end of the cut.

MUNICIPAL ENGINEERING AND BUILDING CONSTRUCTION.

The usual work of this subdivision was satisfactorily performed, consisting of the maintenance and construction of roads and bridges, construction of fences, the completion of the installation of the sewer system in the new town of Gatun, and other special jobs of minor importance.

Central Division.

During the month of February, the total amount of material excavated in the Central Division was 1,644,636 cubic yards, of which 606,991 cubic yards were classified as earth and 1,037,645 cubic yards as rock. Of this quantity, 1,624,687 cubic yards were removed by steam shovels and 19,949 cubic yards by hand near Bobio. The quantity of material removed from the Canal prism was 1,546,008 cubic yards, while 98,628 cubic yards were removed from the Obispo Diversion. The daily average number of steam shovels at work during the month was 56.05 as compared with 51.80 for the month of January.

For comparison with the work done during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels	Classification of material.		Av. No. of steam shovels working during month	W'kg days in month	Av. amount excavated per shovel per 8-hour day.
		Rock	Earth			
1908:	cu. yds.	cu. yds.	cu. yds.			cu yds
Feb.....	1,441,263	813,832	627,431	54.00	24	1,112
1909:						
Feb.....	1,624,687	1,028,865	595,822	56.05	23	1,260

Rainfall at Empire: 1908, 0.00 ins.; 1909, 1.50 ins.

The above table shows that the average

laid. The foundations for the driving machinery and main footings were completed.

Excavation—During the month the shovel excavation in the Canal prism was continued with two shovels, and auxiliary excavation with one shovel. This auxiliary excavation consisted in widening the cut made for the east towers of the lock cableways, and in preparing the site for the concrete mixers, and the roadbed for the industrial railway leading south from the concrete mixers.

The dredge excavation consisted of excavation in the approach channel, and in the slip between the cableway dock and cement house by the dredge *Mindi*, and the hydraulic excavation in the north end of the lock chamber by Dredge 85.

In the drafting room plans for alteration of Panama railroad lighters for carrying cement, for refuse flight conveyors, and for burning plant for cement shed, were completed. Studies were made for the connection between the south end of the lock and the dam, and a satisfactory solution has been reached. The re-design of the steel forms for the lock walls was commenced, and at the end of the month the design was 90 per cent completed.

GATUN DAM.

Pile driving, dredging and excavation were continued in the dam operations. The quantity of material placed in the dam is shown in the foregoing table.

PORTO BELLO.

Power Plant Site—The erection of the Laidlaw-Dunn-Gordon air compressor and two receivers was completed, and air was furnished for rock drills. The erection of foun-

output per shovel day was over 13 per cent greater in February, 1909, than in the corresponding month of the previous year.

During the month, 137,367 cubic yards of material excavated from the Cut were transported to the relocation of the Panama railroad between Caimito and Bas Obispo and dumped as filling in the embankment for the new roadbed, the total to date for this purpose being 557,258 cubic yards.

During the month 19,772 cubic yards of rock from Bas Obispo were transported to Gatun, a distance of 23 miles, and dumped in the toe of the dam, making a total to date for this purpose of 281,814 cubic yards.

In building construction work, eight new buildings were completed, three of which were turned over to the Quartermaster's Department, one to the Marine Corps, one to the Division of Meteorology and River Hydraulics, and three were retained for the use of the Central Division. Nine new buildings were worked upon during the month, but were not completed. Three jobs of alterations to buildings were completed, and nine partly completed. Six buildings had rescreening completed, and three were partly rescreened. Four repair jobs, other than rescreening, were completed, and five were partly completed. Eighteen jobs of repairs to screening were completed. Plumbing was installed in three buildings.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

At Pedro Miguel, the storage trestle and dump tracks leading to same were continued, and the filling of the west dam begun over that portion for which the core trench was completed. The excavation for a tail track on the west side of the Canal above the lock site was also continued.

At Miraflores, the excavation for the upper lock and the diversion of the Cocoli River were continued; also the core trench for the West dam. Grading for the power house was continued, and the installation of machinery for laying concrete begun. The 100-ton powder magazine was practically completed. The dredge *Sandpiper* at the lower end of the lock site made slow progress, due to the hard material encountered, but cut through same toward the end of the month.

The construction of tracks leading to Ancon quarry was continued, and the excavation for the crusher foundations begun.

DISTRICT NO. 2—DREDGING, AND LA BOCA SHIPWAYS.

Five dredges were in operation during the month, the output being as follows:

Dredge	Type	Cubic yards.		Remarks.
		In pr'm	Auxiliary	
Culebra	Suction	285,417	.....	Scow measurement
Gopher	Ladder	125,958	.....	Place measurement
Mole...	Ladder	39,669	24,222	Place measurement
No. 14.	Ladder	111,468	.....	Place measurement
Dipper.	Dipper.	84,743	.....	Place measurement
Total	.....	647,255	24,222	

The necessary maintenance of floating equipment was satisfactorily taken care of, and a large amount of other mechanical work was performed at the shops.

Boring along the Canal line was continued and completed, the work accomplished being as follows:

Diamond drilling	.....	181.3 linear feet.
Wash drilling	.....	346.7 linear feet.

Total 428.0 linear feet.

In addition, borings were made along the

axes of the east and west dams at Pedro Miguel, and in the west dam at Miraflores, to verify the depth of rock at certain points below the surface.

The clearing of the Canal line was temporarily abandoned and the men transferred to the work of clearing the diversion along the east side of the Canal from the Cardenas River south. On this work there was cleared and grubbed 417,100 square feet.

Work was begun on the new sand storage wharf at La Boca, this work consisting in setting up the pile driver and manufacturing pile shoes, caps, etc., preliminary to beginning work.

DISTRICT NO. 3—MUNICIPAL AND BUILDING WORK.

The work of this subdivision was satisfactorily performed.

Mechanical Division.

The manufacturing and repair work of this division was satisfactorily performed, as usual.

Relocation of Panama Railroad.

During the month, 85,004 cubic yards of excavation were accomplished on the relocated line, and 281,175 cubic yards of embankment. At the end of the month a total of 886,028 cubic yards of excavation had been accomplished, and 3,563,464 cubic yards of embankment. The work of constructing trestles for filling, bridges and culverts was continued.

The full section heading of Miraflores tunnel has been completed through to the south end. The tunnel has been completed from the south portal for a distance of 130 feet, and arrangements made preparatory to loading the tunnel barrel with Bas Obispo rock.

During the month, 14,984 linear feet of permanent track were laid, making a total at the end of the month of 74,138 linear feet.

The force of laborers during the month averaged 1,487 men.

In addition to the above work on the relocated line, 2,699 linear feet of temporary track were laid in prosecuting the Corozal line revision, with 5,027 cubic yards of excavation and 7,894 cubic yards of embankment.

Quartermaster's Department.

During the month, 181 men were employed on the gold roll, and the separations numbered 227, making the net separations 46. Of the men employed, 46 were employed in the United States, and 135 were employed or re-employed on the Isthmus, or transferred from the Panama Railroad Company.

The Commission's agent in Barbados was instructed to recruit 1,000 West Indian laborers.

Subsistence Department.

During the month, a net profit of \$3,131.61 is shown in the operation of the line hotels, messes, and kitchens. The Hotel Tivoli, during the month, showed a profit of \$4,614.41.

Department of Civil Administration.

COURTS.

The Supreme Court was in session twice during the month. In the circuit courts 12 civil and 26 criminal cases were disposed of, and in the district courts 58 civil and 457 criminal cases were disposed of.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

The total revenues of the Canal Zone in February aggregated \$19,980.51. The general revenues amounted to \$12,363.89.

The postal revenues were \$5,869 on ac-

count of stamp sales, \$3.60 on account of newspaper postage, and \$1,744.02 on account of money order fees. Money order sales during the month amounted to \$416,145.01, of which \$302,414.17 were payable in the United States and foreign countries, and \$113,730.84 in the Canal Zone. Eighty-two dispatches of mail were made to foreign ports by the Cristobal exchange office.

Seventeen vessels entered at and sixteen cleared from the port of Ancon, and nineteen vessels entered at and eighteen cleared from the port of Cristobal during February.

Three estates were settled by the Administrator of Estates during February, six were entered for settlement, and on February 28, there were in the hands of the Administrator sixteen unsettled estates.

DIVISION OF POLICE AND PRISONS.

The number of arrests during February was 472, as compared with 524 in January.

There were 134 prisoners confined in the district jails at the close of the month. Ten convicts began penitentiary sentences during the month, 17 were discharged at the expiration of their sentences, and on February 28, 117 convicts were confined in the penitentiary.

DIVISION OF PUBLIC WORKS.

The usual business of this division was conducted during the month. The amount of water consumed in February in the city of Panama amounted to 26,207,000 gallons, and in the city of Colon 19,814,075 gallons.

DIVISION OF FIRE PROTECTION.

Thirteen fires occurred during the month, 11 involving Commission and railroad property valued at \$50,895. The estimated damage to Commission and railroad property was \$190.

DIVISION OF SCHOOLS.

The total enrollment in the white schools during the month was 694, and the average daily attendance 599. In the colored schools the total enrollment was 1,340, and the average daily attendance 855.

Department of Sanitation.

[The substance of the report of this department was published in THE CANAL RECORD last week.]

Respectfully, H. F. HODGES,

Acting Chairman and Chief Engineer.

Visit of the U. S. S. "Washington."

The U. S. S. *Washington*, Capt. Austin M. Knight, commanding, arrived in Panama Bay about noon Saturday, March 20, from Corinto, Nicaragua. She took coal and supplies aboard on Sunday and Monday, and sailed Tuesday morning for Amapala, Honduras.

Division No. 405, B. of L. E.

A regular meeting of Division No. 405, grand international auxiliary to the Brotherhood of Locomotive Engineers, will be held at Las Cascadas, on Friday, March 26, at 2.30 p. m.

Knights of Columbus.

An important meeting of Panama Council, No. 1371, Knights of Columbus, will be held at Empire in the lodge hall on Sunday, March 28, at 10 a. m. All brothers on the Zone are requested to be present.

Pennsylvanians.

All Canal diggers from the State of Pennsylvania are requested to send their names and State address on a postal card to the Keystone State Club, Cristobal, C. Z.

OFFICIAL CIRCULARS.

Applications of Panamanians for Employment.

CULEBRA, C. Z., March 8, 1909.

CIRCULAR No. 237.

There is quoted below a translation of the latter part of Decree No. 11, promulgated by the President of the Republic of Panama, February 22, 1909, concerning the evidence of citizenship to be submitted by applicants for employment on the gold rolls of the Isthmian Canal Commission, who claim to be citizens of the Republic of Panama:

"ARTICLE 1. Native Panamanians who aspire to be employed in the service of any of the official departments in the Canal Zone, must previously present to this office* their certificate of baptism, or a judiciary acknowledged sworn declaration drawn up on stamped paper of the first class, if such certificate is not available, by which their Panamanian nativity is established. The said certificate of baptism or judiciary declaration, will be exchanged at this office* by a certificate setting forth the identity of the applicant.

"ART. 2. Naturalized Panamanian citizens who desire employment with some of the official departments of the Canal Zone, shall address a petition to this office* in which they must state the date on which they obtained their naturalization papers, and this office* will then issue the corresponding certificate, attesting to the Canal Zone authorities their Panamanian citizenship by adoption.

"ART. 3. The office of the Secretary of Foreign Affairs will keep a record of all certificates issued by it, in which shall be set forth all the details regarding the Panamanian citizens in whose favor they are issued.

"*The office of the Secretary of Foreign Affairs of the Republic of Panama."

No Panamanian will be appointed to a position on the gold rolls until he has presented one of the two forms of certificate provided for in this decree. The certificate should be forwarded to the office of the Chairman, attached to the application for increase of force or change of rating.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Shipment of Heavy Castings.

CULEBRA, C. Z., March 19, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Attention has been called by the Panama Railroad Company to the fact that express shipments of heavy castings and large packages have caused delays in the time of passenger trains. In future shipments of this nature will not be handled on passenger trains, except in cases of absolute necessity. If advance notice is given the Panama Railroad Company will arrange to handle emergency shipments on freight trains without delay. Please issue the necessary instructions to all concerned.

H. F. HODGES, Acting Chairman.

Accountable Officials.

OFFICE OF THE CHIEF QUARTERMASTER, CULEBRA, C. Z., March 19, 1909.

ALL ACCOUNTABLE OFFICIALS:

A list of all accountable officials who are authorized to assume accountability for Isthmian Canal Commission property is herewith enclosed for your information. Receipts of Form Q. M. D. 4, signed by other than accountable officials, except in cases of sales, will not be accepted in support of property returns. By direction of the Acting Chairman.

Respectfully, C. A. DEVOL, Chief Quartermaster.

Officials of the Isthmian Canal Commission who are authorized to assume accountability for public property.

CONSTRUCTION AND ENGINEERING.

- Division Engineer, Atlantic Division.
- Division Engineer, Central Division.
- Division Engineer, Pacific Division.
- Subsistence Officer.
- Assistant Engineer, M. and R. H. (Third Division, Office of Chief Engineer).
- Superintendent of Motive Power and Machinery.
- Electrical Engineer, M. P. and M.
- Master Mechanic, Gorgona shops.
- Master Mechanic, Empire shops.
- Depot Quartermaster, Mount Hope.
- Storekeeper, Empire.
- Storekeeper, Gorgona.
- District Quartermaster, Porto Bello.
- District Quartermaster, Cristobal.
- District Quartermaster, Gatun.
- District Quartermaster, Tabernilla-San Pablo.
- District Quartermaster, Gorgona.
- District Quartermaster, Bas Obispo.
- District Quartermaster, Las Cascadas.

- District Quartermaster, Empire.
- District Quartermaster, Culebra.
- District Quartermaster, Pedro Miguel-Paraiso.
- District Quartermaster, Corozal.
- District Quartermaster, Ancon-La Boca.

CIVIL ADMINISTRATION.

Head of Department of Civil Administration, ZONE SANITATION.

- Chief Sanitary Officer.
- The following officials are authorized to execute the certificate on Form Q. M. D. 5, certifying that material has been applied to the work, but do not assume accountability for property:
- Chairman and Chief Engineer.
- Examiner of Accounts.
- Disbursing Officer.
- General Secretary of clubhouses.
- Secretary to the Isthmian Canal Commission.
- Chief Quartermaster.

Cabin Rates Between New York and Cristobal.

The General Manager of the Panama Railroad Steamship Company announces the following rates on the steamers of the company between New York and Cristobal (Colon), which went into effect May 9, 1908:

S. S. ADVANCE.	
Berths in promenade deck rooms 17, 18, 19, 20, 21, 22, 26, 27.....	\$80.00
All main deck berths and berths in rooms 11 to 16 and 23, 24, 25.....	75.00
S. S. COLON.	
Berths in numbered rooms 21 to 45 midship saloon deck.....	80.00
Berths in numbered rooms 46 to 53 after house saloon deck; berths in numbered rooms 59 to 67 on main deck; berths in rooms 1 to 19 on boat deck.....	75.00
S. S. PANAMA.	
Berths in numbered rooms 20 to 43 and 45 midship saloon deck.....	80.00
Berths in numbered rooms 44 and 46 to 57 after house saloon deck; berths in numbered rooms 58 to 67 on main deck; berths in rooms 1 to 19 on boat deck.....	75.00
S. S. ALLIANCA.	
Berths in suites with privilege of bath.....	90.00
Berths in rooms on saloon deck.....	80.00
Berths aft on main deck.....	75.00

A whole room guaranteed for use of one passenger will be at an additional cost of half rate for each berth.

Stages of the Chagres.

Maximum height of Chagres River above low water for the week ending midnight Saturday, March 20 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. Diver n.
Height of low water above sea-level, feet.....	125	92	46	1	0	0
Maximum height above mean sea-level, feet:						
Sunday, Mar. 14.....	126.0	93.0	47.6	3.0	0.9	0.8
Monday, Mar. 15.....	125.8	92.9	47.6	2.8	0.9	0.8
Tuesday, Mar. 16.....	125.7	92.9	47.3	2.8	1.0	1.0
Wednesday, Mar. 17.....	125.6	92.9	47.3	2.7	1.0	0.9
Thursday, Mar. 18.....	125.8	93.0	47.4	2.7	1.0	1.0
Friday, Mar. 19.....	125.9	93.1	47.7	2.8	1.0	1.0
Saturday, Mar. 20.....	125.7	93.0	47.6	2.9	1.0	1.0

Misdirected Letters.

Division of Posts, Customs and Revenues.

Ancon, C. Z., March 24, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- Abdo, Solomon
- Baughner, Roht.
- Border, Charlie
- Brennemour, W. O.
- Burke, H. S.
- Clader, W. A.
- Collins, Harry
- Crowley, Mr. & Mrs. D. E.
- Cushing, Charles
- Davis, W. G.
- Earle, H. E. (2)
- Everist, A. C.
- Ferguson, Reginald W.
- Francis, Louis
- Fraser, Howard A.
- Gueydan, R. L.
- Hamilton, Miss Pearl
- Jones, J. B.
- Jones, Clark C.
- Kelly, D. J.
- Kerrish, Wm. L.
- King, Mr. and Mrs. Jeff.
- Kop, Georoy (2)
- Logue, Gregg
- Mathews, E. L.
- McHenry, Paul
- Moore, Bismark
- Nation, C. A.
- Pring, Clyde E.
- Reese, John L.
- Rhodes, H. G.
- Rosegrant, J. H.
- Rutler, Major George F.
- Schraeder, I. O.
- Silverton, C. J.
- Stewart, Malcolm
- Toderle, John
- Vreeland, E. H.
- Walker, John A.
- Zimmerman, B. F.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Panama.....	P. R. R. Monday.....	Mar. 22
Advance.....	P. R. R. Saturday.....	Mar. 27
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Mar. 27
Allianca.....	P. R. R. Friday.....	Apr. 2
Magdalena.....	R. M. Saturday.....	Apr. 3
Colon.....	P. R. R. Thursday.....	Apr. 8
Prinz Joachim.....	H. A. Saturday.....	Apr. 10
Panama.....	P. R. R. Wednesday.....	Apr. 14
Orinoco.....	R. M. Saturday.....	Apr. 17
Advance.....	P. R. R. Tuesday.....	Apr. 20
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Apr. 24
Allianca.....	P. R. R. Monday.....	Apr. 26
Atrato.....	R. M. Saturday.....	May 1
Colon.....	P. R. R. Monday.....	May 3
Panama.....	P. R. R. Saturday.....	May 8
Prinz Joachim.....	H. A. Saturday.....	May 8
Advance.....	P. R. R. Friday.....	May 14
Oruba.....	R. M. Saturday.....	May 15

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca.....	P. R. R. Sunday.....	Mar. 21
Magdalena.....	R. M. Tuesday.....	Mar. 23
Colon.....	P. R. R. Saturday.....	Mar. 27
Prinz Joachim.....	H. A. Tuesday.....	Mar. 30
Panama.....	P. R. R. Friday.....	Apr. 2
Orinoco.....	R. M. Tuesday.....	Apr. 6
Advance.....	P. R. R. Thursday.....	Apr. 8
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Apr. 13
Allianca.....	P. R. R. Wednesday.....	Apr. 14
Colon.....	P. R. R. Tuesday.....	Apr. 20
Atrato.....	R. M. Tuesday.....	Apr. 20
Panama.....	P. R. R. Monday.....	Apr. 26
Prinz Joachim.....	H. A. Tuesday.....	Apr. 27
Advance.....	P. R. R. Sunday.....	May 2
Oruba.....	R. M. Tuesday.....	May 4
Allianca.....	P. R. R. Saturday.....	May 8
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	May 11
Colon.....	P. R. R. Friday.....	May 14
Tags.....	R. M. Tuesday.....	May 18
Panama.....	P. R. R. Thursday.....	May 20
Prinz Joachim.....	H. A. Tuesday.....	May 25
Advance.....	P. R. R. Wednesday.....	May 26

COLON TO BARRADOS, CALLING AT TRINIDAD.

Tags.....	R. M. Tuesday.....	Mar. 30
Magdalena.....	R. M. Tuesday.....	Apr. 13
Orinoco.....	R. M. Tuesday.....	Apr. 27
Atrato.....	R. M. Tuesday.....	May 11

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The next sailings of the Leyland Line for New Orleans via Kingston, Ja., will be as follows: Steamship *Tampican* about March 27, and steamship *Cuban* about April 5. The *Tampican* will call at Tampa, Fla., after leaving Kingston.

Rainfall, March 1 to 20, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal.....	.91	1.67
Brazos Brook.....	.69	2.38
Gatun.....	1.23	2.70
Bohio.....	3.24	3.61
<i>Central Division—</i>		
Tabernilla.....	.66	.84
San Pablo.....	.15	.33
Bas Obispo.....	.36	.43
Gamboa.....	.34	.46
Empire.....	.17	.21
Camacho.....	.21	.40
Culebra.....	.14	.15
<i>Pacific Division—</i>		
Rio Grande.....	.15	.18
Pedro Miguel.....	.03	.04
La Boca.....	.01	.01
Ancon.....	T	T
<i>Atlantic Coast—</i>		
Porto Bello, (to 5 p. m. Mar. 20).....	1.12	3.41
Nombre de Dios, (Mar. 1 to 13).....	.28	.67
<i>Upper Chagres</i>		
El Vigia.....	.09	.22
Alhajuela.....	.06	.19

PROPOSALS FOR BUILDING.

Bids are being asked by the Purchasing Agent on the Isthmus for the construction by contract at Culebra, of one type-ten house. Bids will be opened at Mount Hope on April 3, 1909. Plans and specifications can be obtained at the office of the Depot Quartermaster, Mount Hope, upon deposit of \$5 to insure their return.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Work on the Trinidad Watershed.

The survey of the watershed of the Chagres River has been extended to the valley of the Trinidad, where a party is now operating about ten miles from the mouth of the river.

As the lock canal project of the French did not take into consideration the water supply of the Trinidad and Gatuncillo Rivers, since these rivers empty into the Chagres north of Bohio, no records of the run-off of their watersheds were kept by the French. The only gaugings made heretofore were those of the Walker Commission covering a period of a few months only. For about twenty-two months stations have been in operation at Lagartera, about fourteen miles from the mouth of the Trinidad, and at a point on the Gatuncillo about six miles from its mouth.

Diamond drill borings are being made along the Trinidad-Atlantic divide to determine the quality of the material in the ridges.

Sand Dredging at Nombre de Dios.

The sand that is being delivered at the Gatun spillway from the pits at Nombre de Dios is loaded on barges by a clam shell dredge that is not well adapted to the work. No difficulty is experienced, however, in supplying the amount needed at the spillway mixing plant. The dipper dredge is developing the sand deposits at a depth of twenty feet or more, and cannot work to an advantage at a less depth. In the course of two weeks the old French suction dredge which was found on the bank of the Chagres at Chagrecito, and is undergoing repairs at the Cristobal dry dock, will be put in service at Nombre de Dios to assist in stripping the surface clay and silt from the sand. A new dredge with a clam shell bucket erected on each end, built especially for the Nombre de Dios work, will be put in service

sometime in April, and the best sand to be obtained in that locality can then be handled in any quantities that are likely to be required.

New Commissary at Gatun.

Work will begin presently on the new commissary at Gatun. It will be located just north of the new Panama railroad station on the level of the railroad tracks, and therefore about twenty feet below the level of the railway bridge. It will be a two-story building, with an entrance from the level of the railway bridge to the second floor, on which the commissary will be situated. On the first floor will be two storerooms, one for hotel supplies, and the other for commissary supplies. The building will be 107 feet 4 inches long and 30 feet wide. Unlike the other commissaries along the Line the shelves will be on the outside walls, and the office and counters in the center. It will be divided as usual into a side for "gold" employes and one for "silver" employes, but a system of gates will make it possible to contract the size of the "gold" side and enlarge the "silver" side at those times during the day when there is a large influx of "silver" employes. The same force of clerks will wait on both classes of employes. In the center of the roof will be a large skylight and ventilator. A refrigerator, 16 by 20 feet, and an elevator for ice form part of the plan. Back of the commissary will run a spur track, on which the supply cars will be unloaded.

Office and Storehouse at La Boca.

A new office and storehouse for the La Boca section of the Pacific Division is in course of construction at La Boca near the machine shop. The office will be 20 feet by 60 feet, two stories high, with three rooms on each floor. One room will be set apart as the office of the storekeeper, and the remaining five rooms will be used by the resident engineer. The storehouse will be 100 feet by 60 feet and one story high. It is not likely that the old store room, a building erected by the French, will be torn down immediately as the additional storage space afforded by the new building will be needed to place under cover materials now in the yard. The new building will be ready for use in about a month.

Change in Sailings to Taboga.

Effective Thursday April 1, the *Sanidad* will leave from La Boca (dredge landing) at 9 a. m., for Taboga and Palo Seco, on Tuesday, Thursday and Saturday of each week, instead of from Panama at 10 a. m., on these days.

The train for La Boca leaves Panama at 7.55 a. m. from what is known as the "bull pen," two squares from the station at Panama, immediately after the arrival of train No. 3 from Colon. An I. C. C. brake will

be at the station to transfer passengers for Taboga to La Boca, who cannot catch the train or who desire to go by brake.

Returning from Taboga the boat will reach La Boca at 4 30 p. m., connecting with train from La Boca to Panama, which in turn connects with train leaving Panama at 5.35 p. m.

Pile Driving on Naos Breakwater.

The work of driving piles on the Naos Island breakwater trestle at the Pacific entrance has been resumed after about six weeks of enforced idleness, due to lack of piles. It is probable that the building of the breakwater will continue without cessation from this time on.

New Schoolhouse at Gatun.

The new schoolhouse under construction at Gatun is nearing completion. The plans call for a building 88 feet 6 inches by 65 feet 6 inches over all, divided into four rooms each 36 feet 6 inches by 25 feet; the ceiling to be 14 feet above the floor. Separate toilets for boys and girls will be built at opposite ends of the building. The construction will be of the Commission style, with a screened veranda running around the building.

The Dredge "Marmot."

The *Marmot*, an old French ladder dredge of the Belgian type, was launched at La Bocashipways on March 25. Within a month it will be at work in the Pacific entrance to the Canal, doing the excavation work for which it was designed 25 years ago, but never entered upon. It is a composite dredge made of a hull taken from the beach at La Boca opposite the Panama railroad wharf, plates dug out of the mud at San Pablo, and machinery from an old dredge at Gorgona left on the banks of the Chagres by the French. The cost of rebuilding is about \$35,000, and the capacity of the dredge will be about 6,000 cubic yards a day of two 12-hour shifts.

The hull of the dredge had been erected by the French and then anchored at La Boca. Before the machinery was installed work was suspended, and the hull, an iron box 130 feet long, 38 feet wide, and 12 feet deep, was abandoned. Early in the American occupation it was sunk in the old French canal in order to get it out of the way. When the project for dams at La Boca was abandoned the hull was found to be again in the way and it was raised and sunk outside the prism of the Canal, opposite the steamship wharf. It was floated last fall and on November 10 was drawn up onto the shipways. The bottom and a few of the frames were completely rotted away, but the plates above the water line were in good condition.

The frames amidship were renewed, and new plates put on the bottom. A set of bilge plates, unimpaired excepting one

NOTES OF PROGRESS.

(Continued.)

corner, were found in the mud at San Pablo where they had been left by the French. These plates were used, and the corner that was lacking was supplied from an old dredge at Gorgona. The decks were also renewed. The deck machines, including the training engine, are the only new machinery installed.

Three return tubular Scotch marine boilers, taken from one of the old dredges at Gorgona, supplied with new tubes and made equal to new American boilers of the same type, were installed and fitted with burners for using oil as fuel. Two vertical double compound, reciprocating engines, likewise taken from an old French dredge at Gorgona, have been repaired and will be put in. The high pressure cylinders are 320 millimeters in diameter; low pressure, 650 millimeters; revolutions, 57 per minute; stroke, 750 millimeters; and the combined horse-power is 190. The total horse-power of the dredge is 250. The ladder tower was on the hull, but the ladder was taken from an old dredge left by the French at San Pablo. New half-yard buckets recently purchased in the United States will be used.

The dredge is of the type that makes its own flotation, and on this account will be especially useful excavating in the old French canal where the Scotch type of dredges can work only after a sufficient depth of water to float them has been procured.

Concrete Mixers for Gatun Locks.

Six of the eight concrete mixers to be used in the construction of the Gatun locks have been delivered at Gatun. They are of the Chicago cube type and have a capacity of two yards.

Gatun-Mount Hope Road.

A barge of rock quarried and crushed at Porto Bello has been unloaded at Mindi for use in surfacing the road between Mount Hope and Gatun. The road is graded throughout its entire length and the bridges are now in process of construction. Between 15,000 and 18,000 cubic yards of crushed rock will be used in surfacing this road.

Sand and Repair Wharf at La Boca.

The sand and dredge repair wharf authorized for the Pacific Division at La Boca is in progress of construction, and 200 feet out of the 900 feet to be built have been completed. The primary purpose of the wharf is a landing place for sand from Chamé. The sand will be hauled in cars to Miraflores and Pedro Miguel where it will be used in the concrete work of the locks and spillway.

Surgical Wards for Negro Employees.

Wards 7 and 8, the surgical wards for negro employes at Ancon Hospital, are to be torn down and two new buildings will take their places. These wards are in old buildings left by the French, and are in such poor condition that it is more economical to erect new buildings than to make repairs. The new wards will be in the shape of a "T," and although two distinct buildings, will be under one roof. Each building will be two stories high, built on the foundations of the present wards, and will have a capacity of 136 beds. There will be four isolation wards. On each floor of each ward will be a dining room, diet kitchen, surgeon's dressing room and toilet rooms.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

There will be a meeting of the Board of Directors of the Canal Zone Federation of Women's Clubs at the Cristobal clubhouse on Saturday, April 3, at 2 o'clock.

Meetings for effecting a permanent organization in Paraiso and Pedro Miguel have been called for Wednesday and Thursday evening, March 31 and April 1, respectively.

Canal Zone Lodge, No. 699, International Association of Machinists, gave an entertainment in the Y. M. C. A. hall in Cristobal on the night of March 16. Stories, recitations, music, and a moving picture exhibition occupied the early part of the evening, and a dance and refreshments the latter part.

Panama Lodge No. 1, Knights of Pythias, Cristobal, gave a dance at Lincoln House, Colon, on Saturday night, March 27. Over three hundred couples were present. The floor was in the best possible condition and the music furnished by the Panama railroad orchestra under the direction of Mr. Thompson was exceptionally good. A special train took the guests to all points on the line after the dance. The Empire Company of the Uniform Rank were present in a body and the Cristobal Company of Uniform Rank acted as aids. Both companies were in uniform.

Cristobal Court No. 8, Independent Order of Panamanian Kangaroos, has been organized with the following officers: Judge, John K. Gibson; prosecuting attorney, W. G. Young; defendant attorney, J. L. Kerr; chaplain, B. J. Burgoon; comptroller, C. A. Lester; clerk, H. M. McKeever; sheriff, Charles Mohl; inner guard, Freeman Grant; deputy sheriff, Arthur Haglia.

The regular meetings will be held on the first and third Sunday in each month, at 2 p. m., and on the second and fourth Thursday in each month, at 8 p. m., in the I. C. C. lodge hall, Cristobal.

At a meeting at the Hotel Tivoli, on Sunday evening, March 7, a South Carolina Club was organized. About twenty-five of the South Carolinians on the Isthmus are interested, and the club will be glad to know of more. The officers elected to serve until June were as follows: W. E. Russell, president; H. C. Dew, vice-president, and C. T. Lindsay, secretary and treasurer. All "Palmettos" who have been communicated with will shortly receive particulars as to the organization and its object.

All survivors of the wreck of the steamship *Finance*, which was sunk in New York harbor on November 26 (Thanksgiving Day), 1908, who are at present on the Isthmus, are requested to send their names and addresses to Frank Whiteman, Empire, C. Z., with the view of calling an early meeting.

Church Notices.

There will be special Easter services in the Commission chapel, Culebra, on Sunday evening, April 11. Mrs. Adolf Faure of Empire will sing and other music will be furnished by Mr. Gray of Ancon. Arrangements for the uniting of the Episcopal congregations at Culebra and Empire in Easter services have been made. The service at Culebra chapel will be at 7.30 a. m., and at St. Mary's, Empire, at 11 a. m. Special music will be rendered by an augmented choir. There will be a service at Culebra on Palm Sunday, April 4, at 11 a. m.

The weekly meetings of the Woman's Guild in connection with St. Luke's Church, Ancon will be discontinued after Easter and the regular meetings on the first and third Monday of each month will be resumed. The sewing meetings during the past six weeks have been well attended.

PERSONAL.

Among the passengers on the *Advance*, due at Cristobal on April 2, is Lieut.-Col. Geo. W. Goethals, U. S. A., Chairman and Chief Engineer of the Isthmian Canal Commission.

Mrs. H. J. Slifer, Miss Margaret Slifer, and Master James Slifer returned to the Isthmus on the *Panama*, which arrived at Cristobal March 28, 1909.

Mr. Forbes Lindsay, author and journalist, and Mr. F. Willoughby Smith, American consul at Messina, Italy, were among the passengers who arrived at Cristobal on the *Panama* on March 28.

Meetings to be Held.

Cristobal Court No. 8, will hold a regular meeting in Cristobal lodge hall, on Sunday, April 4, at 8 p. m., for business and initiations. All brethren in good standing are fraternally invited to be present.

A regular meeting of Division 756 of the Brotherhood of Locomotive Engineers will be held at Pedro Miguel, Sunday, April 4, at 1.30 p. m.

The regular meeting of Division 405 of the G. I. A. to the B. of L. E., will be held Friday, April 9, at 2.30 p. m., in the lodge room at Las Cascadas.

Charter members and others desiring to become members of Ancon Lodge, Knight of Pythias, are requested to attend an important meeting at the Ancon lodge room on Tuesday, April 6, at 8 p. m., sharp. Election of officers will take place.

Local No. 95, International Association of Steam, Hot Water and Power Pipe Fitters and Helpers, will hold its regular meeting in the room over the I. C. C. Hotel at Gorgona on April 4, at 2 p. m. All members are requested to be present.

L. E. Aldrich died at Ancon Hospital on March 15. He was forty-four years old, a native of New Hampshire, was married, and had been on the Isthmus 8 months, residing at Cristobal.

A concert will be given by the I. C. C. band at the Hotel Tivoli, Ancon, on Sunday night, April 4.

The Las Cascadas Palm Club, a newly organized social club, held its first dance on Saturday evening, March 27.

Commission Clubhouses.

CRIStOBAL.

A class in the study of the Life of Christ has been organized under the leadership of Mr. H. L. Stuntz. Candle pins have been added to the equipment of the bowling alleys.

The following events are scheduled: Saturday, April 3—Moonlight athletic meet on the new cinder track. The men working for the P. R. R. will be pitted against the men working for the I. C. C. Monday, April 5—Concert by the German band. Wednesday, April 14—Concert by I. C. C. band. Monday, April 26—Concert by Mr. Jennings' orchestra.

CULEBRA.

An indoor baseball game was played with Empire Friday night which Culebra won by a score of 27 to 21.

The standing of the local bowling league on March 24, was as follows:

	Won.	Lost.	Per cent.
All Stars.....	6	0	100%
Quartermaster's Dept.....	3	1	.750
Chief Engineer's office.....	5	3	.625
Culebra Cut team.....	3	3	.500
M. & R. H. Division.....	2	4	.333
Miscellaneous teams.....	1	5	.166
Transients.....	0	4	.000.

GORGONA.

A well attended and interesting service was held in the clubhouse under the auspices of the Association on Sunday evening, March 28. The meeting was addressed by Mr. H. L. Stuntz, auditor of the Panama railroad. A vocal solo was rendered by Mrs. G. H. Pierson, and a duet by Mrs. Pierson and Mr. T. S. Booz. Secretary Mitchell presented the matter of bible classes to the men present, with the result that three classes were formed, two for Monday evening and one for Wednesday evening of each week.

There is much activity on the bowling alleys. A local duck-pin tournament is under way, with 30 men contesting. The local pool tournament which has been running for some weeks, closed on Friday night, March 26, with Edward McInerney in first place and L. P. Robitow, second.

THE ISTHMIAN CANAL.

Paper Read by the Chairman and Chief Engineer Before the Manufacturers' Association in Chicago on March 16.

A canal connecting the Atlantic and Pacific oceans has occupied public attention for upwards of four centuries, during which period various routes have been proposed, each having certain special or peculiar advantages. It was not until the nineteenth century, however, that any definite action was taken looking toward its accomplishment.

In 1876 an organization was perfected in France for making surveys and collecting data on which to base the construction of a canal across the Isthmus of Panama, and in 1878 a concession for prosecuting the work was secured from the Colombian Government.

In May, 1879, an international congress was convened under the auspices of Ferdinand de Lesseps, to consider the question of the best location and plan of the canal. This congress, after a two weeks' session, decided in favor of the Panama route and of a sea-level canal without locks. De Lesseps' success with the Suez Canal made him a strong advocate of the sea-level type, and his opinion had considerable influence in the final decision.

Immediately following this action the Panama Canal Company was organized under the general laws of France, with Ferdinand de Lesseps as its president. The concession granted in 1878 by Colombia was purchased by the company, and the stock was successfully floated in December, 1880. The two years following were devoted largely to surveys, examinations, and preliminary work. In the first plan adopted the canal was to be 29.5 feet deep, with a ruling bottom width of 72 feet. Leaving Colon, the canal passed through low ground to the valley of the Chagres River at Gatun, a distance of about 6 miles; thence through this valley, for 21 miles, to Obispo, where, leaving the river, it crossed the continental divide at Culebra by means of a tunnel, and reached the Pacific through the valley of the Rio Grande. The difference in the tides of the two oceans, 9 inches in either direction from the mean in the Atlantic and from 9 to 11 feet from the same datum in the Pacific, was to be overcome and the final currents reduced by a proper sloping of the bottom of the Pacific portion of the canal. No provisions were made for the control of the Chagres River.

In the early eighties after a study of the flow due to the tidal differences a tidal lock near the Pacific was provided. Various schemes were also proposed for the control of the Chagres, the most prominent being the construction of a dam at Gamboa. The dam as proposed afterwards proved to be impracticable, and this problem remained, for the time being, unsolved. The tunnel through the divide was also abandoned in favor of an open cut.

Work was prosecuted on the sea level canal until 1887, when a change to the lock type was made, in order to secure the use of the canal for navigation as soon as possible. It was agreed at that time that the change in plan did not contemplate abandonment of the sea-level canal, which was ultimately to be secured, but merely its postponement for the time being. In this new plan the summit level was placed above the flood line of the Chagres River, to be supplied with water from that stream by pumps. Work was pushed forward until 1889, when the company went into bankruptcy; and on February 4 of that year a liquidator was appointed to take charge of its affairs. Work was suspended on May 15, 1889. The New Panama Canal Company was organized in October, 1894, when work

was again resumed, on the plan recommended by a commission of engineers.

This plan contemplated a sea-level canal from Limon Bay to Bohio, where a dam across the valley created a lake extending to Bas Obispo, the difference in level being overcome by two locks; the summit level extended from Bas Obispo to Paraiso, reached by two more locks, and was supplied with water by a feeder from an artificial reservoir created by a dam at Alhajucla, in the upper Chagres Valley. Four locks were located on the Pacific side, the two middle ones at Pedro Miguel combined in a flight.

A second or alternative plan was proposed at the same time, by which the summit level was to be a lake formed by the Bohio dam, fed directly by the Chagres. Work was continued on this plan until the rights and property of the new company were purchased by the United States.

The United States, not unmindful of the advantages of an Isthmian canal, had from time to time made investigations and surveys of the various routes. With a view to government ownership and control Congress directed an investigation of the Nicaraguan canal for which a concession had been granted to a private company. The resulting report brought about such a discussion of the advantages of the Panama route to the Nicaraguan route, that by an act of Congress, approved March 3, 1899, a commission was appointed to—

make full and complete investigation of the Isthmus of Panama, with a view to the construction of a canal * * * to connect the Atlantic and Pacific oceans * * * and particularly to investigate the two routes known respectively as the Nicaragua route and the Panama route, with a view to determining the most practicable and feasible route for such canal, together with the approximate and probable cost of constructing a canal at each of the two or more of said routes.

The Commission reported on November 16, 1901, in favor of Panama, and recommended the lock type of canal. The plan consisted of a sea-level section from Colon to Bohio, where a dam across the Chagres Valley created a summit level 82 to 90 feet above the sea, reached by two locks. The lake or summit level extended from Bohio to Pedro Miguel, where two locks connected it with a pool 28 feet above mean tide, extending to Miraflores, the location of the final lock. The ruling bottom width of the canal prism was fixed at 150 feet, increased at the curves and in the submerged channels. In Panama Bay the width was fixed at 200 feet, and in the artificial channel in Limon Bay 500 feet was adopted, with turning places 800 feet wide. The minimum depth was 35 feet, and the locks were to have usable lengths of 740 feet and widths of 84 feet. The Commission assessed the value of the rights, franchises, concessions, lands, unfinished work, plans, and other property, including the railroad of the New Panama Canal Company, at \$40,000,000.

By act of Congress, approved June 28, 1902, the President of the United States was authorized to acquire, at a cost not exceeding \$40,000,000, the property rights of the New Panama Canal Company on the Isthmus of Panama, and also to secure from the Republic of Colombia perpetual control of a strip of land not less than six miles wide, extending from the Caribbean Sea to the Pacific Ocean, and—

the right * * * to excavate, construct, and to perpetually maintain, operate, and protect thereon a canal of such depth and capacity as will afford convenient passage of ships of the greatest tonnage and draft now in use.

In event the provisions for the purchase, and for securing the necessary concession from Colombia could not be carried out, the President was authorized to secure the rights necessary for the construction of the Nicaraguan canal.

The law also provided, after the foregoing arrangements had been perfected, that— the President shall then, through the Isthmian Canal

Commission * * * cause to be excavated, constructed, and completed a canal from the Caribbean Sea to the Pacific Ocean. Such canal shall be of sufficient capacity and depth as shall afford convenient passage for vessels of the largest tonnage and greatest draft now in use, and such as may be reasonably anticipated.

To enable the President to carry out these provisions certain sums were appropriated and a bond issue, not to exceed \$130,000,000, was authorized. By this act Congress, in accepting the estimates accompanying the report of the Commission of 1901, adopted the type proposed by the Board, or a lock canal.

Pursuant to the legislation, negotiations were entered into with Colombia and with the New Panama Canal Company, with the end that a Treaty was made with the Republic of Panama granting to the United States control of a 10-mile strip, constituting the Canal Zone, with the right to construct, maintain, and operate a canal. This Treaty was ratified by the Republic of Panama on December 2, 1903, and by the United States on February 23, 1904.

The formal transfer of the property of the New Panama Canal Company on the Isthmus was made on May 4, 1904, after which the United States began the organization of a force for the construction of the lock type of canal, in the meantime continuing the excavation by utilizing the French material and equipment and such labor as was procurable on the Isthmus.

The question of a sea-level canal was again agitated, and secured such recognition that the President convened an international board of engineers, consisting of 13 members to assemble at Washington on the 1st day of September, 1905, for the purpose of considering the various plans for the construction of the canal that would be submitted to it.

The plans submitted may be briefly summarized as—

(1) That of the Commission of 1901, which has already been explained.

(2) A lock canal with terminal lakes proposed by Mr. Lindon W. Bates, and for which three projects were proposed. The one which he appeared to favor contemplated a summit level of 62 feet above the sea, created by a dam at Bohio, and an intermediate level of 33½ feet above mean tide, effected by a dam at Mindi. This plan provided four locks—at Mindi, Bohio, Pedro Miguel, and Sosa. A variant of the plan contemplated a dam at Gatun instead of at Bohio, showing that, at least for a 30-foot head, the Gatun location was not considered by him as unfavorable or offering any difficulties respecting the foundations. His other plans were modifications of this, the summit levels being 27 or 62 feet, but in each instance the lock type was advocated.

(3) The plan proposed by Mr. Bunau-Varilla, carried out the idea of the first French company, namely, the construction of a lock canal with a summit level 130 feet above mean tide, to be ultimately converted into a sea-level canal, or what he calls the Straits of Panama. The locks were to be constructed so that as the levels were deepened by dredges they could be eliminated, navigation continuing during the enlargement and transformation. The material removed by the dredges was to be deposited in the lake formed of the upper Chagres River by a dam at Gamboa, and any suitable locations in the various pools between the locks. In commenting on this plan the Board of Consulting Engineers concluded that—

After a full and careful consideration of all the features of Mr. Bunau-Varilla's plan, the Board is of the opinion that it should not be adopted for the Panama Canal for the following reasons:

1. The construction of the large locks required under the present law and necessary for the accommodation of the traffic seeking the canal after its completion makes it quite impossible to complete the

preliminary lock canal even nearly within the period stated.

2. The excessive cost of transformation added to the loss of costly locks and other appurtenant structures required by the preliminary lock canal.

3. If the lock canal is likely to be retained for many years; it should be made for the most efficient service, and not be encumbered with modifications in lock construction which would prove inconvenient in use.

(4) A plan proposed by Maj. Cassius E. Gillette, a lock canal with a summit level 100 feet above mean tide by the construction of a dam across the Chagres Valley at Gatun.

No sea-level plan was submitted for consideration, so that the board outlined a general plan of its own, and for purposes of comparison adopted as the lock type a 60-foot summit level canal. Two levels were used, the summit level was carried by an earth dam at Bohio, and the intermediate level by an earth dam at Gatun, each dam sustaining a head of 30 feet. It is to be noted that no difficulties were anticipated in the construction of these dams, and there was no dread or fear of the foundations.

As the result of its deliberations, the board submitted a majority report and a minority report signed by five of its members, the former advocating a sea-level canal and the latter a lock canal, with the summit level 85 feet above mean tide.

The Isthmian Canal Commission, with one dissenting voice, recommended to the President the adoption of the lock type recommended by the minority, which was also strongly advocated by the then chief engineer, Mr. John F. Stevens. The President, in the message to Congress dated February 19, 1906, stated:

The law now on our statute books seems to contemplate a lock canal. In my judgment a lock canal, as herein recommended, is advisable. If the Congress directs that a sea-level canal be constructed its direction will, of course, be carried out; otherwise the canal will be built on substantially the plan for a lock canal outlined in the accompanying papers, such changes being made, of course, as may be found actually necessary, including possibly the change recommended by the Secretary of War as to the site of the dam on the Pacific side.

On June 29, 1906, Congress provided that a lock type of canal be constructed across the Isthmus of Panama, of the general type proposed by the minority of the Board of Consulting Engineers, and work was continued along these lines. As originally proposed, the plan consisted of a practically straight channel 500 feet wide, 41 feet deep from deep water in the Caribbean to Gatun, where an ascent to the 85-foot level was made by three locks in flight. The level is maintained by a dam approximately 7,700 feet long, one-half mile wide at the base, 100 feet wide at the top, constructed to 135 feet above mean tide. The lake formed by this dam, 171 square miles in extent, carried navigation to Pedro Miguel where a lock of 30 feet lift carried the vessel down to a lake 55 feet above mean tide, extending to Sosa Hill, where two locks overcame the difference of level between the lake surface and the Pacific. Nineteen and eight-hundredths miles of the distance from Gatun to Sosa Hill had a channel 1,000 feet at the bottom, a minimum channel for $4\frac{1}{2}$ miles through Culebra of 200 feet at the bottom. The balance of the distance varied in width to 800 feet, the larger portion of the entire canal being not less than 500 feet. The depth of water was fixed at 45 feet. The lake assured a perfect control of the Chagres River.

Certain changes have been made in the original project, the most important being the withdrawal of the locks from Sosa to Miraflores, which was recommended and adopted in December, 1907. This resulted in a change in the direction of the channel in Panama Bay. A breakwater is being constructed from Sosa to Naos Island which, by cutting off the silt-bearing cross current, which has always been troublesome, protects the channel against silting.

A second change is the widening of the

$4\frac{1}{2}$ miles of Culebra Cut to a width of 300 feet at the bottom. This was done by executive order and was not made on the recommendation of the Commission.

A third change is the location of the breakwaters in Colon harbor. The necessity for these breakwaters was made apparent in the latter part of January, when a storm of some magnitude seriously interfered with shipping. As originally proposed for both the sea-level and lock types, the breakwaters were parallel to the axis of the channel excavated in Limon Bay. If so constructed, sufficient area would not be given to dissipate the waves entering head on into the channel, and they would not afford much, if any, protection to shipping. These breakwaters are to be built out from Manzanillo Island and Toro Point, so as to give a sheltered anchorage, and also an opportunity for such expansion to the waves as to break them up.

A fourth change is in the dimensions of the locks. As proposed by the minority they were 900 feet by 95 feet, usable lengths and widths. These dimensions were subsequently changed by the Commission at the instigation of the President to dimensions 100 feet wide and 1,000 feet long. The width was again increased to 110 feet on the recommendation of the General Board of the Navy, so as to accommodate any possible increase in beam of future battleships.

The Gatun dam is to consist of two piles of rock 1,200 feet apart and carried up to 60 feet above mean tide. The space between them and up to the required height is to be filled by selected material deposited in place by the hydraulic process. During the construction of the north side of the south rock pile a slip occurred in November last at the crossing of the French Canal. This was the fifth slip that occurred at this point, the rock settling to some extent, but generally slipping sidewise until the angle of repose was reached. In this connection it is to be noted that the silt deposits in the channel had not been removed. This slip would probably have passed unnoticed, as did the former ones, but for the fact that at the time a flood in the Chagres River had attained such proportions as to cover a portion of the Panama railroad tracks just south of Gatun. A newspaper correspondent, going from Colon to Panama, saw his opportunity for a sensational story, and attributed the flood to the dropping of the Gatun Dam into the subterranean lake under the dam and locks, which another faker had previously discovered, and the news of the destruction of the Gatun Dam was cabled to the States.

The slip did not affect the south slope or side of the rock pile. It was entirely local and did not in any way interfere with the work. It would not have occurred had steps been taken during construction to give the proper slope to the rock pile, but economy of time and money did not warrant such precaution. As stated by one of the engineering publications, "We can state from actual personal examination that this incident has absolutely no engineering significance."

As a result, however, the public is told that dire disaster will follow the undertaking unless the present plans are abandoned and the Straits of Panama constructed, that is, a sea-level canal across the Isthmus 500 to 600 feet wide. To accomplish this, however, a lock canal must be built first, and subsequently widened and deepened until the ideal is reached. There is no data available for such a canal. With mountains instead of hills to be removed estimates are, of course, impossible; so the most optimistic figures, suitable alone to the ideal, are offered as a bait. In any event it is also

claimed that Bohio should have been selected for the site of the dam in lieu of Gatun.

As between Gatun and Bohio, at both places the distance from the natural surface to the rock is so great that any attempt to found the dam on the last-named material will be attended by enormous expense. At Bohio the gorge in its lower strata is filled with water-bearing gravel and to make the dam safe the underflow through these strata would have to be cut off by some means extending down 165 feet. No such strata exist at Gatun, so, for this reason alone, leaving out of consideration the advantages in the control of the Chagres River and to navigation by reason of the greater extent of lake, Gatun offers the better site.

Both the majority and minority of the Board of Consulting Engineers considered Gatun a suitable location for a dam; the former adopted it for the typical lock canal used for comparison with the sea-level canal, the latter for the 85-foot summit-level canal. The majority, however, feared the existence of an underground flow in case of the higher dam, but investigations have failed to disclose any. The great mass of underlying material is not sandy and gravelly deposits as was supposed, but a mixture of these materials so firmly cemented together with clay as to make the strata in which they occur impervious to water.

I venture the statement, without fear of contradiction, that the site of no public or private work of any kind has received such a thorough and exhaustive examination and investigation as the foundation of the dam and locks at Gatun. There is no longer a doubt concerning any of the underlying strata; neither the impermeability, nor the ability of the foundations to bear the loads that will be brought upon them, can be questioned if the data be carefully and impartially examined. The investigations fail to disclose any water-bearing strata or the existence of that underground stream with a discharge equal to the Chagres River itself, which was recently asserted as a fact on the floor of the Senate.

In this connection the statement is also made that the change in the location of the locks at the Pacific end was due to our demonstrated inability to construct the dams, and that as the foundation at Gatun is of the same material, it necessarily followed that the Gatun Dam is also impossible of accomplishment.

The majority of the Board of Consulting Engineers in its report states that—

The dam at La Boca, between San Juan Point and the Sosa Hill, unless carried down to bed rock at that location, would be placed upon a far worse foundation than that proposed at Gatun or Mindi. The La Boca site is one covered by an ooze of mud or silt, with some sandy material overlying the rock. * * * Unless some feature equivalent to that of a heavy masonry core characterized the design of the dam at this point or unless a resort be made to dredging down to bed rock or near to it, and refilling with suitable material, or an earth dam at this location be made very massive, it would be in grave danger of being pushed bodily out of place by the pressure due to the head of water in the reservoir.

We found the material in the foundations of these dams not only worse than at Gatun, but in nowise comparable. In the former a covering of ooze and silt, in the latter firm ground with a few soft or marshy spots.

I know that the La Boca dams could be built to safely withstand the heads of water in the resulting lake by adopting either the method of dredging out the ooze or by giving massive dimensions to the superimposed structure. The engineering committee and the majority of the Commission preferred the former method. In either case the cost would exceed the original estimates, and in addition it is a military blunder to push the locks to and beyond the proper line of defense, especially when the canal is a military necessity to this country. That the dams could be built is evidenced by the

fact that the west toe of the Sosa-Corozal dam was carried across the valley on the ooze as an embankment for a railroad to be utilized in transporting stone for the Pacific locks. The charge, therefore, that the dams could not be constructed is not true, and the analogy at Gatun does not follow. Nor is there any truth in the statement that the military necessity was an afterthought as has been insinuated.

I visited the Isthmus in 1905 with a committee of the Board of National Coast Defenses, with which I was associated at that time, for a study of the defenses of the canal. When the location of the locks at the Pacific end was fixed, I was directed to call the Secretary of War's attention to the military necessity of withdrawing the locks to the interior. This I did, with the result that in forwarding the report of the Board of Consulting Engineers to the President he calls attention to the fact as follows:

The great objection to the locks at Sosa Hill is the possibility of their destruction by the fire from an enemy's ship. If, as has been suggested to me by officers of this department entitled to speak with authority on military subjects, these locks may be located against and behind Sosa Hill in such a way as to use the hill as a protection against such fire, then economy would lead to the retention of this lake. * * * If, however, Sosa Hill will not afford a site with such protection, then it seems to me wiser to place the locks at Miraflores.

In forwarding the report to Congress, the President calls attention to the change recommended by the Secretary of War in the location of the locks on the Pacific side. The so-called afterthought appears, therefore, as a conclusion reached long before I had any connection with the work.

Discredit is also thrown on the Gatun Dam because there has been a desire to reduce the height from 135 to 105 feet. The original height was arbitrarily fixed to secure an excess of weight, so as to fully compress the underlying material supposed to be largely silt deposited by the river. Subsequent investigations show that the supposed compressibility does not exist; that a marine, not a river deposit is encountered. The greater the height of the dam the greater the difficulty of constructing the upper portion, and the greater the cost, both in time and money. From present available data, if the lake should take the total discharge of the Chagres River, the water surface would not exceed 90 feet, the top of the locks, 92 feet above sea-level, would permit escape of the water long before it could reach the crest of the dam. Why then go to the expense of the extra height of the dam, and what is to be gained thereby? Assuming the crest of the dam as 100 feet wide, uniform slopes from the rock piles would give a height of 105 feet, and this height was suggested. Because as an additional reason it was mentioned that the pressure over the base would be more uniformly distributed by a dam with the cross section proposed, the opponents of the present project, without ascertaining the facts, point to the change as a desire to secure a uniform base pressure, and used it as an argument against the stability of the foundation.

Much also has been made of the fact that in the testimony before one of the Congressional committees mention was made of securing the stability of the superstructure by balancing the dam on the underlying material. Naturally the testimony is read and discussed in such a way as to leave the impression that the entire dam is to be so constructed. The ground to be covered by the dam is crossed by three water courses, the Chagres River, the French Canal, and the West Diversion, and between these streams the ground is undulating, Spillway Hill reaching a height of 110 feet above sea-level: It is not remarkable or unprecedented that there should be depressions which undrained become soft with the excessive rainfall. Ex-

cept for these the ground is firm. It is in the crossing of these soft spots that slips have occurred and are liable to occur, and to which the balancing method referred. They are relatively small in extent and when drained or filled cause no trouble, as experience at the La Boca embankment clearly proves.

As previously stated, the Gatun Dam satisfactorily solves the problem of the control of the Chagres, and there should be no doubt in the mind of any one who impartially examines the data that the solution is not only feasible, but absolutely safe. As there has never been any question raised as to the safety and stability of the dams at Pedro Miguel and Miraflores, with the Gatun Dam accepted, other things being equal, the relative merits of the lock versus sea-level canal must rest upon the ease and safety of navigation offered by the two types.

In the sea-level type offered in lieu of the lock type already described, the Chagres River is controlled by a masonry dam across the valley at Gamboa 4,500 feet long, 750 feet of which is subject to a pressure due to a head of 170 feet during the extreme flood stages of the river. Proper sluice gates are proposed for discharging the river into the canal. The difference in tides is overcome by means of a lock on the Pacific side in the vicinity of Sosa Hill. While provisions are made for damming or diverting some of the streams that would otherwise enter the Canal prism, not less than 22 flow directly into the Canal, with no provision to control the currents or check the deposits of material carried by them during flood stages.

The prism of the Canal is to have a bottom width of 150 feet through the earth sections, or for nearly one-half its length, and a 200-foot bottom width through the rock sections. Nineteen miles of the length are made of curves so that the proposed sea-level canal is not a wide, straight, and open channel, connecting the two oceans, but a narrow, tortuous ditch, with varying currents of unknown strength, impeded by a lock, and threatened by a dam resisting a pressure due to a head twice as great as that at Gatun.

To be sure, the partisans of the sea-level type are now proposing to eliminate both the Gamboa dam and the tidal lock by making the channel so wide as to reduce the currents that result from the discharge of the Chagres and the difference in tides, but fail to explain how they propose to control or divert the Chagres, the bed of which will be 50 feet above the water surface of the Canal at the juncture. As data is not available for preparing accurate estimates for even such a sea level type as was originally offered, neither they nor any one else can offer any figures as to time and cost for the construction of such a canal as they now advocate.

In any comparison, therefore, we must confine our attention to the lock type as now building, and a sea-level canal as offered by the Board of Engineers, and not by the idealist.

So far as the two prisms are concerned, for ease and safety of navigation the lock type is better because of the greater widths of channels, fewer and easier curves, and freedom from objectionable and troublesome currents, both from the Chagres and its tributaries. This must be admitted by all, but the exponents of the sea-level type concentrate their attention on the obstructions and dangers that the locks constitute in the lock type, and also on the dangers that will result from the failure of the Gatun Dam, forgetting that at least equally great disaster must follow the failure of the Gamboa dam. The lock in the sea-level canal is not mentioned, probably because the danger is not so great, since there is but one.

Experience shows that the risks to ships in narrow waterways are material and im-

portant. In such a channel as the original Suez Canal delays and losses to commerce were great, and the danger to ships considerable; although the benefit of the widening is striking, this is true even now.

It is well known that the narrow channels connecting the Great Lakes have been obstructed repeatedly by vessels aground or wrecked in such a manner as to block traffic. Even in the entrances to our seaports there is a frequency of accidents, which illustrate the difficulties encountered in navigating narrow and tortuous channels.

Accidents in locks have been relatively few, and none of a serious nature have occurred at the St. Marys Falls Canal during fifty-four years of its use. The risks to ships in such a narrow waterway, as proposed for the sea-level canal at Panama, far outweigh all hazards in the proposed lock canal, PROVIDED the latter is built so as to minimize the chance of accident at the locks. This is met by providing every possible safety device, by building the locks in duplicate and by the installation of a system by which the vessels will be controlled by powerful electric machinery on the lock walls, thus avoiding mistakes on the part of the vessels' crew or engine-room staff, which once led to an accident at the Manchester Ship Canal.

Again, it is objected that the size of the locks limits the Canal to vessels which can use them. This is true. The present lock designs provide intermediate gates dividing the locks into lengths of 600 and 400 feet. About 98 per cent of all the ships, including the largest battleships now building, can be passed through the 600-foot lengths, and the total lock length will accommodate the largest commercial vessels now building, which, I believe, are 1,000 feet long and 88-foot beam.

It is true that ships may increase in size so as to make the present locks obsolete, but the largest ships now afloat cannot navigate the present Suez Canal, nor the proposed sea-level canal at Panama. It must also be remembered that the commerce of the world is carried by the medium sized vessels, the length of only one of the many ships using the Suez Canal being greater than 600 feet.

The General Board of the Navy is on record that 110 foot width will be ample for the future needs of the Navy, and naval construction of the future will be limited not alone by the locks of the Panama Canal, but also by the available dry docks. Ships that cannot use locks 1,000 feet by 110 feet cannot use a 150-foot sea-level canal, nor can this be so easily and economically increased and maintained as is made to appear by its advocates.

Increasing the width of Culebra Cut, as recently ordered, from 200 to 300 feet, is advanced as an argument to show that the locks are too narrow. Ships do not navigate the locks in the sense that they do the Canal prism, and the wider the channel the easier will be navigation. On account of slides that developed in Culebra Cut considerably more additional work was made necessary in the upper reaches of the divide than was contemplated, and the advantages of the increased width to navigation were so great, compared with the relative amount of material to be removed in order to secure it, that the President ordered it. By this action the width of the locks is in no wise called into question.

The water supply for lockages was so exhaustively treated by the minority of the Board that it has not been called into question by any one who had carefully considered the report and data submitted therewith. Recently, however, the theory has been advanced that the water of the lake may seep through the adjacent hills or through the

bottom, and is significantly referred to as a mooted question. This possibility is emphasized by the seamy quality of the rock when exposed. The French plans, with Bohio Lake, were the result of careful and protracted study and investigation, and nothing of the kind was anticipated. The Commission of 1901 was not in doubt of the resisting power of the hill covering such a flow. The report of the geologist on the general formation of the country does not lead to any such dread or fear. The reservoirs, constructed in the hills of the same geological formation as the entire lake area, are not affected by any such leakage or seepage. At Black Swamp, an extensive area between Bohio and Gatun, the water stands above the level of the Chagres—which is within half a mile—and also above sea level the level of the water remains unchanged, clearly indicating no such leakage.

Toward the close of the last dry season certain measurements of the Chagres at Bohio indicated a less discharge there than at Gamboa; this was subsequently exploded by other observations which showed that the first ones were in error. Notwithstanding this, and in spite of the many evidences of tightness of the earth covering, the possibility of a flow through the hills was advanced and was seized upon as another argument against the lock type.

The Board of Consulting Engineers estimated the cost of the lock type of canal at \$139,705,200, and of the sea-level canal at \$247,021,000, excluding the cost of sanitation, civil government, the purchase price, and interest on the investment. These sums were for construction purposes only.

I ventured a guess that the construction of the lock type of canal would approach \$300,000,000, and without stopping to consider that the same causes which led to an increase in cost over the original estimates for the lock canal must affect equally the sea level type, the advocates of the latter argued that the excess of the new estimates was an additional reason why the lock type should be abandoned in favor of the sea-level canal.

The estimated cost by the present commission for completing the adopted project, excluding the items left out by the Board of Consulting Engineers, is placed at \$297,766,000. If to this be added the estimated cost of sanitation and civil government until the completion of the work, and the \$50,000,000 purchase price, the total cost to the United States of the lock type of canal will amount to \$375,201,000. In the preparation of these estimates there are no unknown factors.

The estimated cost of the sea-level canal for construction alone sums up to \$477,601,000, and if to this be added the cost of sanitation and civil government up to the time of the completion of the Canal, which will be at least six years later than the lock canal, and the purchase price, the total cost to the United States will aggregate \$563,000,000. In this case, however, parts of the estimate are more or less conjectural—such as the cost of diverting the Chagres to permit the building of the Gamboa dam and the cost of constructing the dam itself. Much has been said of the disadvantage of the seamy rock in connection with some experiments made at Spillway Hill test pit and of the so-called "indurated clay," yet these same disadvantages apply to the foundation at Gamboa and the same class of material must be dealt with. The cost of constructing and maintaining a channel through the swamps of the lower Chagres is an unknown factor, and no schemes have been developed for controlling the various streams that are encountered and that must be reckoned with along the route of the canal. So that the

sea-level estimates have not the accuracy of those for the lock type.

The majority of the Board of Consulting Engineers estimated that from ten to thirteen years would be required for the completion of the sea-level canal. The Isthmian Canal Commission and the then Chief Engineer fixed the time from eighteen to twenty years. It will take at least six years to complete the dam at Gamboa, and until the control of the Chagres River is assured, little if any excavation can be carried lower than 40 to 50 feet above sea level, so that in the absence of anything more definite the time needed to construct the Gamboa dam is assumed as the additional period needed for completing the sea-level type.

Much criticism has resulted because of the excess of the present estimates over those originally proposed, arising largely from a failure to analyze the two estimates, or to appreciate fully the actual conditions.

The estimates prepared and accompanying the report of the Consulting Engineers were based on data less complete than are available at present. The unit costs in the report of 1906 are identical with those in the report of 1901, and since 1906 there has been an increase in the wage scale and in the cost of material. On the Isthmus wages exceed those in the United States from 40 to 80 per cent for the same class of labor. The original estimates were based on a ten-hour day, but Congress imposed the eight-hour day. Subsequent surveys and the various changes already noted have increased the quantity of work by 50 per cent, whereas the unit costs have increased only 20 per cent—not such a bad showing. In addition, municipal improvements in Panama and Colon, advances to the Panama railroad and moneys received and deposited to the credit of miscellaneous receipts aggregate \$15,000,000, which amount will eventually and has in part already been returned to the Treasury. Finally, no such system of housing and caring for employes was ever contemplated as has been introduced and installed, materially increasing the overhead charges and administration.

Much stress has been laid upon the fact that recent improvements in machinery have so modified conditions that the excavation can be done more economically by special devices in conjunction with dredging than is possible with the methods now adopted. The machines referred to are for shattering rock under water, and though it is claimed that such devices have given satisfactory results in connection with the Manchester Ship Canal, it is known that similar appliances have failed in certain localities in the United States where they were tried. The variations in the character of the rock on the Isthmus from soft argillaceous sandstone to hard trap are such as to make the use of such devices very problematical. Experience generally has shown that more money can be wasted on subaqueous rock excavation than in the removal of such material in the dry. Experiments are now being made on the Isthmus with one of these rock crushing devices, but thus far the results are not promising.

Much has been written recently concerning the probable effect of earthquakes. The last earthquake of any importance occurred in the seventeenth century, and existing ruins in Panama demonstrate clearly that no shock of any violence could have occurred during the eighteenth or nineteenth centuries. Should an earthquake visit the Isthmus, the chances are that the effect upon the Gatun Dam would be less disastrous than upon the Gamboa dam. The solid concrete construction of the locks, strengthened by reinforcements, will be as proof against any earth shocks as any structure which man builds

anywhere, and the sea-level canal has as much to fear as the lock canal.

The vulnerability of the lock canal in time of war is another argument advanced in favor of the sea-level type, but has little weight, as the sea-level type is equally vulnerable from attacks by land or air in its Gamboa dam as are tidal locks and the various devices for controlling the streams along the route.

The idea of the sea-level canal appeals to the popular mind, which pictures an open ditch, offering free and unobstructed navigation from sea to sea, but no such substitute is offered for the present lock canal. As between the sea-level and the lock canal, the latter can be constructed in less time, at less cost, will give easier and safer navigation and in addition secure such a control of the Chagres River as to make a friend and aid of what remains an enemy and menace in the sea-level type.

In this connection attention is invited to the statement made by Mr. Taft, when Secretary of War, in his letter transmitting the reports of the Board of Consulting Engineers:

We may well concede that if we could have a sea-level canal with a prism of 300 to 400 feet wide, with the curves that must now exist reduced, it would be preferable to the plan of the minority, but the time and cost of constructing such a canal are in effect prohibitive.

We are justly proud of the organization for the prosecution of the work. The force originally organized by Mr. John F. Stevens for the attack upon the continental divide has been modified and enlarged as the necessities of the situation required, until at the present time it approaches the perfection of a huge machine, and all are working together to a common end. The manner in which the work is being done and the spirit of enthusiasm that is manifested by all forcibly strikes every one who visits the works.

The main object of our being there is the construction of the canal; everything else is subordinate to it, and the work of every department is directed to the accomplishment of that object.

In addition to the Department of Construction and Engineering, there are the Departments of Sanitation and Civil Administration, the Quartermaster's and Subsistence Departments, the purchasing department organized in the United States, the legal department, and the Departments of Examination of Accounts and Disbursements. Subordinated to, but acting in conjunction with, the Commission is the Panama railroad.

Too much credit cannot be given to the Department of Sanitation, which, in conjunction with the division of municipal engineering, has wrought such a change in the conditions as they existed in 1904 as to make the construction of the Canal possible. This department is subdivided into the health department, which has charge of the hospitals, supervision of health matters in Panama and Colon, and of the quarantine, and into the sanitary inspection department, which looks after the destruction of the mosquito by various methods, by grass and brush cutting, the draining of various swampy areas, and the oiling of unavoidable pools and stagnant streams.

According to the statistics of the health department, based on the death rate, the Canal Zone is one of the healthiest communities in the world, but in this connection it must be remembered that our population consists of men and women in the prime of life, with few if any of the aged, and that a number of the sick are returned to the United States before death overtakes them. To the Sanitary Department are also assigned 11 chaplains employed by the Commission to attend the sick, as well as to look after the spiritual welfare of the employes. At most of the villages there is a combined church and lodge house so constructed that

the lower floor is used for divine service, while the upper part provides places for meetings of the various lodges. The assignment of time to ministers and to lodges is made by the Quartermaster's Department.

The Department of Civil Administration exercises supervision over the courts, which consist of three circuit and five district judges; the three former, sitting *in banc*, constitute the Supreme Court. The district courts take cognizance of all cases where the fine does not exceed \$100, or imprisonment does not exceed thirty days. Jury trials are restricted to crimes involving the death penalty or life imprisonment—in short summary justice rules, and so long as the Zone is nothing more nor less than a construction camp this form of law or justice will continue to be the most satisfactory.

The Department of Civil Administration has charge also of the police force, the post-offices, collection of customs and taxes, the issue of licenses, and the public-school system. The schools are improved to such an extent that the children of the employes have very nearly the same advantages as in the United States up to and including the high-school courses.

The Quartermaster's Department has charge of the recruiting of labor, the care, repair, and maintenance of quarters, the collection and disposal of garbage and refuse, the issue of furniture, and the delivery of distilled water and commissary supplies to the houses of employes, and is to have charge of the construction of all new buildings. Operating in conjunction with the purchasing department in the States, the Quartermaster's Department secures all supplies needed for construction and other purposes and makes purchases of materials on the Isthmus when required.

The common-labor force of the Commission and the Panama railroad aggregates in the neighborhood of 25,000 men, and consists of about 6,000 Spaniards, with a few Italians, the remainder being from the West Indies.

The Spaniard is the best laborer, as he possesses more strength and endurance. Under some conditions this is not true, the foreigner strenuously objecting to doing work that requires him to stand in water.

All the skilled labor, the clerical force, and the higher officials are Americans and are recruited through the Washington office.

This department also has charge of all the property records, receives semiannual returns of property from all those to whom property has been issued, and checks the returns and inventories of the storehouses, made at certain times, with the records compiled from original invoices.

The Subsistence Department has charge of the commissaries and the manufacturing plants which consist of an ice and cold storage establishment, a bread, pie, and cake bakery, a coffee roasting outfit, and a laundry. These belong to the Panama Railroad Company, as, at the time they were established, money received from sales could be reapplied, whereas if operated by the Commission the money would have reverted to the Treasury, necessitating reapropriation before the proceeds of sale could be utilized. They are, however, under the management of the Subsistence Officer of the Commission, who has charge of the various hotels, kitchens, and messes of the Commission.

There are 16 hotels from Cristobal to Panama, which serve meals to the American, or gold, employes at 30 cents per meal. There are 24 messes where meals to European laborers are served, the cost per day to such laborers being 40 cents; and there are 24 kitchens, or messes, for meals supplied to the silver laborers, or West Indians, the cost to the laborer being 30 cents per day for 3 meals. Subsistence is furnished without

profit to the Commission, though every effort is made to have the institutions self-supporting. The commissaries and manufacturing plants are operated at a profit so as to reimburse the Panama Railroad Company for its outlay in six years from January 1, 1909, at 4 per cent interest.

The Subsistence Department also has charge of the Hotel Tivoli, which is a large hotel located at Ancon, for the entertainment of the Commission's employes at a comparatively low rate, and of transient guests at rates usually charged at first-class hotels.

All moneys are handled by the Disbursing Officer who pays accounts that have been previously passed upon by the Examiner of Accounts. The last-named official makes the administrative examination required by law prior to the final audit of the accounts by the Auditor for the War Department. The pay rolls are prepared from time books kept by foremen, timekeepers, or field clerks, subsequently checked by the Examiner of Accounts, who maintains a force of time inspectors. The time inspectors visit each gang, generally daily, at unknown times to the foreman, timekeeper, or field clerk, and check the time books with the gangs of workmen; the inspectors report to the Examiner of Accounts the results of their inspection not only in connection with timekeeping, but all violations of the regulations of the Commission that may come under their observation.

Payments of pay rolls are made in cash, beginning on the 12th of each month and consuming four days for the entire force on the Isthmus. All American employes and European laborers are paid in gold; all on the so called "silver roll" are paid in Panamanian silver.

The Department of Construction and Engineering is under the direct charge of the Chief Engineer. He is assisted by the Assistant Chief Engineer, who considers and reports upon all engineering questions submitted for final action. The Assistant Chief Engineer has charge of the designs of the locks, dams, and spillways, and supervision of these particular parts of the work. There is attached to the Chief Engineer an assistant to the chief engineer, who looks after mechanical forces on the Isthmus, and has supervision over the machine shops, the cost-keeping branch of the work, the apportionment of appropriations, and the preparation of the estimates. There is also an assistant engineer, who has charge of all general surveys, meteorological observations, and river hydraulics.

The Zone is divided territorially into three divisions, each in charge of a division engineer, the first extending from deep water in the Caribbean south to include the Gatun Locks and Dams, known as the "Atlantic Division." The second or "Central Division," extends from Gatun to Pedro Miguel, and includes the excavation through the continental divide. The third, or "Pacific Division," extends from Pedro Miguel, including the locks and dams of that locality, to deep water in the Pacific.

The general plans emanate from the office of the Chief Engineer and the details are left to division engineers, subject to the approval of the Chief Engineer. The whole idea of the organization in the Department of Construction and Engineering, and in fact of all the work, is to place and fix responsibility, leaving to each subordinate the carrying out of the particular part of the work intrusted to his charge.

Each division engineer has charge not only of the work involved in the construction of the Canal, but all municipal engineering, including water supply, building and maintaining roads, and the establishment and maintenance of sewer systems.

With the force under his charge the division engineer executes such sanitary draining as may be prescribed by the chief sanitary officer, so that all construction work, excepting the construction of buildings, concerning the location of which the division engineer is consulted, however, is directly in the hands of the division engineer.

Attached to the office of the chairman is a general Y. M. C. A. secretary, who has supervision of the Commission's clubhouses, which are operated and maintained under the auspices of the Y. M. C. A. Four of these are now constructed and in operation and four more are to be built from funds recently made available by Congress. They have done much toward securing a greater permanency to the force, in giving healthful amusement, and to a better contentment on the part of the employes.

I have endeavored to show that a channel of sufficient width, in which the waters of the many streams, especially the Chagres, will not be a menace, is one most desired for an Isthmian canal. The sea-level canal proposed by the majority of the Board of Consulting Engineers is not of sufficient width, nor is the proposed solution for the impounding and diversion of the Chagres and other streams based upon sufficient investigations to insure its success. The "ideal" sea-level canal, the Straits of Panama, recently proposed, is not based upon any investigations of the work to be done and cannot, in view of the approximate estimate of the cost of our own sea-level canal, which is about one-third the size of the "ideal" plan, be given serious consideration. Every criticism against the stability of our locks or dams can be attributed to either an argument in favor of one's own plans or to absolute ignorance of the exhaustive data concerning their safety now in existence. The several other plans of lock-type canal have nothing in their favor that the plan now adopted does not possess to a greater degree.

I have endeavored also to show that the organization on the Isthmus is compact and complete in every way, performing its duties of construction, sanitation, and government with clock like precision. I cannot do better than quote from the message recently sent to the Congress, "that hereafter attack on this type—the lock type—is in reality merely attack upon the policy of building any canal at all," for the adoption of a sea-level canal anywhere approaching the ease of navigation of the lock type will result in the ultimate abandonment of the canal; and I assure you that several years hence, no later than January 1, 1915, even the most ardent sea-level advocates will in making the voyage through the Canal, admit that the ability to navigate a battleship at a high rate of speed through the lake and wide channel from Gatun to Pedro Miguel far outweighs the small inconveniences of the safe lockages up to and down from the summit level.

Missing Man.

George Arthur Cox left his home in St. Augustine, Fla., on the 20th of January, 1909, and it is thought by his relatives, who have not heard from him since that date, that he came to the Canal Zone. It is requested that any one having information concerning this man communicate with Mr. M. J. Stickel, Secretary of the Commission Clubhouse, Cristobal.

Coal Barge for Pacific Division.

An old 16-inch suction dredge left by the French on the banks of the Chagres at San Pablo is on the shipways at La Boca being converted into a coal barge. It was cut into three sections and carried by train from San Pablo to La Boca. It is 90 feet long by 17 feet wide by 10 feet high.

OFFICIAL CIRCULARS.

Good Friday.

CULEBRA, C. Z., March 27, 1909.

CIRCULAR No. 238:

So far as consistent with the transaction of public business, Friday, April 9 (Good Friday), will be observed as a holiday in the Canal Zone.

Good Friday is not included in the list of holidays for which gratuity pay is allowed, and pay for services performed on that day will be calculated the same as for Sundays.

Holy Thursday will be considered an ordinary working day and payment made accordingly.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Use of French Machinery.

CULEBRA, C. Z., March 26, 1909.

CIRCULAR No. 73-REVISED.

It is hereby ordered that hereafter when it is necessary to use any of the material or equipment purchased from the French Canal Company in connection with the work in any division the head of the division in which this material is to be used shall notify the Surveying Officer, giving a list in detail of the material required, showing its location and describing it with sufficient minuteness for purposes of identification. An estimate should also be submitted of the value of each article for the purpose of the work in which it is to be used. Action will then be promptly taken by the Surveying Officer, authorizing the use of the French material required, and its valuation will be fixed and charged to the proper account.

It is also ordered that where French material has heretofore been used and it is believed by the head of the division making use of the material, that the prices charged have been unreasonable, or where material has been used and no charge made, the matter be referred to the Surveying Officer for appropriate action. In such cases full information covering a description of the material or equipment used, and its condition, the purpose for which it was used, and an estimate of its value for such use, taking into consideration the cost of its preparation, should be submitted for the information of the Surveying Officer.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Accounting for Property.

OFFICE OF THE CHIEF QUARTERMASTER.

CULEBRA, C. Z., March 13, 1909.

Effective April 1, 1909, a new form will be issued by the Quartermaster's Department to supersede the old form "Release from Quarters." This release will show that all property held on memorandum receipt has been properly accounted for. All employees on the gold roll, when going on leave of absence or leaving the service, will be required to produce such release, signed by the District Quartermaster of the district in which quartered, before payment is made on time vouchers.

In all departments and divisions gold employees and such silver employees as are responsible for property, who leave the service, go on leave of absence or transfer to another department, will be required to account satisfactorily for all property for which they are responsible and secure release for same from the official under whom they are working, this release to be attached to time voucher and termination papers and forwarded to the accountable official under whom employed. Time vouchers or pay checks will not be issued unless such release is attached.

Deduction will be made for tools lost, damaged or destroyed through the wilful neglect or carelessness of the employe, as directed in Circular No. 171 of the Chairman and Chief Engineer.

Employes who lose, damage or destroy property through no fault of their own will be required to submit an approved Survey Report covering the items lost, damaged or destroyed, or affidavits, satisfactory to the accountable official, from which a survey case may be prepared.

The release from property responsibility will be signed by such officials as designated by heads of departments and divisions.

C. A. DEVOL, Chief Quartermaster.

Approved:

H. F. HODGES,

Acting Chairman and Chief Engineer.

Contract House at Culebra.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, C. Z., until 2 p. m., Saturday, April 3, 1909, when they will be publicly opened, for the erection by contract of one type 10 house at Culebra, C. Z. The Commission will furnish all materials at the site of the work and the contractor is

required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with certified check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$150 conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any and all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals. C. Nixon, Purchasing Agent on the Isthmus.

Rainfall, March 1 to 27, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	.91	1.76
Brazos Brook.....	.69	2.90
Gatun.....	1.28	2.99
Bohio.....	3.24	3.66
<i>Central Division—</i>		
Tabernilla.....	.66	.99
San Pablo.....	.15	.46
Bas Obispo.....	.36	.45
Gamboa.....	.34	.56
Empire.....	.17	.21
Camacho.....	.21	.40
Culebra.....	.14	.15
<i>Pacific Division—</i>		
Rio Grande.....	.15	.18
Pedro Miguel.....	.03	.05
La Boca.....	.12	.13
Ancon.....	.18	.18
<i>Atlantic Coast—</i>		
Porto Bello.....	1.12	3.50
Nombre de Dios.....	.37	1.23
<i>Upper Chagres.</i>		
El Vigia.....	.10	.32
Alhajuela.....	.08	.29

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, March 27, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. Diver'n.
Height of low water above sea-level, feet.....	125	92	46	1	0	0
Maximum height above sea-level, feet:						
Sunday, Mar. 21.....	125.8	93.0	47.6	2.9	1.0	1.0
Monday, Mar. 22.....	125.7	92.9	47.6	2.9	0.9	0.8
Tuesday, Mar. 23.....	125.6	92.9	47.4	2.7	0.9	0.8
Wednesday, Mar. 24.....	126.0	93.2	47.8	3.0	1.0	0.9
Thursday, Mar. 25.....	125.6	92.8	47.4	2.8	1.1	0.9
Friday, Mar. 26.....	125.4	92.8	47.3	2.6	1.1	1.0
Saturday, Mar. 27.....	125.4	92.7	47.2	2.5	1.0	0.8

Misdirected Letters.

Division of Posts, Customs and Revenues,

Ancon, C. Z., March 31, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Ackerman, Miss Mabel	Guirney, James
Allen, Joseph	Hall, J. H.
Anderson, Miss Lucille	Henkle, B. F.
Barrett, M. J.	Hocklerner, N.
Boglioli, John W.	James, W.
Carruthers, Master Thos.	Keiser, Henry (2)
& Elmer	Kohn, M. H.
Carruthers Mrs. E. I.	Lane, J. C.
Caton, Armsted	Lipsy, E. L.
Colburn, Alvin	Lohman, Ervin O.
Corp, Mrs. Charlie	McKeever, Daniel J.
Cotton, Joe	Moore, Wallace
Deavours, J. C.	Osborne, H. C.
Deitsch, J. C.	Owens, Mrs. T. R. (prt. m.)
Denison, Cristy	Paul, Chas.
Dougherty, George (prt. m.)	Reilly, Clarence R.
Downes, Mrs. John (prt. m.)	Roberts, George
Downey, M.	Ryan, T. F.
Flanagan, Thos.	Surtees, Harry
Foster, Frank	Taylor, Ed G.
Gambon, Emil (2)	Williams, Will L.
Garrriott, Clyde	Wurdeman, Herman.
Goodman, Robert G.	

Isthmian Baseball League.

Standing of the Clubs.

	Played.	Won.	Lost.	Per Cent.
Empire.....	15	11	4	.733
M. P. & M.....	16	10	6	.625
Ancon.....	16	6	10	.375
Gorgona.....	15	4	11	.267

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Allianca.....	P. R. R. Friday.....	Apr. 2
Magdalena.....	R. M. Saturday.....	Apr. 3
Colon.....	P. R. R. Thursday.....	Apr. 8
Prinz Joachim.....	H. A. Saturday.....	Apr. 10
Panama.....	P. R. R. Wednesday.....	Apr. 14
Orinoco.....	R. M. Saturday.....	Apr. 17
Advance.....	P. R. R. Tuesday.....	Apr. 20
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Apr. 24
Allianca.....	P. R. R. Monday.....	Apr. 26
Atrato.....	R. M. Saturday.....	May 1
Colon.....	P. R. R. Monday.....	May 3
Panama.....	P. R. R. Saturday.....	May 8
Prinz Joachim.....	H. A. Saturday.....	May 8
Advance.....	P. R. R. Friday.....	May 14
Oruba.....	R. M. Saturday.....	May 15

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Prinz Joachim.....	H. A. Tuesday.....	Mar. 30
Panama.....	P. R. R. Friday.....	Apr. 2
Orinoco.....	R. M. Tuesday.....	Apr. 6
Advance.....	P. R. R. Thursday.....	Apr. 8
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Apr. 13
Allianca.....	P. R. R. Wednesday.....	Apr. 14
Colon.....	P. R. R. Tuesday.....	Apr. 20
Atrato.....	R. M. Tuesday.....	Apr. 20
Panama.....	P. R. R. Monday.....	Apr. 26
Prinz Joachim.....	H. A. Tuesday.....	Apr. 27
Advance.....	P. R. R. Sunday.....	May 2
Oruba.....	R. M. Tuesday.....	May 4
Allianca.....	P. R. R. Saturday.....	May 8
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	May 11
Colon.....	P. R. R. Friday.....	May 14
Tagus.....	R. M. Tuesday.....	May 18
Panama.....	P. R. R. Thursday.....	May 20
Prinz Joachim.....	H. A. Tuesday.....	May 25
Advance.....	P. R. R. Wednesday.....	May 26

COLON TO BARBADOS, CALLING AT TRINIDAD.

Tagus.....	R. M. Tuesday.....	Mar. 30
Magdalena.....	R. M. Tuesday.....	Apr. 13
Orinoco.....	R. M. Tuesday.....	Apr. 27
Atrato.....	R. M. Tuesday.....	May 11

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, and from Colon at 1.30 p. m., via Port Limon, for New Orleans.

Port of La Boca.

Arrivals and departures at La Boca for the week ending March 26, 1909, were as follows: Arrivals—March 20, Washington, U. S. N., from Central America, and City of Para from San Francisco; March 21, Chiriqui and Guatemala from Valparaiso; March 23, Aysen from Valparaiso, and Aztec from Central American ports. Departures—March 21, City of Sydney for San Francisco; March 23, Arica for Guayaquil, and U. S. S. Washington for Central America; March 25, Chiriqui for Buenaventura, and Aysen for Valparaiso.

FOUND—On March 19, in labor train standing at P. R. R. Tivoli switch, a White Peerless sewing machine, with cover. Same will be returned to owner upon proper identification, at Ancon Police Station.

The largest shipment of dynamite to arrive on the Isthmus in several months was brought into Cristobal on March 11 by the Havso. It was shipped from Thompson's Point, New Jersey, and consisted of 1,250,000 pounds of dynamite.

Two ship loads of cypress ties for use on the construction railroads have arrived on the Isthmus. The cargoes were respectively 19,000 and 45,000 ties, part of an order of 200,000 ties recently placed in the States.

The highest record for steam shovels in any district of the Central Division was made on March 24, by the 19 shovels at work in the Culebra District, when 27,910 cubic yards of rock were removed, an average of 1,468 cubic yards per shovel.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, APRIL 7, 1909.

No. 32.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

March Excavation Nearly Four Million.

The grand total of Canal excavation during the month of March, 3,880,337 cubic yards, broke all records since American occupation. It exceeded that of March, 1908, the previous high record, by 393,050 cubic yards. Of the grand total, 2,352,903 cubic yards were removed by steam shovels and 1,527,434 by dredges. In addition to actual Canal excavation, 182,295 cubic yards were removed for the construction of handling plants, stripping of dams, etc., which are not included in the grand total, and which would carry it to 4,062,632. There were 27 working days during the month, and the mean rainfall for the month in the territory in which the excavation was in progress was 1.1 inches as compared with 0.99 inches in March, 1908.

The average daily excavation was 143,716 cubic yards, also the highest since American occupation. It was 6,808 cubic yards more than the daily average excavation in February, the highest previous record, and 9,590 cubic yards higher than the daily average excavation for March, 1908. As there are eight hours in each working day five cubic yards were removed every second.

In the Atlantic Division the total excavation was 758,380 cubic yards, which is 55,895 cubic yards more than was done in February. Of this amount 155,334 cubic yards were taken out by steam shovels and 603,046 by dredges.

All previous records in the territory now included in the Central Division were broken by an excavation of 2,054,088 cubic yards, an average of 76,077 cubic yards per day. The highest previous record was made in February, 1909, when 1,644,636 cubic yards were removed, a daily average of 71,506. The number of shovels at work during each month was about the same. Of the 2,054,088 cubic yards, 1,423,603 were taken from

the Culebra Cut, 542,691 from the Canal prism elsewhere than in the Cut, and 87,794 from the Obispo Diversion which is outside the Canal prism.

In the Pacific Division the total excavation was 1,067,869 cubic yards, which also breaks the highest previous record made in the territory of this Division, that of October, 1908, when 903,436 cubic yards were removed. Of the total for March, 143,481 cubic yards were removed by steam shovels and 924,388 by dredges.

The detailed statement of excavation in the three divisions follows:

ATLANTIC DIVISION.

LOCALITY.	From Canal Prism	Outside Canal Prism	Total excavation
<i>Dry excavation—</i>	<i>cu. yds.</i>	<i>cu. yds.</i>	<i>cu. yds.</i>
Gun spillway.....	13,360	13,360	13,360
Gatun Locks.....	59,598	11,663	71,261
Mindi.....	70,713	—	70,713
Total.....	130,311	25,023	155,334
<i>Wet excavation—</i>			
Atlantic entrance.....	461,208	—	461,208
Gatun Locks.....	141,838	—	141,838
Total.....	603,046	—	603,046
Total wet and dry excavation.....	733,357	25,023	758,380

CENTRAL DIVISION.

<i>All dry excavation—</i>			
Chagres section.....	542,691	—	542,691
Culebra section.....	1,423,603	87,794	1,511,397
Total.....	1,966,294	87,794	2,054,088

PACIFIC DIVISION.

<i>Dry excavation—</i>			
Miraflores Locks.....	46,616	3,604	50,220
Pedro Miguel Locks.....	93,261	—	93,261
Total.....	139,877	3,604	143,481
<i>Wet excavation—</i>			
Pacific entrance.....	865,696	—	865,696
Miraflores Locks.....	58,692	—	58,692
Total.....	924,388	—	924,388
Total wet and dry excavation.....	1,064,265	3,604	1,067,869

TOTAL EXCAVATION, ENTIRE CANAL.

Dry excavation.....	2,236,452	116,421	2,352,903
Wet excavation.....	1,527,434	—	1,527,434
Total.....	3,763,916	116,421	3,880,337

Mean rainfall along Canal (eleven stations) 1.1 inches.

Raising Wrecks at Pacific Entrance.

The hull of a Belgian type ladder dredge, which was abandoned by the French in the Chagres River at San Pablo, has been cut into four parts, loaded upon cars, and will be hauled to La Boca. There the hull will be put together again and such repairs made as are necessary to put it in condition for service as the float of a marine derrick. A crane with machinery will be installed capable of lifting 25 tons. The chief use to which it is intended to put this floating crane is in removing old wrecks from the Canal prism between Miraflores and La Boca. These wrecks are old French dredges and other

shipping sunk in the channel of the French canal near the crossing of the Rio Grande, or that had been laid up on the banks of the Rio Grande and had floated into the Canal at high water. Those that lie directly in the prism of the Canal will be blown up with dynamite and loaded upon barges to be towed out to sea and sunk in deep water.

Gatun Locks Concrete Plant.

In the construction of the concrete plant at Gatun and the lock handling plant the factor that will determine the completion is the power plant. The plans for the power house have been approved and the building itself is well under way, but the boilers have not yet arrived on the Isthmus.

One of the unloading cableways for the rock and sand docks will be ready for operation this week, and the construction of the other two is well advanced. The structural steel work on the cableway plant for the locks will be finished this month. Two-thirds of the machinery is already here and it is probable that the whole plant will be ready for use in June.

The rock and sand dock is completed and the floor of the cement dock is nearing completion. The tunnels through which the electric cars will run under the cement dock and the rock and sand charging bins are completed and the bed for the railway is graded up to the mixers. The eight mixers are set up and can be put in readiness for operation in a few days.

French Canal at La Boca Closed.

On Monday, April 5, the Pacific Division began dumping spoil from the Canal into the French channel, at the crossing of the breakwater to Naos Island. All ships entering or leaving the port of Ancon now use the new channel of the Canal, the sea entrance of which is about a mile southwest of Flamenco Island. Ships coming into the port enter this new channel between parallel lines of marking buoys and keep in about the center until abreast of the La Boca wharf.

The channel is safe at mean tide for ships drawing 18 feet or under, and for ships drawing 18 to 22 feet at three-quarters tide; but heavier draught ships should enter or depart at approximately high tide. The limiting depth in the center of the channel is about 30 feet at mean tide, which is found from along the wharf to about 4,000 feet south. During the lower 2,000 feet of this distance the channel is only 350 feet at bottom width.

The section that is undredged is on the east side of the channel. Work in this will be finished by June 1. From this point, 4,000 feet south of the wharf, to a point 10,000 feet south of the wharf, the channel is open to its full bottom width and is 40 feet deep, and from the latter point to deep sea

NOTES OF PROGRESS.

(Continued.)

it is open to its full width and is from 45 to 55 feet deep. Any information about the new channel that is required by navigation interests will be cheerfully furnished by the Division Engineer, and in case a pilot is required one will be furnished.

Well Preserved French Dredge.

One of the Belgian type ladder dredges left by the French on the banks of the Chagres at Frioles and floated down to Cristobal during the past rainy season, was in such good condition that not over \$10,000 will need to be expended on it before it can take up its work with the dredging fleet at the Atlantic entrance. This dredge is No. 5, and it is now at the Cristobal marine shop being rebuilt. Most of the hull, two of the boilers, and the main engines are in such good condition that they require only overhauling to make them fit for service. One new boiler will be installed. The principal change being made is the extending of the ladder so that the dredge will dig to a depth of 41 feet, the depth required at the Atlantic entrance, instead of 32 feet for which it was originally designed. It will probably be ready for work about the middle of this month. This will make the number of old French ladder dredges in use six. Another, the *Marmot* of the Pacific Division, will be put in service within a few weeks.

Zone Police at Porto Bello.

In accordance with an agreement between the Government of Panama and the Head of the Department of Civil Administration of the Canal Zone, a Sergeant and three first-class privates of the Canal Zone police took up the work of keeping order in the American settlement at Porto Bello on March 26. The settlement is in Panamanian territory. Under the terms of the agreement the Zone police will enforce the laws of Panama and will turn their prisoners over to the Panamanian courts.

The Dredgemaster.

Laurent Roquebert, general foreman of dredging at La Boca, has been a dredgeman at the Pacific entrance to the Canal for twenty years or more, in fact, since the time of the old French company. While at his work on the evening of March 29 he was crushed between two clapets, and now lies critically ill at Ancon Hospital. Two days after the accident the Resident Engineer at La Boca went to see him and was greeted with the question:

"How many yards?" He referred to the amount of dredging that had been done in March, and when told that all records had been broken, he asked:

"And the *Gopher*; what did she do?"

The *Gopher*, like the dredgemaster, is a

heritage from the French. It is a sea-going Scotch ladder dredge that has been at work at La Boca almost constantly for twenty-five years. Roquebert was at one time the master on this dredge, and his confidence that it was the best worker in Canal excavation was unshaken until October, 1908, when dredge No. 1 of the Colon fleet took the record.

In answer to the question, "And the *Gopher*; what did she do?" he was told, "She holds the record by over 3,000 yards."

"The dredgemaster closed his eyes, sighed in satisfaction and said: "I am so happy!"

Visiting Hours at Ancon Hospital.

The physicians and nurses at Ancon Hospital are considerably inconvenienced by requests for permission to visit patients in the hospital at other than visiting hours. The regular visiting hours are from 2 to 4.30 p. m., Tuesday, Thursday and Saturday, and on Sunday from 9.30 to 11.30 a. m., and 2.30 to 4.30 p. m. Visitors may be admitted at other times, with the permission of the Superintendent and the sanction of the physician in charge of the ward, but under no circumstances before 9.30 a. m. Sunday or 10.30 a. m. on week days.

Panama Humane Society.

The Panama Humane Society has been organized to work in conjunction with the Canal Zone Humane Society for the purpose of protecting children and animals in the Zone and Panama from cruel treatment. Already the Panama Society has secured the passage of a humane law to be effective in all parts of the Republic. The annual dues for active members are \$1 gold, for associate members \$3 gold, and for children under 16 years of age 50 cents gold. Each member will be given a certificate of membership and will have authority to make or cause arrests in a manner prescribed by the authorities.

March Rainfall for Three Years.

Stations.	1907.	1908.	1909.	Average since sta. est. rainy exclud. days. ing 1909.	No.
<i>Atlantic Division</i>					
Porto Bello.....			3.56	.....	20
Nombre de Dios.....			1.43	.....	20
Cristobal.....	2.16	3.53	1.85	1.60	19
Brazos Brook.....	1.97	3.01	2.90	2.49	15
Gatun.....	3.42	2.81	2.99	2.22	19
Gatuncillo.....			2.72	4.85	18
Trinidad.....			1.97	3.08	17
Bohio.....	1.82	1.77	3.66	1.61	15
<i>Central Division</i>					
Tabernilla.....		.73	.99	.....	9
San Pablo.....		.49	.46	.....	9
Gambo.....	.35	.50	.56	.80	7
Bas Obispo.....	.34	.41	.45	.75	5
Empire.....	.16	.41	.21	.34	3
Camacho.....	.14	.38	.40	.26	4
Culebra.....	.08	.13	.15	.75	2
Rio Grande.....	.05	.14	.18	.16	4
<i>Pacific Division</i>					
Pedro Miguel.....		.10	.59	.....	5
La Boca.....	.01	T	.14	.95	3
Ancon.....	T	.03	.18	.87	1
<i>Upper Chagres</i>					
El Vigia.....			.32	.....	5
Alhajuela.....	.18	.24	.29	.61	10

WEATHER CONDITIONS, CANAL ZONE, FEBRUARY, 1909.

Stations	Pressure (reduced to mean of 24 hours.)					Temperature.					Precipitation.					Wind.				
	Mean.	Maximum.	Date.	Minimum.	Date.	Mean relative humidity.	Total inches.	Station average per month.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Date.							
Cristobal.....	29.844	79.3	81	31	70	28	81	1.85	1.60	19	10	134	N.	28	18					
Bas Obispo.....	29.840	78.4	91	29	65	28	90	.45	.75	5	3	985	N.W.	21	2					
Ancon.....	29.821	81.4	93	17	70	4	84	.18	.87	1	7	664	N.W.	24	18					

DREDGING IN MARCH.

All Records Broken by Atlantic and Pacific Dredges—Work of the "Gopher."

Of the 3,880,337 cubic yards of Canal excavation in March the dredges of the Atlantic and Pacific divisions took out 1,527,434 cubic yards. This establishes a new dredging record for Canal excavation as will be seen from the following table showing by months the work of the dredges since March, 1908:

MONTH.	Atlantic dredges.		Pacific dredges.		Total.
	<i>Cu. yds.</i>		<i>Cu. yds.</i>		
March, 1908.....	515,223		783,281		1,298,504
April, 1908.....	496,366		676,539		1,172,905
May, 1908.....	561,386		530,466		1,094,852
June, 1908.....	572,749		656,621		1,229,370
July, 1908.....	628,497		696,170		1,324,667
August, 1908.....	638,217		737,774		1,375,991
September, 1908.....	624,776		750,080		1,374,856
October, 1908.....	595,260		762,276		1,267,536
November, 1908.....	570,832		609,089		1,179,921
December, 1908.....	679,604		729,960		1,409,564
January, 1909.....	521,050		490,584		1,011,634
February, 1909.....	444,910		692,532		1,137,442
March, 1909.....	603,046		924,388		1,527,434

These figures do not represent the total amount of dredging each month as considerable excavation has been done for building purposes that is not charged against Canal excavation. In the Atlantic Division the figures for March fall 207,029 cubic yards short of the amount of dredging actually done, because neither the work of the dipper dredge *Mindi* in the channel to the handling plant at Gatun Locks, 45,047 cubic yards, and at pier 14 in Cristobal, 2,400 cubic yards, nor the amount of material pumped into Gatun Dam, 34,721 cubic yards and onto the north toe of the dam, 124,861 cubic yards, by dredge No. 83, was counted as "Canal excavation."

Suction dredge No. 85 was at work all month excavating in the chamber of the north lock at Gatun. The sea-going suction dredge *Ancon* and ladder dredge No. 6 lost six days from their work while undergoing repairs. A statement of the work of the Atlantic dredges follows:

DREDGE.	Type.	Earth.	Rock.	Total.
Ancon.....	Suction.	290,030	.....	290,030
No. 1.....	Ladder.	118,051	.....	118,051
No. 6.....	Ladder.	18,783	34,344	53,127
No. 85.....	Suction.	141,838	.....	141,838
<i>Mindi</i>	Dipper.	16,447	31,000	47,447
No. 83.....	Suction.	159,582	.....	159,582
Total.....		744,731	65,344	810,075

All the dredging in the Pacific Division during March was in the Canal prism and therefore is counted as "Canal excavation." The record for last month exceeds the previous high record, that of March, 1908, by 141,107 cubic yards. The performance of the *Gopher* establishes a new record for ladder dredges on the Isthmus, exceeding the record made by dredge No. 1 of the Atlantic fleet in October, 1908, by 3,681 cubic yards.

All the Pacific dredges were working in the entrance to the Canal, excepting the 20-inch suction dredge *Sandpiper*, which was excavating in the lower lock chamber at Miraflores. A statement of the work of the dredges of the Pacific Division follows:

DREDGE.	Type.	In prism.	Remarks.
<i>Gopher</i>	Ladder.	<i>Cu. yds.</i> 172,477	Place measurement.
No. 14.....	Ladder.	140,141	Place measurement.
Mole.....	Ladder.	128,159	Place measurement.
Dipper.....	Dipper.	117,758	Place measurement.
Culebra....	Suction.	310,161	Scow measurement.
<i>Sandpiper</i> ..	Suction.	58,692	Scow measurement.
Total.....		924,388	

EXPLOSIVES FOR 1909-10.

Supply of Explosives and Other Blasting Accessories.

Over nine million pounds of dynamite will be required for the Canal work in the fiscal year 1910, according to estimates made by the division engineers. The estimates have been embodied in a requisition, and bids will be requested in a few days. It is estimated that the dynamite will cost \$1,026,514. Supplies of fuse, caps, and connecting wire have already been ordered for the calendar year 1909. As compared with last year the amount of dynamite for which requisition is made is 2,011,400 pounds less.

The requisition is divided among divisions and into classes as follows:

Dynamite, Saltpetre, 60 per cent Nitroglycerine:

	Pounds	Pounds.
Atlantic Division.....	982,000	
Central Division.....	1,800,000	
Pacific Division.....	600,000	
		3,382,000

Dynamite, Saltpetre, 45 per cent Nitroglycerine:

Atlantic Division.....	225,000
Central Division.....	5,400,000
Pacific Division.....	200,000
	5,825,000

The size of the cartridge for the above is to be 1 1/2 inch diameter by 8 inches long.

Dynamite, Saltpetre, 45 per cent Nitroglycerine:

Pacific Division.....	5,000
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Dynamite, Saltpetre, 60 per cent Nitroglycerine:

Pacific Division.....	60,000
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The size of the cartridges for the above is to be 2 ins. in diameter by 16 ins. long.

Total.....	9,272,000
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The conditions on which the contract is to be awarded are:

The Commission reserves the right to increase or reduce the amount of dynamite to be furnished by 20 per cent at any time before shipment is made. The delivery of the 45 per cent and 60 per cent dynamite in cartridges 1 1/2 inches by 8 inches is to be made in monthly shipments extending over a period of one year. The delivery of the 40 per cent dynamite, and of the 60 per cent dynamite in cartridges 2 inches by 16 inches, is to be made in one or more shipments as early as possible after August 1, 1909. All the explosives are to be packed in moisture-proof cases of 10-pound cartons; in 50-pound wooden boxes; cartridges to be wrapped in a distinctive color of paper and stamped "I. C. C." in common red letters.

Bids will be received for Trojan powder and Nitro powder equivalent in disruptive effect to the grades of nitroglycerine dynamite hereinbefore specified. Bidders on such explosives must guarantee the performance of their explosives and that the safety and keeping properties of the same will be equal to those of the equivalent grades of dynamite, and that they will prove in all other respects equally efficient and satisfactory for use on the Isthmus. Failure to fulfill such guarantee in any respect, as demonstrated by actual use on the Isthmus, will be regarded as just ground for the annulment of the contract. All bids to be sent to the Isthmus.

BLASTING SUPPLIES.

Blasting supplies to suffice until December 31, 1909, taking into consideration stock on hand and on order, have been contracted for as follows:

Electric Fuses.

2 feet long.....	4,000	30 feet long.....	150,000
3 feet long.....	4,000	35 feet long.....	106,000
10 feet long.....	13,000	40 feet long.....	13,000
16 feet long.....	40,000	50 feet long.....	6,500
20 feet long.....	80,000	60 feet long.....	2,500
24 feet long.....	106,000		

All of the above to be double strength wires, double insulated and waterproofed. To come forward weekly in shipments of not less than 1-35th part of each length. First shipment to arrive May 1, 1909.

Blasting Caps.

Five hundred thousand blasting caps of quintuple strength to be delivered weekly at the rate of not less than 18,000. First shipment to arrive on the Isthmus June 1, 1909.

Triple Tape Fuse.

One million feet of triple tape fuse to be delivered weekly at the rate of not less than 37,000 feet. First shipment to arrive June 1, 1909.

Connecting Wire.

Twenty-four hundred pounds of No. 20 B. & S. gauge double insulated quality and waterproof. To be in spools of 2 pounds each, and to come forward in monthly shipments of 400 pounds. First shipment to arrive June 1, 1909.

Leading Wire.

Three hundred and thirty thousand feet of No. 12 B. & S. leading wire. Wires to be in pairs, 500 linear feet each. Thirty thousand feet to be delivered at

Once, and thirty thousand feet to be delivered the first of each month thereafter.

Insulating Tape.

Eighteen hundred pounds of insulating tape to be delivered at the rate of 150 pounds per month. First shipment to come forward immediately and to follow regularly thereafter.

OFFICIAL CIRCULARS.

Panamanians on Gold and Silver Rolls.

CULEBRA, C. Z., April 2, 1909.

CIRCULAR No. 237-A.

Attention is invited to the fact that the order of the Secretary of War, dated December 23, 1908, permits the employment of citizens of Panama on the gold rolls but does not prohibit their employment on the silver rolls. Both citizens of Panama and citizens of the United States may be carried on the silver rolls if they are engaged for services ordinarily compensated in silver. Citizens of Panama who are now carried on the silver rolls should not be transferred to the gold rolls unless they are performing duties of the same grade and character as are commonly performed by gold employes. If the duties of Panamanian employes are such as to warrant transfer to the gold roll they should be paid at standard gold rates.

H. F. HODGES, Acting Chairman.

Boiler Inspection.

CULEBRA, C. Z., March 31, 1909.

CIRCULAR No. 239.

Section No. 9-(a) of "Boiler Inspection Rules and Regulations" is hereby amended to read as follows:

"All boilers in noncondensing plants shall be thoroughly washed out not less frequently than once in every two weeks.

"All boilers in condensing plants shall be thoroughly cleaned not less frequently than once every month."

All departments and divisions will be governed accordingly.

H. F. HODGES, Acting Chairman and Chief Engineer.

Bills Against Department of Civil Administration.

CULEBRA, C. Z., March 31, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Effective April 1, 1909, only completed jobs should be included on bills rendered against the Department of Civil Administration or the Government of the Canal Zone. If the work extends over more than one month, one bill covering the entire cost will be rendered upon the completion of the job, instead of rendering a bill for the work performed during each month, as has been the practice heretofore. The accumulated charges in suspense will be reported to the Examiner of Accounts monthly, on Form 132-c. E., under their proper headings.

H. F. HODGES,

Acting Chairman and Chief Engineer.

Castings at Gorgona Shop.

CULEBRA, C. Z., April 3, 1909.

NOTICE TO ALL CONCERNED:

The Gorgona foundry is prepared to make gray-iron castings up to six tons in weight, and brass castings up to two tons in weight. Gray-iron castings are poured regularly every working day and brass castings twice a day.

When the situation requires quicker delivery than by forwarding work request, Form C. E. 159, through regular channels, order may be placed by telephone or written memorandum by any authorized representative of the head of a division or department directly to the office of the Master Mechanic at Gorgona shops, in which case the work request should follow in the customary manner, with notation thereon to the effect that the work has previously been ordered direct of the Master Mechanic. All such "Rush" orders should state whether overtime work is desired, which statement should be confirmed on Form C. E. 159 following.

In cases of actual emergency work will be started any time during the day or night. To protect emergency cases developing outside of regular working hours, which require overtime work to produce the castings at the earliest possible moment, orders should be telephoned or sent direct to general foreman, J. J. Eason, at his residence in Gorgona.

To assist in obtaining the fullest utilization of the foundry facilities for all concerned, when castings are desired for quicker delivery than ordinary, the orders should show what proportion of each item will relieve the immediate pressing needs.

As a general rule, work can be started during the night within 30 minutes after receipt of order and, brass castings can be made within two hours after receipt of order, provided a pattern is furnished or is on hand at the foundry. If desired, in any case, patterns will be furnished.

By special arrangement with the Panama railroad, castings are shipped daily in special cars from Gorgona to La Boca and to Cristobal, and intermediate points.

GEO. D. BROOKE,

Supt. of Motive Power and Machinery.

Approved:

GEO. W. GOETHALS,

Chairman and Chief Engineer.

UNIQUE EXCAVATION.

Steam Shovels and Dredges Working at the Atlantic Entrance.

Two classes of excavation are in progress between the Atlantic entrance to the Canal and Gatun, that are unique not only in the Canal work, but also in general engineering. One is the dredging from Limon Bay to the Mindi Hills, and the other is the excavation below sea-level in the hills. From the shore line of Limon Bay inland for two miles the channel runs through a bed of silt overlying argillaceous sandstone, and the work referred to is in that section.

The excavation in the Mindi Hills begins at the point where the present Canal crosses the old French canal, and extends south a half mile. A channel 500 feet wide has been cut through a hill about 50 feet high, and in August, 1908, after a year of excavation, the cut had reached sea-level. Instead of blasting the rock below sea-level, flooding it, and taking it out by dipper dredges, as was at first intended, two pumps were installed to keep the cut dry, and steam shovel work was continued. The record since July, 1908, is as follows:

MONTH.	Earth.	Rock.	Total.
July, 1908.....	5,045	18,470	23,515
August, 1908.....	10,552	5,757	16,309
September, 1908.....	10,759	21,353	32,112
October, 1908.....	6,383	39,092	45,475
November, 1908.....	10,991	36,192	47,183
December, 1908.....	14,559	47,694	62,253
January, 1909.....	8,096	37,568	45,664
February, 1909.....	7,951	38,095	46,046
March, 1909.....			70,713
Total.....	74,336	244,221	389,270

The total amount of material to be excavated at Mindi when work was begun in July, 1907, was about 2,800,000 cubic yards, and 927,229 cubic yards had been taken out on April 1, 1909. In July and August, 1908, only one 70-ton shovel was constantly at work, and between August and March 20 70-ton shovels were operated.

Since the first week in March two 70-ton and one 95-ton shovels have been working at this point, and one of the shovels is 24 feet below sea-level. Only rock is excavated, as it is more economical to allow the earth to be taken out by dredges, which will be done when the rock excavation is finished and the cut is flooded. The spoil is dumped on the relocated line of the Panama railroad at Gatun, on the toes of Gatun Dam, and one train load a day is sent to Colon to be used in various fills in process there. Three pumps are ready for use in keeping the cut dry, but up to the present time one has generally been found adequate.

From the shore line to the hills at Mindi the work is being done by dredges. Subaqueous rock excavation, usually very expensive, is done here for less than \$1 a cubic yard. Holes are drilled in the rock which is blasted without springing with 60 per cent dynamite. This blasting has been done so successfully that the rock is shattered into pieces small enough to be handled by the ladder and dipper dredges. The channel must be 40 feet deep below mean sea water at the Atlantic entrance, and the lowest point reached at present is 38 feet.

This excavation is being done by two reconstructed Scotch ladder dredges left on the Isthmus by the French, and two modern dipper dredges. The ladder dredges handle material to a depth of 20 to 25 feet readily. It is intended to remove the bottom rock by the dipper dredges. Both the dipper dredges have been withdrawn for the present, one to Noubre de Dios and the other to Gatun, to excavate the approach channel and slip to lock entrances and to deepen the French canal from Gatun to Cristobal.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION. MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for Canal and Outside Canal Prisms. Includes monthly data from Jan to Dec and a Totals row.

Total to April 1, 1909—926,229 cubic yards. No work done outside of Canal Prism

COLON—DREDGES.

Table with columns for Months (1907, 1908, 1909) and sub-columns for Canal and Outside Canal Prisms. Includes monthly data from Jan to Dec and a Totals row.

Total to April 1, 1909—12,219,543 cubic yards. In this total are included 399,820 cubic yards excavated in 1905, and 1,027,645 cubic yards in 1906. There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for Canal and Outside Canal Prisms. Includes monthly data from Jan to Dec and a Totals row.

Total to April 1, 1909—4,377,759 cubic yards. In this total are included 26,625 cubic yards excavated from the Canal prism in October to December, 1906. In addition there were 379,753 cubic yards removed by dredges from Gatun locks in December, 1908, January, February and March, 1909.

CENTRAL DIVISION.

CULEBRA SECTION—STEAM SHOVELS.

Table with columns for Months (1904, 1905, 1906, 1907, 1908, 1909) and sub-columns for Canal and Outside Canal Prisms. Includes monthly data from Jan to Dec and a Totals row.

Total to April 1, 1909—30,806,400 cubic yards.

CHAGRES SECTION—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for Canal and Outside Canal Prisms. Includes monthly data from Jan to Dec and a Totals row.

Total to April 1, 1909—5,363,033 cubic yards. *No work done outside Canal prism.

CANAL EXCAVATION TO DATE.

Summary table for Canal Excavation to Date, showing totals for French Companies, Americans, Steam Shovels, and Dredges.

EXCAVATION IN TERRITORY OF PRESENT DIVISIONS

Summary table for Excavation in Territory of Present Divisions, showing amounts excavated and estimated amounts yet to be excavated for Atlantic, Central, and All other points.

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Table with columns for Months (1908, 1909) and sub-columns for Canal and Outside Canal Prisms. Includes monthly data from Jan to Dec and a Totals row.

Total to April 1, 1909—90,905 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY.

Table with columns for Months (1908, 1909) and sub-columns for Canal and Outside Canal Prisms. Includes monthly data from Jan to Dec and a Totals row.

Total to April 1, 1909—978,018 cubic yards. There were also 78,233 cubic yards removed by steam shovels at La Boca locks and 'dams in 1907; 139,298 cubic yards at Cardenas Hill March to December, 1908, and 100,468 cubic yards by dredges at Miraflores locks in January, February and March, 1909.

LA BOCA—DREDGES.

Table with columns for Months (1906, 1907, 1908, 1909) and sub-columns for Canal and Outside Canal Prisms. Includes monthly data from Jan to Dec and a Totals row.

Total to April 1, 1909—13,882,942 cubic yards. There were also 172 cubic yards removed by steam shovels outside of the prism during October, 1908.

UTILIZING SPOIL.

Material Excavated from Canal is of Value in Various Places.

A considerable portion of the material excavated from the Canal is of permanent value. It is used in the construction of dams, a breakwater at La Boca, embankments on the relocated Panama railroad, and in reclaiming land for sanitary and other purposes.

The breakwater at the Atlantic entrance to the Canal will not be constructed of spoil from the work, as was recommended by the Board of Consulting Engineers in 1906, but will be built of rock from the quarries at Porto Bello. At the Pacific entrance, however, spoil is being utilized. The channel runs out from the mainland into Panama Bay, a distance of five miles. To lessen the silting up of this channel a breakwater is being built from La Boca to Naos Island, a distance of about two and one-half miles. This breakwater is a long embankment of earth and rock excavated from Culebra Cut, dumped from a trestle that is built out toward the island in advance of the rapidly lengthening fill. Over it a railroad can be constructed and as it is alongside the channel, the breakwater will afford a good location for docks when the traffic at the Pacific entrance grows beyond facilities at La Boca. It will join the island to the mainland, and thus throw open a large additional amount of land that will be available for terminal purposes. If piles for the trestle are delivered promptly it is probable that Naos Island will be connected with the mainland within a year.

At the point where the breakwater juts out from the mainland is a tidal flat which is covered by several feet of water at high tide and is a mass of mud when the tide is out. This flat is also being filled and already several acres of land have been made above high-tide level, and the filling is continuing. The value of this made land will depend largely on the growth of trade at the Pacific entrance, but its location near the present wharf at La Boca and the fact that railroad tracks from it connect with the main line of the Panama railroad, make it a desirable site for warehouses.

In the building of the dams necessary for impounding the water at Gatun, Pedro Miguel and Miraflores, a large amount of excavated material is used. The Gatun Dam involves a fill of 21,800,000 cubic yards, the greater part of which will be the selected material pumped in by suction dredge. In addition to the rock from Culebra Cut that will go to make up the remainder of the necessary fill, a large amount of miscellaneous spoil taken from the prism at Mindi, the spillway of the dam and the lock site, will be placed in the toes of the dam. The amount of material thus utilized will depend on the amount available, as no fill additional to the 21,800,000 cubic yards will be necessary.

The dam at Pedro Miguel will be an earth embankment with a core of selected material, and will require 230,000 cubic yards of excavation. Back filling for the locks will take 834,500 cubic yards of material. Most of this filling is spoil from the lock site. Similar conditions exist at Miraflores. There the earthen dam will require over 1,000,000 cubic yards of material, and the back filling for the locks will require

about 2,000,000 cubic yards. All of this material is taken from the lock site, and practically all of the excavation at Miraflores is being utilized in the lock and dam construction there.

Of the 174,000,000 cubic yards to be excavated in the prism of the Canal, 74,000,000 cubic yards are to be dredged and will not be utilized in the construction work. Of the 100,000,000 cubic yards of dry excavation, 89,800,000 cubic yards are in the Central Division. The following table shows the amount of material placed in the Central Division dumps up to February 1, 1909, and the amount that may still be placed in them:

NAME OF DUMP.	Material placed in dumps up to Jan. 31, 1909.	Remaining capacity.
Tabernilla.....	7,737,161	5,639,505
Mamei.....	552,805	2,365,723
Gorgona.....	621,898	441,585
Chagres.....	434,086	239,113
Gamboa.....	184,629	15,769
Bridge 53.....	314,127	5,000
Whitehouse.....	134,562	6,640
Cunette.....	152,215	25,000
Empire.....	82,222	1,000,000
Cerro.....	176,998	140,000
Culebra.....	1,298,745	251,176
Lirio and Gold Hill.....	798,279	4,119,367
Rio Grande.....	678,554	200,000
Cucuracha.....	48,438	4,331,590
Paraiso.....	74,885	249,750
Pedro Miguel.....	661,017	115,463
Miraflores.....	2,633,662	9,115,693
La Boca.....	3,982,647	20,836,240
New P. R. R. at various points.....	829,403	6,802,359
San Pablo.....	1,311,640	1,454,784
Caimito.....	1,021,390	3,353,565
Matachin.....	1,313,277	390,271
Santa Cruz.....	528,040	1,688,510
Cartagena.....	262,369	302,253
Buena Vista.....	74,045	7,521
Other dumps.....	6,815,907	.....
Total.....	32,523,302	.....

The material placed in the dumps at Tabernilla is wasted, as is that placed in most of the dumps of the Central Division, although an increasingly larger portion of the spoil is being utilized. Within the coming year the dump at Tabernilla will be gradually abandoned and new dumps will be opened along the relocated line of the Panama railroad between Gamboa bridge and Caimito. This will shorten the haul from Culebra Cut and will relieve the main line of the Panama railroad of a large part of the dirt traffic from Bas Obispo north.

An essential part of the Canal work is the relocation of the Panama railroad, and several million cubic yards of spoil will be utilized in this work before it is completed. At Gatun where the relocation lies across a small valley, a fill was made, and a slide developed. It is estimated that enough material was dumped into this fill to raise it 200 feet before the slide was arrested and the required 95-foot level was established. On what is known as the Tiger Hill cut-off near Gatun the railroad crosses the valley of the Gatuncillo River, and a fill was made there of about 1,000,000 yards before the new relocation of the railroad was decided upon. In its course from Gatun to the beginning of Culebra Cut the relocated line runs across a number of small valleys and the construction is alternate cut and fill. A number of the trestles within easy reach from Culebra Cut are being filled with spoil from that part of the Canal. At Gamboa and Santa Cruz about 275,748 cubic yards have already been used and the dumping is still in progress. At Caimito 174,153 yards have been dumped from the excavation at that place.

Embankments yet to be made on the relocated line that can be made to advantage by the Central Division aggregate nearly 7,000,000 cubic yards. Where the relocated line runs out of Culebra Cut at Paraiso over 30,000 cubic yards of material have been used. At Pedro Miguel a large part of the 65,000 cubic yards in the long dump is utilized as the roadbed of the railroad, and south of Miraflores tunnel the dump between that village and Corozal will also be used.

In the drainage of Culebra Cut it has been necessary to build a canal along the east bank to take the water of the Obispo River. Up to January 31, 1909, there had been placed in embankments along this diversion channel 743,927 cubic yards of material. A similar diversion for the Camacho River involved the use of over 30,000 cubic yards. Many thousand yards of spoil have also been utilized in the building of dykes at Santa Cruz and Matachin, and other parts of the work.

The dumps at Miraflores and La Boca are the only ones now used for spoil from the south slope of Culebra Cut. It is probable that between 6,000,000 and 8,000,000 cubic yards of material will be added to that already placed in the dumps at Miraflores, while the La Boca dumps may be extended indefinitely.

The half million cubic yards of material that are being taken out at Tabernilla will be wasted into the Chagres River and into a new dump that has been opened up at the Cano River, opposite Tabernilla. The excavation at Buena Vista will be wasted into the Chagres River.

Towing Sand from Nombre de Dios.

Towing sand barges from Nombre de Dios to Cristobal is very dangerous, that part of the coast between Nombre de Dios and Porto Bello being especially menacing. Twelve towing machines, equipped with wire hawsers instead of the manila rope now in use, have arrived on the Isthmus, and when they are put in service the tugs will tow the sand barges out to sea for some distance from Nombre de Dios before turning west for the run to Cristobal, thus avoiding the dangerous reefs and shoals along the coast. Seven of the towing machines and their boilers are being placed on the sand and rock barges at Cristobal and five will be placed on the tug boats.

A Long Tow.

In the concrete work at Gatun locks and spillway 3,750 barges of crushed rock, each barge carrying 600 cubic yards, will be used. The sand required for this work would fill 1,875 barges of that capacity. Each barge is 150 feet long and they are towed with a distance of 1,200 feet between the tug and the first barge and between each of the barges. If all these barges were made into one tow, allowing one tug for four barges, the tow would be almost 1,500 miles long. It would reach three-fifths of the distance from Colon to New York.

The pumping of material into Gatun Dam, which was suspended about the middle of March, was resumed on April 1. Dredge No. 85, a 20-inch pipe-line suction dredge, is pumping sandy clay from a point half a mile north of the north toe of the dam into the old channel of the Chagres River between the north and south toes.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

Mrs. Goethals, Mrs. Gaillard, Mrs. Rouseau, and Mrs. Devol will be the patronesses at the Red Cross dance to be held in Culebra on April 16.

The date set for the annual meeting of the Canal Zone Federation of Women's Clubs is Saturday, May 15. The meeting will be held at Cristobal.

Final arrangements for the opening of a kindergarten under the protection of the Gatun Woman's Club were made at the business meeting of the club on Friday, April 2. The kindergarten will be held in the Commission chapel building, and will be supported by the monthly tuition fee of \$2.00 (gold) and entrance fee of 50 cents for each child. It is proposed to open the kindergarten as soon as the benches and tables, which are now in the hands of the carpenter, are ready. The club is holding its meetings at the chapel, instead of at the homes of the members, as heretofore.

A number of Gatun women gave a tea on Tuesday, March 31, a small sum being charged for refreshments. The money is to go toward a scholarship fund in the Methodist school in Panama.

Social life at Porto Bello has been active during the dry season. There are now about twenty families living there, and the social intercourse has been of an interesting and pleasant character. A card club of twelve members was organized a short time ago, Mrs. William Waltham being president and Mrs. Quido Pompeige secretary and treasurer. The club was entertained by Mrs. M. J. Nolan on March 25. Prizes were won by Mrs. J. R. Sweeney and Mrs. George Werner.

A Thimble Club has also been organized at Porto Bello. The club meets at the homes of the members. On April 1 the club was entertained by Mrs. W. J. Thomas, who gave an "April Fool" party. The afternoon was devoted to social diversions, games and guessing contests. Mrs. W. H. Storm won the prize. Refreshments were served by the hostess.

An Outing Club has been formed for the study of Spanish history in Porto Bello and the surroundings. The members are at present engaged in the study of such books and literature as they can command on the subject, prior to completing arrangements for excursions and practical study.

On March 14 the first religious service in Porto Bello was held, the Rev. Carl H. Elliott officiating. The collection taken at the service was turned over to the Cristobal section of the Canal Zone Red Cross.

The semiannual election of officers of the Pedro Miguel Woman's Club will take place at the meeting April 14. The club was organized in October, 1907, and now has 22 members.

Under the new administration the year's work for the Gorgona Woman's Club has been outlined. None of the committees has yet been appointed. The art committee will continue to work as heretofore. It has been decided to take up the making of fancy articles in the art department, aprons, collars and ties included, which will be sold for the benefit of the club.

The regular board meeting of the Ancon Woman's Club will take place at the club

rooms on Monday afternoon, April 5, at 2.30. The quarterly business meeting of the club will be held on Wednesday, April 7, at 3 p. m.

An entertainment under the auspices, and for the benefit of the Culebra Woman's Club will be given at the club house on Tuesday evening, April 13. The program will consist of a series of Riley readings by Mr. J. W. Holland. Arthur Howard will play.

The guests of honor at the reception given by the Las Cascadas club on Thursday, March 25, were Mrs. O. G. Randall, Mrs. F. L. Crosby, Mrs. C. F. Merry and Mrs. A. N. Naylor. Mrs. Randall, the founder and first president of the club, who is leaving the Isthmus for her home in Seattle, Wash., was elected an honorary member. There was a large attendance. Refreshments were served by the hostess and the gathering was a very enjoyable one. The Las Cascadas club was formed on October 17, 1907, its purpose being primarily social. The club was admitted to the Canal Zone Federation of Women's Clubs January, 1908. At the meeting on April 1, the following committees were appointed: Entertainment, Mrs. C. W. Decker, Mrs. J. P. Doyle, Mrs. G. L. Lingle, Mrs. M. V. Enright; visiting, Mrs. W. D. Stanton, Mrs. H. H. Baylau.

The next program meeting of the Empire Woman's Club will be April 15, the subject being "The Animals of the Isthmus." At the meeting on April 29 the concluding paper on the History of Panama will be read. At the social meeting April 1, a program was given in which all the members took part. Miss Smith gave several violin solos. Ices and cakes were served.

"Life in European Russia and Extracts from Letters on a Journey through Asiatic Russia, or the Caucasus," was the subject of a paper read before the Gatun Woman's Club at its meeting on Friday afternoon, March 26, by Mrs. H. R. Trask of Ancon. The paper was illustrated with photographs. Mrs. O. L. Brownell presided in the place of the president, who was not present. There was a good attendance. The business meeting on April 2 was held at the home of the president, Mrs. E. L. Bandy.

Culebra Union Christian League.

The council of the Union Christian League of Culebra held its quarterannual business meeting on April 1, and reports submitted showed the following activities for the three months ending March 31:

Regular Sunday services, 13; average attendance, 78. Regular midweek services, 11; average attendance, 17. Special week-night services, 5; average attendance, 75. Musicales, 1; attendance, 150. Total number meetings, 30; total attendance, 1,745.

All regular services of the League are conducted by the Commission Chaplain, Rev. J. Wesley Holland. One or two numbers of special music are given at each Sunday evening service. The League is a union of all denominations and extends a cordial welcome to the general public to attend the services.

Red Cross Section Organizations.

The Gatun Section of the Canal Zone Branch of the National Red Cross has been organized with Maj. William L. Sibert chairman and R. M. Gamble secretary and treasurer.

The Paraiso Section has chosen Mr. Henry Dundas chairman, Miss Beattie secretary

and treasurer, and has appointed an executive committee of three. Arrangements are being made for an entertainment to be given during April.

The Pedro Miguel Section was organized on April 1, with Mr. Ernest Bitely as chairman and Mrs. A. T. Webber as secretary and treasurer. A dance will be given in the near future and a committee of five has been appointed to complete arrangements.

The Cristobal organization has chosen the following officers: Chairman, Dr. M. E. Connor; treasurer, Mrs. Louis Broome; secretary, Mr. M. J. Stickle; executive committee, Mrs. Lorin C. Collins and Mrs. C. Nixon. An entertainment committee has been appointed to devise a means of raising funds.

Personal.

The Ven. Archdeacon Bryan returned to the Isthmus on the *Advance*, which arrived at Cristobal on April 3.

Joseph Beaumont has been appointed Superintendent of Telegraph and Telephone of the Panama Railroad Company. His department includes in addition to the telegraph and telephone service, the signal, and the electric light and power services.

Missing Men.

The friends of Manuel Gomez Vilor, a Spanish laborer at one time employed by the Isthmian Canal Commission, have not heard from him since last September. Any one who knows of his whereabouts should inform the Assistant to the Chairman, Culebra, C. Z.

Information is desired in regard to Alois Trentman, who was employed by the Commission previous to July 1, 1906. Any one having knowledge concerning him is requested to communicate with the Collector of Revenues, Ancon, C. Z.

Information is desired in regard to Jos. F. Rian (or Rion), who is supposed to be on the Isthmus. Any one having knowledge concerning him is requested to communicate with THE CANAL RECORD.

Information is wanted in regard to Arthur Dale, aged 22, who is thought to have sailed from New York to Panama between the 10th and 18th of March. Any one having information concerning him is requested to communicate with A. Bruce Minear, general secretary Y. M. C. A., Culebra.

Knights of Columbus.

Panama Council, No. 1371, Knights of Columbus, will be formally instituted at Empire, C. Z., on Easter Sunday, April 11, 1909, commencing with mass in the Roman Catholic chapel at 9 a. m. All Knights of Columbus (any degree) are requested to attend these exercises.

Local No. 5, Associated Union of Steam Shovel and Dredgemen, will meet at Fraternal Hall, Culebra, Sunday, April 25, at 2.30 p. m. It is especially requested that all members be present.

The suction dredge *Ancon* was in dry dock at Cristobal for six days during March while new stern bushings, new tail shafts, and new propellers were put in.

The work of laying concrete in the foundations at Miraflores power station was begun last week.

FOURTH OF JULY.

Meeting at Cristobal—Ancon Suggested by Cristobal Man.

All citizens who are interested in a Fourth of July celebration at Cristobal are requested to meet on Friday evening, April 16, at 8 o'clock, at the Y. M. C. A. clubhouse, for the purpose of organizing committees.

THE CANAL RECORD:

I have read the article in THE CANAL RECORD of March 24, advocating Empire as the place to hold the next Fourth of July celebration. I think that any one who attended the celebration last year will agree that Ancon is the logical spot for such an event. In the first place, the Tivoli Hotel is the only hotel on the Isthmus where a crowd of two or three thousand people can be fed within a space of two or three hours. Neither the I. C. C. hotel at Empire, nor any other hotel on the Line can hope to do this. It should be remembered, too, that the celebration will take place on either the third or fifth of the month, and many would undoubtedly like to take advantage of the two successive holidays to arrive early on the scene of festivities and remain both days. The Tivoli Hotel has ample accommodations for all who desire to stay there. Its spacious parlors and lobbies will be a resting place during the heat of the day for those who do not care to attend the athletic contests, and its broad piazzas afford an excellent view of the fireworks at night. I do not know what kind of accommodations Empire has for a dance on such a large scale, but I do know that even the large ballroom of the Tivoli was found inadequate last year, and to have dances at different buildings would be to detract from the unity of the occasion, and in addition might impart a clannish aspect to the affair.

While the suggestion of a barbecue may have its attractive features it does not eliminate the cold and insurmountable fact that subsistence for a large number of people for at least three or four meals must be provided. Furthermore, the celebration in Empire, together with a barbecue, would necessarily take the character of a picnic, and there are many persons to whom the picnic idea does not appeal strongly even under the most favorable conditions. This tropical climate, with its redbugs, ants, and other innumerable insects, will not allow us to give ourselves up to such unrestrained enjoyment of nature as we revel in under the elms and maples of the north.

As free trains are run on the Fourth from Colon to Panama, the fact that Empire is centrally located is of little significance, as it is no trouble to ride on for ten or fifteen miles farther.

Our friend from Empire states: "Never having had this celebration Empire should be given the preference this time." I hope it is not intended to establish a "town's rights" principle to govern the distribution of Fourth of July celebrations. If so, we will have Mount Hope, Miraflores, and other metropolitan centers along the Line applying for their share of the spoils. The place for the celebration should be selected from the standpoint of the greatest amount of enjoyment for the greatest number, and not with a view to enhancing the notoriety or flattering the civic pride of any particular town.

This is not intended as a protest against

holding the celebration at Empire, but a protest against holding it at any place but Ancon. While Cristobal "holds my heart and soul," I unhesitatingly cast my vote for Ancon. As the Fourth occurs only once a year, and as it constitutes a day of enjoyment for every American in the Zone, I earnestly hope that this matter will be looked at in a broad light.

EMPLOYEE.

Cristobal, C. Z., March 31, 1909.

Rainfall, March 1 to 31, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	.91	1.85
Brazos Brook.....	.59	2.90
Gatun.....	1.25	2.99
Bohio.....	3.24	3.66
<i>Central Division—</i>		
Tabernilla.....	.66	.99
San Pablo.....	.15	.46
Bas Obispo.....	.36	.45
Gamboa.....	.34	.56
Empire.....	.17	.21
Camacho.....	.21	.40
Culebra.....	.14	.15
<i>Pacific Division—</i>		
Rio Grande.....	.15	.18
Pedro Miguel.....	.30	.59
La Boca.....	.12	.14
Ancon.....	.18	.18
<i>Atlantic Coast—</i>		
Porto Bello.....	1.12	3.56
Nombre de Dios.....	.37	1.43
<i>Upper Chagres.</i>		
El Vigia.....	.10	.32
Alhajuela.....	.08	.29

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, April 3, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. Diver n.
Height of low water above sea-level, feet.....	125	92	46	1	0	0
Maximum height above mean sea-level, feet:						
Sunday, Mar. 28.....	125.3	92.7	47.2	2.4	1.0	1.0
Monday, Mar. 29.....	125.3	92.7	47.2	2.4	1.0	0.9
Tuesday, Mar. 30.....	125.3	92.6	47.2	2.3	1.0	0.8
Wednesday, Mar. 31.....	125.2	92.6	47.2	2.2	0.9	0.8
Thursday, Apr. 1.....	125.2	92.6	47.2	2.2	0.9	0.9
Friday, Apr. 2.....	125.6	92.8	47.1	2.1	0.7	0.6
Saturday, Apr. 3.....	125.6	92.9	47.5	2.5	0.7	0.6

Misdirected Letters.

Division of Posts, Customs and Revenues, Ancon, C. Z., April 7, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Barrett, W. M.	Manning, J.
Barth, Geo. H.	Mansfield, Henry
Beeler, Chas.	McGuigan, John
Bishoff, Mrs. Fred	McKeever, J. Frank
Bristol, Mrs. Edith C.	McLeer, Mrs. R. E.
Clarke, James F.	Morgan, Geo. W.
Cristy, Thomas	Namur, Mrs. Bruno
Dye, Ira Williard	Pedersen, H. C.
Fabyan, Gny	Rounsvell, G. K.
Farrer, Michael	Schaefer, Joseph
Garrillot, Clyde	Stephens, Fred A.
Gleason, Dr. J.	Summer, D.
Graham, Alexander P.	Wheeler, Maj. Homer W.
Grund, W. E.	Wilson, Mr. Ben
Hayes, H. S.	Woodford, Earl
Higgins, Mrs. Nellie	Wright, A.
Lee, Mrs. E. E.	

Commissary Hours.

The hours during which commissaries are open are as follows:

Cristobal, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.
Culebra, 8 a. m. to 12.30 p. m.; 2.30 p. m. to 7 p. m.
All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

Lost—In Ancon, a Venetian glass necklace. Reward for return to the office of the Superintendent of Schools.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

CRISTOBAL.

The Pool Tournament resulted in a tie for the first three places. Davis won on the play-off, with White second. The score of games was as follows:

Won		Lost.	
Davis.....	9	Russell.....	6
White.....	9	Burke.....	5
Billingslea.....	9	Saunders.....	3
Chute.....	8	Vance.....	2
Fowler.....	7	Owens.....	1
Larsen.....	6	Stanford.....	1

The second in the series of moonlight athletic meets held on the new cinder track resulted in a victory for the I. C. C. team over the P. R. K. team, 21 to 20.

A consignment of books has been sent from the Cristobal Y. M. C. A. library to Porto Bello for use of the men there.

The Boys' Isthmian athletic meet, held on the Cristobal athletic field, Saturday, March 20, resulted in a victory for the Empire team: Cristobal, second; Culebra, third; and Gorgona, fourth. The winners in the different events were as follows:

100-pound 1-lap race—Lincoln, Empire, first; Morrison, Gorgona, second; Morris, Cristobal, third.

80-pound 1-lap race—Warner, Culebra, first; Smith, Cristobal, second; Daughtrey, Cristobal, third.

Standing broad jump—Wade, Empire, first; Sims, Cristobal, second; Morrison, Gorgona, third.

100-pound 1-lap race—Wade, Empire, first; Sims, Cristobal, second; Kerruish, Cristobal, third.

Running broad jump—Wade, Empire, first; Sims, Cristobal, second; Lincoln, Empire, third.

100-pound 50-yard dash—Wade, Empire, first; Sims, Cristobal, second; Turner, Cristobal, third.

80-pound, 50-yard dash—Roe, Culebra, first; Warner, Culebra, second; Daughtrey, Cristobal, third.

Running high jump—Sims, Cristobal, first; Wade, Empire, second; Johnson, Empire, third.

Relay race: Cristobal—Smith, Jennings, Bilet, Daughtrey, Sims, Morris, first. Culebra—Roe, F. McGovern, M. Mitchell, T. McGovern, C. Mitchell, Warner, second. Empire—Lincoln, Davies, Von Oustrand, Catto, Johnson, Wade, third.

Judges—Weidman, Goodman, Booz. Starter, Taulbee. Clerk of course, Cundiff.

The boys of the public school in Cristobal have been given a thorough physical examination by Physical Director Condif.

EMPIRE.

The Empire duck pin bowlers captured three games from the Culebra bowlers on the Empire alleys Saturday night, April 3. This places the Empire team first; by the narrow margin of four games, Cristobal being second. Empire has six more games to roll before the closing of the tournament, three at Culebra and three at Cristobal.

Work has been resumed in the gymnasium. The baseball men were out for practice last week, and efforts are being made to organize a "gym" class which will meet two evenings each week. Light calisthenics, work on the horse and bars, and indoor games will constitute the work of the class.

Contract Fire Station at Gatun.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, C. Z., until 2 p. m., Monday, April 12, 1909, when they will be publicly opened, for the erection by contract of a fire station at Gatun, C. Z. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with certified check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$150 conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest and to waive defects or informalities in proposals. C. Nixon, Purchasing Agent on the Isthmus.

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at La Boca at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at La Boca about 4.30 p. m. in time to make connections for the 5.30 train at Panama.

One of the steam shovels working in the Cut at Bas Obispo is excavating at elevation 38, which is two feet below the bottom of the Canal. This shovel is digging a sump for drainage purposes.

PERFORMANCE OF STEAM SHOVELS

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS
The subjoined tables show the monthly records of steam shovel work in Canal excavation since American occupation

CENTRAL DIVISION.					ATLANTIC DIVISION.						
PERIOD.	Working days.	Average number of shovels at work.	Output per shovel (cubic yards.)		Rainfall (inches), Empire.	PERIOD.	Working days.	Average number of shovels at work.	Output per shovel (cubic yards.)		Rainfall (inches.) Catun.
			Per day.	Per month.					Per day.	Per month.	
1906—					1907—						
January..	26	12.83	363	9,430	1.28	July.....	19½	1.83	323	8,393	11.12
February	23	12.48	587	13,494	0.57	August ..	27	7.70	580	15,647	16.37
March....	27	12.37	716	19,335	0.45	Sept'ber	24	8.12	783	18,790	8.03
April....	24	12.33	720	17,289	11.42	October..	27	9.00	897	24,232	19.27
May.....	27	12.41	581	15,684	7.54	Nov'e'ber	24	9.00	938	22,514	14.27
June.....	26	14.81	539	14,026	6.92	Dec'e'ber.	25	9.00	1,233	30,833	5.53
July.....	25	16.64	378	9,441	14.61	1908—					
August ..	27	16.93	536	14,461	11.84	January..	26	10.72	1,274	33,115	3.18
Sept'e'ber	24	21.33	568	13,664	7.41	February	24	11.76	1,235	29,628	1.29
October..	27	22.67	532	14,373	3.97	March....	26	13.54	1,296	33,711	2.81
Nov'e'ber.	24	20.46	459	10,533	21.05	April....	25	14.00	1,260	31,492	1.47
Dec'e'ber.	25	22.68	491	12,267	8.15	May.....	25	12.18	1,055	26,361	17.30
1907—					1909—						
January..	26	31.04	702	18,248	0.08	January..	25	7.00	765	19,124	7.17
February	23	39.87	674	15,966	0.13	February	23	5.74	949	21,826	4.12
March....	25	43.88	741	18,530	0.16	March....					
April....	26	44.12	765	19,884	0.09	April....					
May.....	26	31.70	833	21,674	6.22	May.....					
June.....	25	38.28	651	16,266	13.53	June.....					
July.....	26	43.38	680	17,670	9.85	July.....					
August ..	27	39.85	729	19,679	11.28	1908—					
Sept'e'ber	24	39.42	815	19,563	10.86	March....	26	4.50	686	17,849	0.00
October..	27	39.85	792	21,383	15.44	April....	25	5.50	753	18,829	0.76
Nov'e'ber.	24	44.88	772	18,541	10.40	May.....	25	6.75	525	13,116	8.65
Dec'e'ber.	25	48.84	923	23,066	1.47	June.....	26	5.30	701	18,217	4.98
1908—					1909—						
January..	26	51.53	1,039	27,003	0.75	July.....	26	5.80	824	21,441	5.66
February	24	54.00	1,112	26,690	0.00	August ..	26	5.91	846	21,992	7.39
March....	26	53.66	1,152	29,947	0.41	Sept'e'ber	25	6.59	818	20,455	7.56
April....	25	53.04	1,184	29,596	1.36	October..	27	6.77	742	20,034	8.41
May.....	25	53.24	894	22,344	12.91	Nov'e'ber.	23	7.00	713	16,396	8.65
June.....	26	55.15	1,011	26,294	8.21	Dec'e'ber.	26	6.11	838	21,793	10.27
July.....	26	52.57	1,071	27,848	11.79	1909—					
August ..	26	52.58	1,122	29,184	8.11	January..	25	6.42	840	21,512	3.08
Sept'e'ber	25	49.68	1,178	29,444	9.76	February	23	7.18	650	14,950	3.26
October..	27	49.55	1,177	31,766	8.87	March....					
Nov'e'ber.	23	50.91	1,156	26,577	4.46	April....					
Dec'e'ber.	26	50.73	1,209	31,421	5.09	May.....					
1909—					1909—						
January..	25	51.80	1,183	29,576	2.28	June.....					
February	23	56.05	1,260	28,986	1.50	July.....					
March....						August ..					
April....											
May.....											
June.....											
July.....											
August ..											
Sept'e'ber											
October..											
Nov'e'ber.											
Dec'e'ber.											

*Pedro Miguel.

The *Cartago*, of the United Fruit Company Steamship Line, which ran on the reef at Utila Island off the Coast of Honduras on November 14, left New Orleans for Colon on April 3, and will leave Colon on the return voyage on April 13, stopping at Port Limon.

Auction of Ponies.
There will be sold at public Auction, at Empire police station, at 2 o'clock p. m., April 9, 1909, the following described public animals:
One dark bay native pony, No. 17.
One gray native pony, No. 23.
One gray native pony, No. 47.
The animals may be seen at the Empire corral. Full information may be obtained from the Chief of Police, Ancon.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.			
Allianca.....	P. R. R. Friday.....	Apr. 2	
Atrato.....	R. M. Saturday.....	Apr. 3	
Colon.....	P. R. R. Thursday.....	Apr. 8	
Prinz Joachim.....	H. A. Saturday.....	Apr. 10	
Panama.....	P. R. R. Wednesday.....	Apr. 14	
Magdalena.....	R. M. Saturday.....	Apr. 17	
Advance.....	P. R. R. Tuesday.....	Apr. 20	
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Apr. 24	
Allianca.....	P. R. R. Monday.....	Apr. 26	
Orinoco.....	R. M. Saturday.....	May 1	
Colon.....	P. R. R. Monday.....	May 3	
Panama.....	P. R. R. Saturday.....	May 8	
Prinz Joachim.....	H. A. Saturday.....	May 8	
Advance.....	P. R. R. Friday.....	May 14	
Oruba.....	R. M. Saturday.....	May 15	
All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.			
COLON TO NEW YORK.			
Magdalena.....	R. M. Tuesday.....	Apr. 6	
Advance.....	P. R. R. Thursday.....	Apr. 8	
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Apr. 13	
Allianca.....	P. R. R. Wednesday.....	Apr. 14	
Colon.....	P. R. R. Tuesday.....	Apr. 20	
Orinoco.....	R. M. Tuesday.....	Apr. 20	
Panama.....	P. R. R. Monday.....	Apr. 26	
Prinz Joachim.....	H. A. Tuesday.....	Apr. 27	
Advance.....	P. R. R. Sunday.....	May 2	
Oruba.....	R. M. Tuesday.....	May 4	
Allianca.....	P. R. R. Saturday.....	May 8	
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	May 11	
Colon.....	P. R. R. Friday.....	May 14	
Tagus.....	R. M. Tuesday.....	May 18	
Panama.....	P. R. R. Thursday.....	May 20	
Prinz Joachim.....	H. A. Tuesday.....	May 25	
Advance.....	P. R. R. Wednesday.....	May 26	
NEW ORLEANS TO COLON.			
Cartago.....	U. F. C. Saturday.....	Apr. 3	
Ellis.....	U. F. C. Saturday.....	Apr. 10	
Parismina.....	U. F. C. Saturday.....	Apr. 17	
Cartago.....	U. F. C. Saturday.....	Apr. 24	
Ellis.....	U. F. C. Saturday.....	May 1	
Parismina.....	U. F. C. Saturday.....	May 8	
Cartago.....	U. F. C. Saturday.....	May 15	
Ellis.....	U. F. C. Saturday.....	May 22	
COLON TO NEW ORLEANS.			
Parismina.....	U. F. C. Tuesday.....	Apr. 6	
Cartago.....	U. F. C. Tuesday.....	Apr. 13	
Ellis.....	U. F. C. Tuesday.....	Apr. 20	
Parismina.....	U. F. C. Tuesday.....	Apr. 27	
Cartago.....	U. F. C. Tuesday.....	May 4	
Ellis.....	U. F. C. Tuesday.....	May 11	
Parismina.....	U. F. C. Tuesday.....	May 18	
Cartago.....	U. F. C. Tuesday.....	May 25	
Ellis.....	U. F. C. Tuesday.....	June 1	
COLON TO BARBADOS, CALLING AT TRINIDAD.			
Tagus.....	R. M. Tuesday.....	Mar. 30	
Atrato.....	R. M. Tuesday.....	Apr. 13	
Magdalena.....	R. M. Tuesday.....	Apr. 27	
Orinoco.....	R. M. Tuesday.....	May 11	
The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.			
Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.			
The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, and from Colon at 1.30 p. m., via Port Limon, for New Orleans.			
The next sailings of the Leyland Line for New Orleans via Kingston, Ja., will be as follows: Steamship <i>Tampican</i> about March 27, and steamship <i>Cuban</i> about April 5. The <i>Tampican</i> will call at Tampa, Fla., after leaving Kingston.			
The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.			
All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.			
The arrivals and departures at Ancon for the week ending April 3, 1909, were: Arrivals—March 27, <i>Ecuador</i> from Guayaquil; March 28, <i>Pen</i> from San Francisco; March 29, <i>Taboga</i> from intermediate ports; March 30, <i>Quito</i> from intermediate ports; March 31, <i>Hauri</i> , <i>Kosmos</i> Line, from Central America; April 2, <i>Limari</i> from Valparaiso, and <i>Maryland</i> U. S. N., from Central America. Departures—March 27, <i>Guatemala</i> for Valparaiso; March 29, <i>City of Para</i> for San Francisco; March 31, <i>Taboga</i> for intermediate ports; April 2, <i>Ecuador</i> to Guayaquil.			

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, APRIL 14, 1909.

No. 33.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Use of Oil as Fuel to Be Continued.

The revocable license granted the Union Oil Company of California January 10, 1906, to operate and maintain a pipe-line for the transmission and delivery of oil in the Canal Zone, has been amended. The license provided that the company should pay into the treasury of the Canal Zone the sum of \$500 a month for the support of the public schools, and should furnish to the Isthmian Canal Commission and the Panama Railroad Company such crude oil as might be desired at the rate of 90 cents a barrel. The license as amended does away with the monthly payment of \$500, places the price of oil at \$1.10 per barrel for a period of six years from April 1, 1909, guarantees the use of between 30,000 and 60,000 barrels of oil per month, and provides that no taxes be collected on account of the government of the Canal Zone during the term of the agreement, which expires April 1, 1915.

The first deliveries of oil were made in August, 1906. The pipe-line was completed across the Isthmus in November, 1907, and the oil has been used by the Commission in quantities varying from a few hundred barrels to 20,000 barrels or more each month since that time. Experience of two years demonstrated to the Union Oil Company that it could not continue the contract except at a loss, and arrangements were therefore made to withdraw from the Isthmus. As the use of oil as fuel has proved convenient and economical to the Commission and the Panama Railroad Company, the license has been amended on condition that the Union Oil Company will continue the delivery of oil. Before the license was amended an investigation was made to ascertain whether oil of satisfactory grade could be delivered in the Canal Zone at less cost than \$1.10 per barrel, and whether it would be cheaper to continue the use of coal. It was found that the new contract was in the interest of econ-

omy. At present about 35,000 barrels of oil are used each month, and the amount consumed will increase as the installation of oil burners now in progress is completed.

New Quarters Authorized.

Authority has been granted for the construction by contract of two type-18 bachelor quarters at Gatun and one type-10 house and four type-17 houses at Ancon. The quarters at Gatun will be two stories high and contain 24 rooms with the usual bath and toilet rooms. The quarters at Ancon are erected at the instance of the Department of Sanitation. The type-10 house is a two-story one-family house, and will be located at Ancon, outside of the hospital reservation. The type-17 quarters are one-story one-family houses, and will be located within the hospital reservation. The work will be done by contract, and bids will be advertised for in a few days.

Standard Supplies for 1910.

The first bids for supplies of standard articles to be used in the Canal work during the year ending June 30, 1910, will be opened on April 18, in the office of the General Purchasing Agent at Washington. These bids will be for steel and articles made of steel, and they will be followed at short intervals by bids for supplies of articles made entirely or partly of rubber, paints, oils, and other articles that have become standard in the Canal work.

This method of contracting for standard supplies for a year is the same as that followed in other branches of the Government service and in large business establishments. Until recently it was not practicable to put it into effect in the Canal work, because it is only by experience that a conclusion can be reached as to what articles are standard and what quantities of each are needed. It was first proposed to ask for bids for a six months' supply, or for the period between January 1 and June 30, 1909, but the task of compiling the schedules was so great that advertisement could not be made before January 1, and the method of making separate contracts for supplies as they are needed will therefore be continued until the beginning of the next fiscal year.

The new method is to place a contract for one class of articles with a qualified bidder on the condition that he will supply all of that article needed in the fiscal year at a fixed price. Over eight thousand articles are required, and these have been grouped into a convenient number of classes. For instance the schedule for materials made wholly or partly of rubber includes 28 classes, on any one of which a bid will be received. Each class is composed of a number of separate articles. Class 1 of this schedule is made up of four items, each item including various quantities of four-ply armored air

hose, in 25-foot lengths, covered with flat steel galvanized wire braided about the hose. The first item includes five different sizes of hose. Bids are made on classes, not on items.

The schedule for standard supplies shows (1) the item number, (2) the quantity of each size required, (3) a complete description of the article, (4) Proposition A, (5) Proposition B. Proposition A is a proposal to furnish a certain quantity at a certain price subject to the right of the Commission to increase or reduce the quantity by 50 per cent or less. Proposition B is a proposal to furnish the articles subject to the right of the Commission to purchase any part or none of the quantities advertised for, and to increase or to diminish the quantities purchased by 50 per cent or less. The purpose of the alternate proposition is to determine whether bidders in certain lines will make better prices when the amount of material to be taken is known within certain limits, or will make the same price regardless of whether they are sure of a sale or not.

The acceptance of any supplies is contingent on their passing inspection in the States, and in some cases articles must stand the additional test of use for a certain period on the Isthmus.

Porto Bello Wireless.

The project for a wireless telegraph station at Porto Bello has been approved. The expense of building the station will be borne by the Isthmian Canal Commission, and the equipment will be furnished by the Navy Department. When the desirability of providing a means of quick communication between Porto Bello and the Canal Zone became apparent a telephone line was projected. It was found that the cost of installation alone would be about \$15,000, and that the cost of maintenance would probably be very high. Investigation of the cost of a submarine cable was then made, and it was estimated that a cable would cost twice as much as a telephone line. The wireless station at Porto Bello will transmit messages to the wireless station at Colon, and from there will be transmitted to any part of the Canal Zone by telegraph or telephone. Communication with any station within reach will also be established. The cost of installation, including the buildings, will be about \$7,000, and the cost of maintenance will be very low.

Equipment of Canal Zone Railroads.

An inspector from the Interstate Commerce Commission left New York on the *Colon*, which is due to arrive at Cristobal on April 14. He comes to the Isthmus to pass on some questions with regard to the effect of interstate carrier laws recently enacted on the equipment of the Canal Zone railroads.

CANAL MEDALS.

Minting Begun—Corrections in List Previously Published.

Samples of the first Canal Medals struck at the Philadelphia Mint have been received on the Isthmus, and the minting of the first order of five thousand has begun. Corrections of the list as published in THE CANAL RECORD are still coming in, but it is probable that practically all will be in hand by June 1. Persons who wish to make corrections should do so at once, addressing the Assistant to the Chairman at Culebra, because the list as compiled and corrected cannot be changed after the engraving is begun. Each medal is to have the name of the person to whom it is awarded engraved on the obverse, and the number and the dates between which it was earned on the reverse side.

The first issue will be of medals earned up to January 1, 1909. The number of persons entitled to medals and the number to the bar, which indicates four years of service, is shown in the following statement:

Entitled to Medals up to January 1, 1909.

Isthmian Canal employes	1975
Panama Railroad employes	247
	2222

Entitled to Service Bars up to January 1, 1909.

Isthmian Canal employes	97
Panama Railroad employes	48
	145

ISTHMIAN CANAL COMMISSION EMPLOYEES.

The publication in THE CANAL RECORD of the list of employes who are entitled to Canal Medals has enabled the Chairman's office, through the persons interested, to make the following corrections in the list:

- Ferguson, Howard, from May 30, 1904, to May 31, 1904.
- Gorkas, William C., from June 20, 1904, to June 28, 1904.
- Carter, Henry R., from June 23, 1904, to June 28, 1904.
- Kenealy, Patrick, from June 29, 1904, to June 28, 1904.
- Sinclair, Joseph M., from Aug. 1, 1904, to July 19, 1904.
- Rerdell, Montfort C., from Aug. 9, 1904, to Aug. 16, 1904.
- Maguire, James M., from Aug. 15, 1904, to Aug. 16, 1904.
- Rowe, Hartley, from Jan. 12, 1905, to Nov. 1, 1904.
- Ruggles, Wm. B., from Aug. 10, 1904, to Aug. 9, 1904.
- Maher, Edward, from Dec. 1, 1904, to Oct. 1, 1904.
- Padgett, Monroe L., from Dec. 1, 1904, to Oct. 10, 1904.
- Duey, Charles W., from Feb. 7, 1905, to Feb. 6, 1905.
- Keys, James C., from Feb. 7, 1905, to Feb. 6, 1905.
- White, Samuel M., from June 20, 1905, to Feb. 23, 1905.
- Olsen, Louis, from Mar. 16, 1905, to Dec. 26, 1904.
- Simpson, Stephen S., from Apr. 16, 1906, to June 22, 1905.
- Jenkins, Ben., from July 13, 1905, to July 17, 1905.
- Lawton, John M., from Aug. 17, 1905, to Aug. 4, 1905.
- Johnson, August, Dec. 5, 1905, to Aug. 10, 1905.
- Butz, Leonard, Sept. 23, 1905, to Sept. 25, 1905.
- Cooper, John B., from Nov. 27, 1905, to Nov. 26, 1905.
- Caddock, John D., from Nov. 25, 1905, to Nov. 26, 1905.
- McGimsey, Jas. V., from Nov. 27, 1905, to Nov. 26, 1905.
- Roper, Cecil T., from Nov. 27, 1905, to Nov. 26, 1905.
- Rourke, Louis K., from Dec. 19, 1905, to Dec. 16, 1905.
- Groves, Richard B., from Apr. 6, 1906, to Nov. 1, 1905.
- Potts, Frederick A., from July 5, 1905, to July 6, 1905.
- Storla, John L., from Oct. 24, 1905, to Oct. 23, 1905.
- Atwood, F. Stanley, from Nov. 12, 1905, to Nov. 13, 1905.
- Schutt, Oscar, from Dec. 2, 1905, to Dec. 5, 1905.
- Robinson, F. M., from Jan. 12, 1906, to Dec. 21, 1905.
- Tamuehill, John W., from Oct. 15, 1906, to Jan. 13, 1905.
- Brown, Perry F., from Apr. 1, 1905, to Apr. 3, 1906.
- Lewis, Fitz J., from Apr. 18, 1906, to Apr. 11, 1905.
- Oyster, William M., from July 20, 1906, to July 30, 1906.
- Yeakle, Charles E., from Sept. 10, 1906, to Sept. 8, 1906.
- Burson, William B., from June 28, 1904, to May 24, 1904.

Corrections have been made in names as follows:

- Walkers, Frederick G., to Walters, Frederick G., Sept. 1, 1905.
- Jose De Lavandeyra, to J. de Lavandeyra, July 16, 1905.
- Van Hardeveld, to Van Hardeveld, J. A., July 5, 1905.
- Kendall, Charles R., to Kendall, Charles E., July 7, 1905.
- Hibbard, Mary E., June 29, 1904, to Hibbard, M. Eugene, June 28, 1904.
- Haskin, William C., to Hawkins, William C., July 5, 1904.
- Sprangler, Chas. J., Apr. 1, 1904, to Spangler, Chas. J., July 17, 1904.
- Parker, Charles C., to Parker, Charles L., Nov. 1, 1904.
- Bates, Phil E., to Bates, Phil M., Dec. 6, 1904.
- Alexander, Edigio E., Jr., to Alexander, Elias E., Sept. 14, 1904.

- Frogerty, John E., to Fogerty, John E., Mar. 22, 1905.
- Kennedy, Sydney J., to Kennedy, Sydney J., Apr. 4, 1905.
- Davis, Sydney L., to Davis, Sidney L., Apr. 24, 1905.
- Ensev, Charles R., to Ensey, Charles R., Apr. 25, 1905.
- Bryon, Charles E., to Brvon, Charles R., July 11, 1905.
- Green, Henriette B., to Green, Harriette B., July 12, 1905.
- Hale, David H., to Hale, David J., July 12, 1905.
- Pitman, William P., to Pittman, William P., August 14, 1905.
- Grissom, James T., to Grissom, James T., Aug. 19, 1905.
- Gorham, George A., to Gorham, George H., Oct. 31, 1905.
- Conrod, Moise, to Conrad, Moise, Nov. 21, 1905.
- McCormack, William T., to McCormack, William T., Jan. 13, 1906.
- Surles, Clarence O., to Surles, Clarence C., Jan. 22, 1906.
- Ferguson, Robert N., to Ferguson, Robert N., Feb. 22, 1906.
- Steinbaugh, Howard H., to Steinbaugh, Howard W., May 7, 1906.
- Freeman, Sam D., to Freedman, Sam D., Mar. 22, 1906.
- Gnyant, Claude K., to Guyant, Claude E., May 26, 1906.
- Luther, Arthur P., to Luthur, Arthur T., May 26, 1906.
- Hall, John, to Hall, John H., May 31, 1906.
- Crosgrove, James, to Cosgrove, James, June 9, 1906.
- Roberts, Frank B., to Roberts, Frank R., May 11, 1906.
- Browne, George, to Brown, George, July 14, 1906.
- Cameron, Charles G., to Cameron, Charles C., July 30, 1906.
- Davis, Percy W., to Davis, Percy W., July 30, 1906.
- Gerrard, Fred C., to Garrard, Fred C., July 30, 1906.
- Angell, Chester, to Angell, Chester R., Aug. 1, 1906.
- Kenny, Arthur E., to Kenney, Arthur F., Aug. 1, 1906.
- O'Conner, Fred B., to O'Connor, Fred B., Aug. 7, 1906.
- Beckjord, Jessie G., to Beckjord, Jesse G., Aug. 13, 1906.
- Garvin, Patrick A., to Garvin, Patrick J., Aug. 13, 1906.
- Pickin, H. Ernest, to Picken, H. Ernest, Aug. 24, 1906.
- Wilson, Joe O., to Wilson, Joseph O., Aug. 24, 1906.
- O'Mealey, Bertrand J., to O'Mealey, Bertrand J., Aug. 29, 1906.
- Coulan, Archie B., to Conlan, Archie B., Sept. 4, 1906.
- Jorgensen, Einar L., to Jorgensen, Einar L., Sept. 4, 1906.
- Church, Sydney, to Church, Sidney, Sept. 4, 1906.
- Stevens, Master B., to Stevens, Masters B., Sept. 5, 1906.
- McCullough, Darrell H., to McCullough, Derrill H., Sept. 8, 1906.
- Metcalf, Jesse C., to Metcalfe, Jesse C., Sept. 8, 1906.
- Haynie, Waller T., to Haynie, Walter T., Sept. 17, 1906.
- Milligan, William O., to Milligan, William G., Nov. 20, 1906.
- Alexander, Burchard D., to Alexander, Burchard B., Feb. 28, 1906.
- Waldron, Frank K., to Waldon, Frank K., June 15, 1906.
- Murphy, Za, to Murphy, Zan, Oct. 2, 1906.
- Wassell, Harden E., to Wassell, Hardin E., Oct. 9, 1906.
- McNeil, Thomas A., to MacNeil, Thomas A., Oct. 14, 1906.
- Beau, Walter I., to Beau, W. I., Oct. 19, 1906.
- Mvers, Forrest J., to Myers, Forrest J., Oct. 24, 1906.
- Neal John P., to Neal, John Pratt, Oct. 27, 1906.
- Perry, Robert E., to Perry, Hobart E., Nov. 2, 1906.
- Therson, Edward D., to Thurston, Edward D., Nov. 2, 1906.
- Monk, Herman B., to Monk, Herman V., Nov. 6, 1906.
- Jennings, Allen H., to Jennings, Allan H., Nov. 16, 1906.
- Healy, Edward B., to Healey, Edward B., Dec. 19, 1906.

- Edmunds, Jr., William H., to Edmands, Jr., William H., Dec. 28, 1906.

The following names have been added:

- Uncles, Roderick W., May 4, 1904.
- de Obarrio, P., July 9, 1904.
- Ward, James T., July 11, 1905.
- Bolten, Herman, July 26, 1905.
- Jepsen, Peter C., Aug. 21, 1905.
- Wahlquist, Oscar, Feb. 9, 1906.
- King, Claude W., Nov. 13, 1905.
- Wolnitzek, Thomas, Feb. 22, 1906.
- Shaughnessy, J. Andrew, March 17, 1906.
- Warr, George D., July 19, 1906.
- Lough, Matthew H., Aug. 13, 1906.
- Roenaspie, Fred, June 24, 1906.
- Perl, Fritz, July 25, 1906.
- O'Leary, Joseph, Feb. 21, 1905.
- Lowe, George, May 21, 1906.
- Peterson, Walter, July 9, 1906.
- Jones, John W., Oct. 21, 1906.
- Kittel, Charles, Oct. 26, 1906.
- Rutledge, Richard B., Nov. 20, 1906.

The following names have been omitted from the list pending settlement of the question of citizenship:

- Huntington, Linn M., Aug. 10, 1904.
- Jakoby, Joseph, Sept. 5, 1905.
- Piaella, Antoine, April 1, 1905.
- Hammel, Otto, April 13, 1905.
- Norton, Francis J., Aug. 14, 1905.
- Hinselman, August, Sept. 1, 1905.
- Oersted, Hans C., Sept. 12, 1905.
- Beckwith, George G., Feb. 22, 1906.

PANAMA RAILROAD EMPLOYEES.

Corrections have been made in names as follows:

- Chester, W. E., to Chester, W. C., May 4, 1904.
- Stevens, J. A., to Stevens, J. E., May 11, 1904.
- Cannon, Harry F., to Gannon, Harry F., May 15, 1905.
- Notte, John G., to Notte, John G., Mar. 22, 1905.
- Beterbenner, H., to Betebenner, H., May 23, 1905.
- Beckel, W. O., to Beckell, W. O., May 29, 1905.
- Trasher, Leon C., to Thrasher, Leon C., May 31, 1905.
- Dedge, Graham, to Dedge, Graham G., Sept. 19, 1905.
- Goerlich, Samuel E., to Goerlich, Clarence S., Mar. 26, 1906.
- Johnson, H. E., to Johnson, Horace E., June 15, 1906.
- Gransberry, O. E., to Granberry, O. E., June 19, 1906.
- Hoffmark, H. F., to Hoffmark, R. F., June 24, 1906.
- Williams, Minnie, to Williams, Minnie E., July 1, 1906.
- Hill, J. C., to Hill, Iver G., July 17, 1906.
- Crop, Charles D., to Corp, Charles D., Sept. 4, 1906.
- Germandt, M., to Geraundt, Max, Nov. 6, 1906.
- McLean, Neal, to McLean, Neil, Nov. 6, 1906.

The following changes have been made in date:

- Hill, George, June (?), 1904, to June 24, 1904.
- Nunn, Numa, July 1, 1905, to July 1, 1904.
- Monk, Bert H., Dec. 17, 1905, to Dec. 25, 1905.
- Bain, W. H., Dec. 5, 1906, to Feb. 1, 1906.
- Zook, E., Dec. 16, 1906, to Dec. 17, 1906.
- Parker, F. E., Dec. 17, 1906, to Dec. 18, 1906.

The following names have been added:

- Illia, John D., Dec. 14, 1904.
- Stewart, David, Dec. 9, 1905.
- Stubner, Charles E., Feb. 22, 1906.
- Omeallia, Ruth, June 19, 1906.
- Lester, Clarence A., July 25, 1906.
- Andrews, Rollen F., Oct. 14, 1906.
- Renton, A. J., Nov. 20, 1906.

STATEMENT OF CLASSIFIED EXPENDITURES TO JANUARY 31, 1909.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1908. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Department of Civil Administration.	Department of Sanitation.	Department of Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.	\$1,446,407.73	\$4,636,630.37	\$13,410,795.01	\$4,296,732.98	\$19,345,697.87	\$43,136,263.96
Fiscal year 1908.	704,610.15	2,310,212.01	16,680,660.46	1,494,956.41	11,684,215.15	32,874,654.18
Fiscal year 1909:						
July, 1908.	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August, 1908.	77,019.80	145,870.37	1,599,556.90	60,798.76	517,046.09	2,400,291.92
September, 1908.	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
October, 1908.	59,612.51	155,676.68	1,448,614.64	67,696.17	727,544.14	2,459,144.14
November, 1908.	59,374.12	147,957.24	1,369,805.56	77,406.64	480,139.10	2,134,682.96
December, 1908.	65,526.32	166,321.70	1,500,404.77	70,936.43	893,337.24	2,696,526.46
January, 1909.	51,416.82	164,605.80	1,550,843.72	65,209.31	1,418,185.90	3,250,261.75
Total.	2,618,732.63	8,054,962.64	40,649,633.41	6,278,447.27	36,313,881.81	93,915,657.76

SCHOOL PROBLEMS.

Conditions in Canal Zone that Present Peculiar Difficulties in Education.

In the work now in progress of grading the schools of the Canal Zone, three great obstacles are encountered: (1) the difficulty of harmonizing the points of view of people coming from hundreds of different places; (2) the absence and tardiness; (3) the constant changing of places of residence.

It is probable that, in its extent at least, the first of these problems is unique in education. In the Canal Zone schools for white children the 722 pupils represent over 500 different schools, and a score or more distinct educational systems. Thirty-six States, two territories and the District of Columbia have representatives among the pupils, and the teachers themselves represent 16 different States. Not only are the systems of the various States different, but in only a few of the States is there a thoroughly uniform system of education, so that each city or town has some distinct features in its school system.

Twenty-one different nationalities other than American are represented by pupils in the schools for white children, and practically every one of the alien children began school work under a system differing in some respects from that in which each of the others began. The schools of the Canal Zone have reached the point where attention to grading is necessary and the difficulties that are being overcome may be surmised from a study of the following table, showing the States and countries from which the children have come, and the number from each State or country:

United States.	Foreign Countries.
Alabama..... 11	Denmark..... 1
Arizona..... 1	Nicaragua..... 1
Arkansas..... 5	Holland..... 3
California..... 8	England..... 23
Colorado..... 3	Germany..... 15
Connecticut..... 4	Jamaica..... 11
District of Columbia..... 36	Spain..... 16
Florida..... 8	Panama..... 32
Georgia..... 8	Costa Rica..... 2
Illinois..... 37	Greece..... 1
Indiana..... 10	Nova Scotia..... 1
Iowa..... 27	Colombia..... 4
Kansas..... 6	Guatemala..... 3
Kentucky..... 20	Ireland..... 1
Louisiana..... 7	Cuba..... 7
Maine..... 4	France..... 9
Maryland..... 11	Finland..... 1
Massachusetts..... 25	Syria..... 2
Michigan..... 17	Hungary..... 2
Minnesota..... 7	Scotland..... 1
Mississippi..... 7	Central America..... 3
Missouri..... 11	
Nebraska..... 9	Aliens..... 139
New Jersey..... 12	Americans..... 530
New Mexico..... 4	Unknown nat'lity..... 6
New York..... 70	Nat'lity not stated..... 16
North Carolina..... 1	Pupils never having
Ohio..... 38	attended school
Oklahoma..... 3	prior to coming to
Pennsylvania..... 58	Isthmus..... 31
South Carolina..... 4	
South Dakota..... 2	Grand total..... 722
Tennessee..... 5	
Texas..... 23	
Vermont..... 4	
Virginia..... 15	
Washington..... 2	
Wisconsin..... 7	
Total..... 530	

It is not only in reconciling differences in methods of teaching that difficulty is experienced. Indeed the more elemental difficulty is that the attitude of children, parents, and teachers is fixed by conditions in the particular locality from which they come. A local coloring suffuses their thought and action. The teachers themselves are the product of local conditions, and no matter how advanced their professional training may be their work reflects their school edu-

cation and professional experience. More than the teachers, the parents and children show a natural local pride in the schools of their home community, and this is occasionally reflected in their attitude toward the school system of the Zone.

One phase of this local coloring is the conviction of teachers, parents, and children that the grading of the schools with which they are familiar should be the standard. To adopt their ideas would mean several hundred different standards. It is seldom that two schools can be found in the States in which the grading is exactly the same. In one school a certain grade will carry the student farther than it will in another, and if there is a general similarity of grading it will yet be found that in the extent to which some studies are pursued there is a difference. There is no harm in this where the community schools take children from the primary grade through the high school, for there the change in the personnel of the student body is slight, and there is no conflict of grades. But in the Zone schools each pupil has been started on a different scheme, each parent has his own confirmed idea of how a school should be graded and conducted, and each teacher has a similar difficulty in overcoming his local coloring.

The burden of readjusting himself and the pupil and reconciling the parents falls on the teacher. How well the Canal Zone teachers have overcome these difficulties may be judged from the fact that the work of grading is making good progress.

In the schools for colored children the following States and countries are represented by the number of pupils indicated:

United States:	Brazil..... 2
Colorado..... 2	Central America..... 1
Iowa..... 1	British Honduras..... 1
New York..... 5	China..... 9
Ohio..... 2	Colombia..... 96
Pennsylvania..... 1	Costa Rica..... 6
Texas..... 1	Cuba..... 1
American born:	French West Indies:
States unnamed..... 6	Martinique..... 13
Assyria..... 1	Guadeloupe..... 1
British Possessions:	Italy..... 2
Barbados..... 61	Nicaragua:
Demerara..... 5	Negro..... 1
Antigua..... 5	Nicaraguan..... 1
Grenada..... 24	Panama..... 357
Jamaica..... 415	Spain:
Saint Lucia..... 73	Native born..... 19
Montserrat..... 3	Spanish origin..... 28
Saint Kitts..... 1	Venezuela..... 1
Saint Vincent..... 2	Unknown nat'lity..... 59
Trinidad..... 9	
Turks Island..... 1	Total..... 1,215

The constant changing of parents from one part of the Zone to another is a condition that makes grading difficult, and will continue to do so until one standard has been thoroughly established. A school for white children at Gatun began the year last September with 21 pupils and by accretions from other parts of the Zone this number has been increased to 46. In one of schools for colored children there have been 50 changes in the past six months. This changing unsettles the children who are transferred and the school to which they go. It also adds to the absences.

The one great cause of absence in the schools for white children is the six weeks vacation granted to "gold" employes engaged in the States. Practically every white child in the Zone comes from a family which spends six weeks of the year away from Panama. A great majority of these are away from the Isthmus during six weeks of the school year, for it is not possible or desirable to let all employes have their vacation in the

summer months. This condition in the schools for white children has led to the appointment of two teachers who, when not substituting, spend their time in the schools along the line of the Canal giving special instruction to pupils who have missed school part of the year.

Among the colored children absence and tardiness are chronic and under present conditions are practically incurable, although efforts to lessen the absence and tardiness are not spared. A constant change of residence, indifference on the part of parents and children, the large number of pupils to each teacher, and the legal restrictions on the punishment of truants and sluggards are the more important obstacles in the way of curing absence and tardiness.

Canal Zone Schools.

The question of a supplementary course in spelling for the schools of the Canal Zone was discussed at the teachers' meetings held in Ancon on April 3. Several weeks ago an examination in English composition was held throughout the schools and the words commonly misspelled in the compositions submitted by the pupils form the basis of the supplementary work for each grade. Number, letter, and word cards have been printed and the schools will begin to use them at the beginning of next term. The use of these cards, the matter of hand work now being introduced into the primary grade, and a new course of study in English and arithmetic were also discussed.

In the meeting of the teachers of the schools for white children a report was made concerning physical culture for the first, second, third, and fourth grades of the Canal Zone schools. Experiments have been conducted at Cristobal by a teacher especially trained in the physical culture of school children, and the report was based upon the observations made in that school. At present only a few exercises that have been found especially adapted to the grades mentioned and to the climate of the Canal Zone will be introduced.

In the meeting for teachers of the schools for colored children, new courses in English and arithmetic, and the introduction of letter, word, and number cards were also discussed. The plan of introducing school gardens was taken up. The idea behind this movement is that the negro children now in the Canal Zone schools will within a few years form a part of the adult population of the Zone, and it is believed that their prosperity and usefulness can be greatly increased if practical lessons in gardening are given them along with their regular school work.

The teachers in the schools for colored children were informed that an examination would be held in the near future to test the educational qualifications of the teachers. The subjects of the examination will be those taught in the schools for colored children. Teachers who cannot pass this test will not be retained in the service, but teachers now in the service will not be dismissed to make way for outsiders who may pass a better examination than they, provided that they come within the passing mark.

Gatun Masonic Club.

The Gatun Masonic Club meets every Monday evening in the hall at Gatun. Visiting brothers are welcome.

CARING FOR THE SICK.

Origin and Work of the Sick Camp—Hospitals, Camps, Dispensaries in 1908.

The sick camp as conducted by the Department of Sanitation of the Isthmian Canal Commission is peculiar to the Canal Zone. It is the place in which laborers are treated for illness that will last but a short time, the class of cases that in gold roll men would be treated "in quarters," and in private practice by giving the patient some medicine and telling him to remain at home for a day or so.

When the Americans assumed control on the Isthmus in May, 1904, there were two small hospitals at Colon, one in Panama, and one in Ancon. In July of that year a physician was stationed at Culebra, and soon after one was assigned to Gorgona, and another to Bohio. Wherever a doctor was stationed a dispensary and field or "line" hospital was opened, all crude affairs, but not ill-adapted to the conditions, since in the first two years of American occupation there were few women on the Isthmus. The "line" hospitals, as they were called, were in fact hospitals, like those at Colon and Ancon, although the aim was to treat in them only such cases as could not be moved with safety to the hospitals at the termini of the railroad, and such as it was evident would not be ill for more than a few days. The moving of sick men from points along the "line" to Ancon and Colon was a more serious matter then than now, because the railroad service was not so good, and hospital cars had not been provided. The shock of the tedious and rough journey forbade the transportation of many cases that now could be moved with safety. At the Miraflores Hospital in 1905 two hundred acute cases were treated at one time, and in a tent hospital at Tabernilla in 1906 all of the 250 cots were occupied. These were strictly emergency hospitals and were needed because there was not sufficient ward space elsewhere.

With the decrease in the sick rate, and the building up of the hospitals at Colon and Ancon, and the improvement in railroad service, the need for "the line" hospitals grew less and finally they were abandoned, the last one to be used being that at Culebra, which was closed in October, 1907. Meanwhile the number of women in the Canal Zone increased, and the crude dispensaries of the first two years became unsuited to the character of the population. The dispensaries are now as well equipped as the office of a physician in the States, and carry a more extensive stock of medicines. At all places, excepting Gatun and Paraiso, where it was necessary to erect new buildings, the dispensaries are in old French buildings.

When the "line" hospitals were abandoned it was found necessary to provide some place at each labor camp for treating such cases as in the Army would be sent to quarters, or at home would be cared for by the family. It was found that most of the laborers who were slightly ill would go to the dispensaries, get medicine and return to their quarters. There they would remain without taking the medicine, without food, often even without water, because their fellows paid little or no attention to them. So, a man a little ill to-day would be very ill the day following. To meet this condition the "sick camps" were established, the first one being opened at Paraiso in the latter part of 1905.

It consisted of two tents with cots, and an attendant saw to it that the men sent to the camp took their medicine and got something to eat.

The sick camps now number seventeen. At Porto Bello, Nombre de Dios, and Gatun spillway tents are used, but at all other points old French buildings have been converted to this use. In each camp is an attendant who is at once janitor, nurse and steward. Some of the camps are supplied with food from the labor messes and kitchens, with little additions of more delicate fare, and in others the attendant cooks the food. A doctor visits each camp twice a day. The camps cost little in proportion to the service they perform. They save a great amount of money and trouble each year, in keeping the laborer who is slightly ill, the malingering, and the hypochondriac out of the hospitals. A statement of the cases treated in the sick camps in the year 1908 follows:

HOSPITAL.	Admitted.	Died.
Tivoli.....	2,022	.....
La Boca.....	879	.....
Corozal.....	1,143	.....
Miraflores.....	1,155	.....
Pedro Miguel.....	994	.....
Paraiso.....	1,736	1
Empire.....	2,751	1
Culebra.....	2,547	5
La Cascadas.....	1,692	8
Bas Obispo.....	2,254	1
Gorgona.....	2,305	1
San Pablo.....	949	1
Tabernilla.....	1,644	.....
Gatun.....	2,314	4
Gatun spillway.....	613	.....
Cristobal.....	682	.....
Porto Bello.....	1,848	1
Total.....	27,528	23

Total days of relief furnished.....\$1,849
 Cost of subsistence per patient per day.....\$.2708
 Total cost of sick camps.....\$25,566.47
 Cost per capita per day, 49 cents.

The history of the hospitals was published in Volume I of THE CANAL RECORD, pages 381, 390, and 397. An idea of the service rendered by them and the sick camps in the calendar year 1908 may be obtained from the fact that 54,778 persons were given treatment. Patients transferred from sick camps to the hospitals and from the hospitals to Taboga Sanatorium, admissions thus duplicated in the total number of persons admitted to the hospitals and sick camps, numbered 6,711. The net admissions to the hospitals and sick camps plus 5,687 employes sick in quarters were thus 53,755. The average cost of subsistence per day for patients in hospitals and sick camps was 33 cents. The total number of days of relief furnished was 438,652; the net cost of hospitals and sick camps was \$682,133.16, and the net cost per capita per day was \$1.55. A statement of the cases treated in the hospital in 1908 follows:

HOSPITAL.	ADMITTED.			DIED.		
	Em- ployes.	Nonem- ployes.	Total.	Em- ployes.	Nonem- ployes.	Total.
Ancon.....	13,925	1,722	*15,880	247	166	†445
Colon.....	6,324	1,368	7,692	142	194	336
Culebra.....	2	79	81	.....	3	3
Palo Seco (Lepers).....	2	12	14	.....	.....	.....
Taboga Sanatorium.....	2,873	711	3,584	.....	2	2
Total.....	23,126	3,892	*27,251	389	365	†786

*This total includes 233 insane persons.
 †This total includes 32 insane persons

In addition to the relief given in the hos-

pitals and sick camps, and to employes sick in quarters, the dispensaries gave relief as follows:

CLASS.	White.	Black.	Total.
Employes.....	235,438	170,978	406,416
Nonemployes.....	29,051	16,227	45,278
Total.....	264,489	187,205	451,694

Total cost of dispensaries.....\$166,182.07

In 1908 the number of cases sent to Colon Hospital varied greatly each month because an effort was made in the early months of the year to keep the number of patients in Ancon Hospital between 550 and 600, and in the later months between 800 and 850. Cases in excess of those treated at Ancon were sent to Colon. They usually included the sick from Cristobal, Gatun and Porto Bello, and at times from points as far south as Gorgona.

The regular "line" hospital at Culebra was closed in October, 1907. On August 1, 1908, the building was opened as a hospital for the inmates of Culebra penitentiary and it is now used exclusively for that purpose. The cost of treating prisoners in Ancon Hospital and furnishing a guard for each patient was excessive and the penitentiary hospital was established as a measure of economy.

Palo Seco Hospital is used exclusively for lepers. It was opened on April 10, 1907, with six inmates. On December 31, 1908, there were 22 and on March 1, 1909, there were 26. They are mainly natives of Panama and West Indian negroes. No Americans are confined there. A white American, a hospital steward of many years' experience, is superintendent, and a visit is made by the Superintendent of Hospitals once each two weeks.

March Police Report.

The March report of the Chief of the Division of Police and Prisons shows that 561 persons, representing 49 nationalities, were arrested in the Canal Zone during the month. This is an increase of 89 for the month, there having been 472 arrests in February. Of the 561 persons arrested, 499 were men and 62 were women, and they were charged with 55 different offenses. They were divided among the towns of the Zone as follows: Ancon, 34; Las Sabanas, 5; La Boca, 46; Corozal, 4; Miraflores, 7; Pedro Miguel, 17; Paraiso, 16; Culebra, 41; Empire, 58; Las Cascadas, 36; Bas Obispo, 25; Gorgona, 74; San Pablo, 10; Tabernilla, 21; Bohio, 13; Gatun, 78, and Cristobal, 76. The total effective police force on March 31 was 170, and the pay roll amounted to \$19,024.46.

One hundred and eighty cases were tried in the Circuit Courts, 24 of which were dismissed, 130 continued, 25 in which convictions were secured, and one case in which bail was forfeited. Of the 25 person convicted 5 were fined, 4 received a jail sentence and a fine, 14 were sentenced to the penitentiary, and in two cases sentence was suspended. Eleven convicts were discharged from the penitentiary during the month, leaving a total of 120 in the penitentiary on March 31. The number of prisoners in the common jails on the same date was 120, a decrease of 14 for the month. The value of the work performed by the convicts on roads, etc., amounted to \$1,905.60.

There were 12 deaths by violence requiring action by the coroner in March. Three of these deaths were caused by railroad accidents, and one by drowning.

PORTO BELLO QUARRY.

Capacity of 2,400 Cubic Yards a Day of Eight Hours.

Two million, two hundred and fifty thousand cubic yards of crushed rock are to be used in the concrete work of Gatun Locks and the spillway of Gatun Dam. To supply this rock the quarries at Porto Bello (a port on the Caribbean Sea 18 miles east of Colon) were opened and a crusher plant with a capacity of 2,400 cubic yards a day has been built. An article in THE CANAL RECORD of September 2, 1908, reviewed briefly the conditions at Porto Bello and described what had been accomplished up to that time. Since then the opening of the quarry has continued, and the crusher plant has been practically completed.

From the beginning the construction was delayed by slow delivery of materials from the States, and the inconvenience of working at a point where a machine shop must be erected and a village constructed before the actual operations of quarrying and building the crusher plant could be carried on economically. On November 20, 1908, the earth overlying the rock on the hill above the power plant slid and pushed the boilers from their foundations, causing an additional delay of several weeks. Notwithstanding these hindrances rock was furnished for the spillway concrete as soon as the mixing plant at the spillway was ready. Two crushers are now at work turning out 600 cubic yards of rock a day. In the course of six weeks all of the eight crushers, comprising two units, will be ready for operation. If they work six days a week it will require until about January 1, 1913, for the crushers to complete their work.

THE QUARRY.

The quarry is in a hill that rises sheer from the water on the east side of the entrance to the harbor of Porto Bello. Extensive borings indicate that the supply of rock is practically unlimited. It has been estimated at twenty million cubic yards, and only 6,734,000 yards will be required in the construction work—2,500,000 yards at Gatun and 4,500,000 in the breakwater in Limon Bay. The rock is a massive andesite with a specific gravity of about 2.70, crushes readily, and is well suited for concrete.

In opening the quarry work was begun at a point 85 feet above sea level. A steam shovel was set at work grading for the floor of the crusher plant, and has continued around the face of the hill, cutting and grading a shelf or terrace for tracks and climbing at the grade rate of $2\frac{1}{2}$ per cent. The present plan contemplates a line of terraces or inclined planes running up to 255 feet above sea-level, but it is probable the quarry will be opened up to an elevation of 300 feet or more. The shelf is made broad enough to hold a steam shovel and a double track railroad.

Before quarrying is begun the rock is stripped of overlying earth by a stream of water forced through a 2-inch nozzle, pumped from the bay through a 10-inch main by an underwriters' pump, delivering 1,500 gallons a minute against a static and friction head of 450 feet. The pipe is laid up to the 265-foot contour and when the stripping is finished it will be used as an additional air main. The stripping is done at less than 2 cents a cubic yard, including the cost of power

pump, hose, and labor. The rock thus bared is drilled and blasted. Twenty-four $3\frac{1}{2}$ -inch drills and six $2\frac{1}{2}$ -inch tripod drills are now in use, and at the present time the average day's work for a drill is $34\frac{1}{2}$ feet, but with more experienced drill runners, 40 to 50 feet per 9-hour shift will be accomplished. Compressed air for the drills is supplied through a 6-inch main which has been laid to an elevation of 265 feet. There is very little loss of air at the drills and the working pressure is about 100 pounds. The holes are drilled about 10 feet apart and are loaded at the bottom and in the middle with light charges of 60 per cent dynamite, the object being to shatter the rock without throwing it. Toe or lifting holes are also used.

After it is blasted the rock is loaded upon cars by steam shovels. Two 70-ton steam shovels are now loading rock, in addition to the two pioneer shovels that are continuing the terraces up the hill. When the plant is in full operation five 70-ton shovels will be kept busy loading. In order that they may not load stone too large for the crusher, the dippers of these shovels have a capacity of only $13\frac{1}{4}$ cubic yards, and to enable them to handle stone continuously they are constructed of extra heavy plate and have teeth of manganese steel. A two-inch water service line supplies the shovels with water. At present only a single-track railroad is in use, but when working at its full capacity the plant will use double tracks. The shovels load the rock upon specially designed Oliver steel dump cars of 6 yards capacity. Ten 40-ton, six-wheel, Porter switching locomotives, with a wheel base of 9 feet and entire load on the drivers, haul the trains from the shovels to the crushers. These locomotives were set up at the Porto Bello shop, and are working on as high as a $4\frac{1}{2}$ per cent grade and on a maximum 52 degree curve. When the permanent track lay-out is completed the curves will be reduced to a maximum of 28 per cent and the grades to not over 3 per cent.

CRUSHERS, POWER PLANT, AND SHOP.

The crushing plant is built in two units, each consisting of one No. 9 and three No. 6 McCully gyratory crushers. Rock is dumped from the cars into the No. 9 crusher, which takes stone twenty-two inches in thickness and crushes it into pieces not over six inches in size. After leaving the No. 9 crusher the rock passes through a revolving screen which allows the pieces less than three inches in size to drop into the main chute. Pieces larger than three inches are delivered to any one of the three No. 6 crushers, where they in turn are reduced to three inches or less and are dropped into the main chute. At present one No. 9 and one No. 6 crusher are in use, and they crush 600 cubic yards a day without crowding. The second No. 9 and five No. 6 crushers are being installed. The two additional No. 6 crushers on the lower bench will be erected, although it is not likely they will be used except in an emergency.

From the chute the stone discharges into a double transmitting pan conveyor. The conveyors are in duplicate, and either or both conveyors may be used for either or both crusher units. The conveyors take the rock from elevation six feet above sea-level up an incline to a point 36 feet above sea-level where they dump it through hoppers into du-

plicate cross-bucket conveyors, which move on tracks around the storage bin, the upper track being at elevation 59. From the cross conveyors the rock is tripped into the portion of the bin desired. The bin is located on the edge of the water, and the rock barges tie up alongside of it. It has a capacity of 2,500 cubic yards. At each twelve feet along the face of the bin is a chute through which the rock is loaded into the barges.

Power to run the crusher plant and compressors, generate electricity and pump water to the quarries, is supplied from a power house located between the storage bin and the face of the hill. Steam is developed by six Oswego-McNaul water tube, brick-set boilers, rated at 185-horsepower each, and two Stirling water tube boilers of the same capacity are on order. The fuel used throughout the crusher plant and quarries is coal, and a bunker capable of holding 1,000 tons has been erected on the water front near the power plant and rock storage bin. A crane mounted on top of the bunker lifts coal from barges by means of a clam shell bucket, and the coal is supplied to locomotives and for the power plant through chutes in the rear of the bunker.

Two tandem compound Ball engines, of 300-horsepower each, both driving on the same shaft, transmit power to the crusher plant. All the power is transmitted by rope drives, except that from the main shaft to the counter shafts of the No. 9 crushers and screens, and the drives to the crushers themselves, which are rubber belted. Manila rope $1\frac{1}{2}$ inches in diameter turning on a 10-groove pulley is used on the main drive.

The air compressor equipment consists of one Laidlaw-Dunn-Gordon compressor, with a capacity of 2,200 cubic feet of free air a minute to 100 pounds pressure, and one Franklin compressor with a capacity of 1,200 feet of free air per minute to 100 pounds pressure. Both compressors are compound for steam and air. A 75-k. w. direct current, 115 volt dynamo, direct connected to an Ames engine, furnishes current to light the village, for night work in the quarry, and to run the machinery in the shops. A duplicate of this dynamo is on order. The accessory plant consists of two condensers with air and circulating pumps, feed-water pumps and feed-water heaters.

To assist in erecting the plant and putting the equipment in service a machine shop was built and equipped with the following machines driven by two 15-horsepower motors:

One each—1,100 pound steam hammer; 60 inch radial drill; 30-inch by 30-inch planer; 36-inch by 19 feet engine lathe; 24-inch by 22 feet engine lathe; 36-inch double punch shears; 24-inch shaper universal crank; 20-inch sliding head drill; 6-inch pipe thread and cutting machine; $2\frac{1}{2}$ -inch single head bolt cutter; cold saw; drill grinder; duplex emery grinder; frame and stone grindstone; portable boiler testing pump; portable hydraulic crank pin; press; valve reseating machine. A 30-ton crane, 5-foot gauge, for wrecking and heavy work, and a 15-ton crane, 3-foot 6 inch gear, for general work, are also part of the equipment.

Bids will be invited in a few days for the construction by contract of the corral at Ancon. Only the superstructure will be built by contract. The concrete and grading work is being done by the Pacific Division.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The business meeting of the Ancon Woman's Club was held in the clubrooms, April 7, the president in the chair. Designs for a club pin were submitted, the one chosen being a Chaldean triangle in gold. The Club has also authorized the ordering of a number of General Federation pins. The following officers were elected at a board meeting held on April 5: Mrs. George L. Campen, second vice-president, vice Mrs. B. W. Payne; Mrs. George Storla, recording secretary, and Mrs. George Green, librarian. The philanthropy department made a visit to Santa Tomas hospital and the Panamanian cemeteries on Thursday, April 8. The next regular program meeting will be held on April 21, and will be in charge of the educational and literary departments.

The Culebra study club had readings at the meeting on March 25, Mrs. George Brooke being the leader. Mrs. Sheridan has been elected president and Mrs. Clara Mitchell secretary for the remainder of the club year.

Social meetings of the Las Cascadas and Paraiso Women's Clubs were held on Thursday, April 8.

A church and Sunday school entertainment, an evening for the benefit of the church mission society, and a dance for the Red Cross are scheduled to take place at Paraiso in the immediate future.

The Woman's Guild of St. Luke's church will hold its next meeting April 19, at the residence of Mrs. H. R. Carter, at 3.30 p. m.

Easter Services.

Easter services were held at nearly all the towns in the Canal Zone and the attendance at all services was large. Sunday school festivals and entertainments were given. A Sunday school was organized at Tabernilla and the new organ for the West Indian mission was dedicated, the Ven. Archdeacon Bryan officiating. At the morning services at the Union chapel, Cristobal, the sermon was preached by the Chaplain, Rev. Carl H. Elliott, and there was special music by a choir of fifteen voices. At Culebra, Rev. J. W. Holland, chaplain, Easter services were held in the morning with a Sunday school festival. At Empire music was rendered by an augmented choir at St. Mary's Church. Evening services at Empire were held in the Commission chapel. The Methodist Church, Panama, which draws its congregation from Canal employes in Ancon, La Boca and Panama, held an Easter service in the morning. The Sunday school children had a part in the celebration, and the program of music was largely given by them.

At St. Luke's, Ancon, special music was rendered and the sermon in the morning was preached by the Bishop of British Honduras and Central America, who arrived on the Isthmus on Thursday, April 8. It will be remembered that the Anglican Church Mission on the Isthmus was formerly included in his diocese and was transferred to the American Episcopal Church at the request of the prelate, in 1907, the Ven. Archdeacon Henry B. Bryan being appointed in charge. While on the Isthmus, the bishop preached at Christ Church, Colon, and administered the rite of confirmation at several of the missions. He sailed on Tuesday for Port Limon and other ports

en route to the United States, whence he will proceed to England for a visit. The bishop was accompanied by his son.

The corner stone of the new Baptist church building in Colon-Cristobal, was laid on Sunday afternoon, April 11. Addresses were made by the pastor in charge, Rev. W. L. Weiss, Judge H. A. Gudger and others. The building is of reinforced concrete and will be erected at a cost of \$5,000. There will be seating capacity for 500.

PERSONAL.

Mr. Alban G. Snyder, U. S. Consul-general to Panama, is a passenger on the *Colon*, which sailed from New York on April 8.

Dr. J. C. Perry, Chief Quarantine Officer, sailed on April 12 to investigate the quarantine situation at the various ports on the north coast of South America.

Dr. J. E. Grant, district dentist, returned to the Isthmus on the *Allianca* on April 8 and has reopened his office at Gorgona.

Obituary.

Philip M. Whiteman died at Ancon Hospital on April 1, 1909. He was 18 years old, a native of New York, and had been on the Isthmus two years, residing at Empire. His nearest relatives were his father, Frank Whiteman, of Corozal, and his sister, Miss Edina Whiteman, of Ancon.

Joseph N. Gauthier, a sailor from the U. S. S. *Washington*, died at Ancon Hospital on April 5. He was 23 years old and lived at Woonsocket, R. I.

Missing Men.

Information is desired in regard to the following men:

J. B. Evans, who left his home, Columbus Grove, Ohio, on February 9, 1909, and has not since been heard of by his parents. It is thought he may be on the Isthmus.

William G. Bruce, of near Brunswick, Sheridan County, Mo., who is supposed to have come to the Isthmus in 1906. He was last heard from at Enid, Okla., in December, 1905.

Any one having knowledge concerning either of these men is requested to communicate with THE CANAL RECORD.

Roman Catholic Services.

Rev. Father M. A. Jiamona, who arrived from New Orleans on Thursday, April 8, has been appointed by the bishop of Panama as pastor at Gatun. Father Jiamona has assumed his duties there and will conduct services at the Catholic chapel in New Gatun as follows: Mass at 7.30 a. m. on weekdays and at 9 a. m. on Sundays and Holy days; catechism on Thursdays and Sundays at 4 p. m.; baptisms on Sundays at 2 p. m.

A conference with the Roman Catholic young men of Gorgona will be held by Father Collins at the Gorgona clubhouse on Saturday evening, April 18, at 7.30.

Kangaroo Meeting.

Cristobal Court, No. 8, will hold a regular business meeting in the Cristobal lodge hall on Sunday, April 18, at 8 p. m. A number of applications for initiation will be considered, as well as the report of the special hall committee. The comptroller expects to have a supply of the official Kangaroo buttons ready for delivery at this meeting.

Panamanians on the Gold Roll.

THE CANAL RECORD:

It is my understanding that, complying with executive order of the Secretary of War, the Chairman and Chief Engineer directed that citizens of Panama be carried on the gold roll.

In this connection, I would thank you to advise me at your earliest convenience why no steps have been taken by the Gorgona storehouse, Q. M. D., to comply with the above.

PEDRO N. FANTENELLE,

Gorgona Storehouse.

GORGONA, C. Z., March 10, 1909.

[The Executive Order of December 23, 1908, issued by the Acting Secretary of War, by authority of the President, reads, in part, as follows:

On and after this date the employment by the Isthmian Canal Commission of skilled laborers, clerks, and all others who have heretofore been known as gold employes of the Commission, shall be restricted to American citizens and citizens of Panama, except where American or Panamanian labor or service of the character required is not available.

This order does not require that either Panamanians or Americans occupying positions on the silver roll shall be transferred to the gold roll; it simply means that after December 23, 1908, none but Americans or Panamanians shall be appointed on the gold roll, except in such cases where Americans or Panamanians fitted for the particular service required are not available. The approved organization provides for various positions, both on the gold and silver rolls, and in case an American or Panamanian accepts employment in a position on the silver roll he must serve as a silver employe. His occupancy of such a position does not give him the right to be carried on the gold roll, and he must be classified as a silver employe in view of the fact that his position is one covered by the silver organization. There have been, and are now, in the service of the Commission, American citizens who have accepted appointments to positions on the silver roll, when positions on the gold roll were not available, and Americans or Panamanians as long as they hold such positions must be carried on the silver roll.]

Steam Shovel and Dredgemen.

The I. B. of S. S. and D. M. will hold their regular meeting on Sunday, April 18, at 2.30 p. m. in I. C. C. lodge hall, Empire.

Concert at Culebra.

A concert will be given by the I. C. C. band at Culebra, on Sunday evening, April 18, at 5.45.

Misdirected Letters.

Division of Posts, Customs and Revenues,
Ancon, C. Z., April 14, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Aldis, L. C.	Lambach, Peter M.
Barber, James C.	Lowe, E. J.
Blachford, Mrs. Clifford	McFee, W. L.
Calvert, M. Fay	Namer, Bruns
Cappers, William	Perrell, Mrs. R. I.
Dalrymple, W. H.	Poyser, Arthur
Davis, Johnie	Rosegrant, J. H.
Franklin, Levi	Savage, S. W.
Gilbert, G. A.	Upson, Mrs. LeRoy
Hamilton, Sam'l	Van Fleet, Frank
Harrison, S. H.	Warner, Fred
	Wickell, Henry

Loss—On Sunday, April 4, a watch, either on train No. 22, (leaving Culebra at 10.36 a. m.) between Culebra and Gorgona, at Las Cascadas station, or at Gorgona station. A suitable record will be paid if returned to J. H. Jansen, Culebra, C. Z.

OFFICIAL CIRCULARS.

Repairs to Buildings.

CULEBRA, C. Z., April 10, 1909.

CIRCULAR No. 183-E-1.

Effective this date, all work in connection with repairs of buildings, including screening, will be done by the Quartermaster's Department. This does not include work already authorized and on hand in the different construction divisions, as such work will be completed by the Division Engineers.

The Chief Quartermaster will take up with the different Division Engineers the question of transfer to his Department of deserving employes needed by him by reason of this order and arrange any other details in connection with this transfer of duties.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Vacation Leave.

CULEBRA, C. Z., April 5, 1909.

CIRCULAR No. 241.

It is provided in Circular 225 (Revised) that "Any authorized absence for two or more consecutive days should be reported to this office and covered by special order as leave without pay."

The issue of special orders in these cases has proved cumbersome and inconvenient. In future it will be sufficient if any absence for two or more consecutive days, whether authorized or unauthorized, is reported to this office by letter, in order that it may be duly recorded and deducted from the employe's service in computing his vacation privileges, but no special order will be issued.

GEO. W. GOETHALS, Chairman.

Disbursing Officer.

CULEBRA, C. Z., April 10, 1909.

CIRCULAR No. 242.

The duties of Disbursing Officer were assumed by Mr. Wm. M. Wood, April 1, and he will continue to serve in that capacity during the absence from the Isthmus of Mr. E. J. Williams on leave.

GEO. W. GOETHALS, Chairman.

Waste of Water from Rio Grande Reservoir

CULEBRA, C. Z., April 10, 1909.

TO ALL CONCERNED:

It is directed that any unnecessary use of water from the mains supplied by the Rio Grande reservoir be stopped immediately. This refers particularly to the wasteful use of water for gardens and plants. Any infraction of this order by employes of the Commission will meet with punishment.

GEO. W. GOETHALS, Chairman.

Charges and Credits Against the Republic of Panama.

CULEBRA, C. Z., April 2, 1909.

CIRCULAR No. 240.

Charges and credits against the Republic of Panama, on account of the installation, construction, maintenance, operation and repair of the water and sewer systems, and pavements of the cities of Panama and Colon shall be distributed, kept and stated separately for each city, as follows:

SUMMARY OF ACCOUNTS.

A—Water and Sewer Systems:

1. Capital cost.
2. New installation.
3. Operation and maintenance.
4. Replacement.

B—Reservoirs, Pipe-lines, and Filtration Plants:

1. Interest on capital cost.
2. Maintenance and operation.
3. Replacement.

C—Paving:

1. Capital cost.
2. New construction.
3. Maintenance and repairs.

DEFINITION OF ACCOUNTS.

A—Water and Sewer Systems.

1. *Capital Cost*—This account will be charged with the entire cost of the installation of water and sewer systems with the city, up to June 30, 1907, and two per cent per annum interest on debit balances.

This account will be credited with proportion of collections made. (Item Z-1.)

2. *New Installations*—This account will be charged monthly with all expenditures during the month on account of new installations and extensions to the water and sewer systems.

This account will be credited with any balance remaining after credits to the other accounts. At the end of each fiscal year it will be charged with interest, at two per cent per annum on balances. At the close of each adjustment period the balance in the account (less the estimated cost of any authorized uncompleted work) will be transferred to Account A-1.

3. *Operations and Maintenance*—This account will

be charged monthly with all expenditures during the month on account of operations and maintenance of the water and sewer systems.

This account will be credited yearly with an amount equal to the total expenditures.

4. *Replacement*—This account will be charged monthly with all expenditures during the month on account of replacement or removals in the water and sewer systems.

This account will be credited with amount collected under Item Z-3, and no adjustment will be made in this account until final settlement with the Republic of Panama. Interest on balance will be computed at the rate of two per cent per annum.

B—Reservoirs, Pipe-lines, and Filtration Plants.

1. *Interest on Capital Cost*—This account will be charged annually with such proportion of the annual interest, at two per cent on the entire cost of reservoirs, pipe-lines and filtration plants to June 30, 1907, as the amount of water consumed in the city during the year bears to the total consumption from the reservoir, or total amount of water filtered.

This account will be credited with collections made under Item Z-4.

2. *Maintenance and Operation*—This account will be charged monthly with such proportion of the expenditures during the month, for the operation and maintenance of the reservoirs, pipe-lines and filtration plants, as the amount of water consumed in the city during the month bears to the total consumption from the reservoir, or to the total amount of water filtered.

This account will be credited yearly with an amount equal to the total charges.

3. *Replacement*—Each year the total expenditures under this head will be divided by the number of years the contract has to run, and the amount so obtained will be added to similar results for each preceding year, with two per cent interest per annum on deferred balance. A proportion of the total so obtained, based on the proportion that the consumption of water in the city during the year bears to the total consumption from the reservoir, or to the total amount of water filtered, will be charged this account.

This account will be credited with collections made under Item Z-6. No adjustment will be made in this account until settlement with Republic of Panama.

C—Paving.

1. *Capital Cost*—This account will be charged with the entire cost of paving up to June 30, 1907, and two per cent interest on debit balances.

This account will be credited with collections made as per Item Z-7.

2. *New Construction*—This account will be charged monthly with all expenditures during the month for new construction and extension of pavements.

This account will be credited with any balance remaining from collections, after other accounts have been credited. It will be charged yearly with interest, at two per cent per annum on balances, and at the close of each adjustment period, the balance in this account (less the estimated cost of any authorized uncompleted work) will be transferred to Account C-1.

3. *Maintenance and Repairs*—This account will be charged monthly with all expenditures during the month on account of maintenance and repairs of pavements.

This account will be charged with two per cent interest per annum on the balances.

This account will be credited with collections made under Item Z-3.

Basis for Water Rates.

Water Works and Sewers, Z-1—One fiftieth of capital cost of water works and sewer systems in cities. One-fiftieth of two per cent interest per annum, for twenty-five years.

Z-2—Estimated cost of repairs and maintenance.

Z-3—Estimated amount required to create sinking fund to cover renewals and replacements.

Reservoirs and Pipe-lines—Proportion based on water used by the Isthmian Canal Commission and Republic of Panama, of

Z-4—Two per cent interest on original cost, for interest on investment.

Z-5—Estimated cost of maintenance and operation, reservoir and pipe-lines.

Z-6—One and four-tenths interest on original cost—for depreciation.

Paving.

Z-7—One-fiftieth of capital cost of paving in cities. One-fiftieth of two per cent interest per annum for twenty-five years.

Z-8—One-fiftieth of fifteen per cent of original cost, for maintenance and repairs. One-fiftieth of two per cent per annum for twenty years on balance due at end of ten years (contract period).

The collections made on account of water rents will be credited in following order:

First: To Accounts A-3, Maintenance and Opera-

tion; B-2, Maintenance and Operation, C-3, Maintenance and Repairs.

Second: To Accounts A-4, Replacement; B-3, Replacement. An amount equal to estimates made under Items Z-3 and Z-6.

Third: To Accounts A-1, Capital Cost; B-1, Capital Cost, C-1, Capital Cost. An amount equal to estimates under Items Z-1, Z-1, and Z-7.

Fourth: To Accounts A-2, New Installation, and C-2, New Construction, any amount remaining, after crediting the other accounts.

H. F. HODGES,

Acting Chairman and Chief Engineer.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

CULEBRA.

A gymnasium class was begun on Wednesday evening, April 7, which will be one of the regular features of the association as long as it is desired.

Culebra won two out of three bowling games in the duck pin tournament on April 7, the last of the series with Empire.

A Bible class was organized the past week to meet every Wednesday evening at 7.15, lasting for 45 minutes. Twenty-two men have enrolled. Mr. Minear is leading the class.

Plans are under way for the organization of an elementary Spanish class, a First Aid to the Injured class, and a male quartet is being formed.

A medal is being contested for on the bowling alleys for the man making the highest score in duck pins during the month of April.

EMPIRE.

The Isthmian Instrumental Club gave a concert at the Empire clubhouse on Monday evening, April 5. Fruit punch was served and a large crowd was present.

A game of baseball between teams from the Culebra and Empire Y. M. C. As. was played at the Empire park on Friday morning, April 9. The score was 7 to 4 in favor of the Cristobal team. The batteries were: Culebra, Bayne and Hartman; Empire, King and Euerle.

Rainfall, April 1 to 10, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	.45	1.62
Brazos Brook.....	.85	2.17
Gatun.....	.33	1.15
Bohio.....	1.20	1.39
<i>Central Division—</i>		
Tabernilla.....	.62	.81
San Pablo.....	.20	.34
Bas Obispo.....	.40	.44
Gamboa.....	.49	.50
Empire.....	.35	.35
Camacho.....	.32	.35
Culebra.....	.05	.05
<i>Pacific Division—</i>		
Rio Grande.....	.02	.02
Pedro Miguel.....	.01	.60
La Boca.....	.03	.06
Ancon.....	.33	.33
<i>Atlantic Coast—</i>		
Porto Bello, (to 5 p. m. April 7).....	3.51	5.00
<i>Upper Chagres</i>		
El Vigia.....	.16	.30
Alhajuela.....	.07	.14

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, April 10, 1909:

	STATIONS.					
	Vieja.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. River).
Height of low water above sea-level, feet.....	125	92	46	1	0	0
Maximum height above mean sea-level, feet.....	125.4	92.7	47.30	2.2	0.6	0.6
Sunday, Apr. 4.....	127.8	94.5	50.15	2.2	0.7	0.6
Monday, Apr. 5.....	126.4	93.8	50.0	4.5	0.8	0.7
Tuesday, Apr. 6.....	125.4	92.8	47.60	2.6	0.9	0.8
Wednesday, Apr. 7.....	125.3	92.7	47.30	2.4	0.8	0.7
Thursday, Apr. 8.....	125.2	92.6	47.25	2.2	0.8	0.8
Friday, Apr. 9.....	126.0	93.1	47.80	2.1	0.8	0.8
Saturday, Apr. 10.....						

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Lieut.-Col. Geo. W. Goethals, U. S. A.,
Chairman, Culebra.
Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
Maj. D. D. Gaillard, U. S. A., Empire.
Maj. Wm. L. Sibert, U. S. A., Gatun.
Civil Engineer H. H. Rousseau, U. S. N.,
Culebra.
Mr. Jo C. S. Blackburn, Ancon.
Col. W. C. Gorgas, U. S. A., Ancon.
Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.

Lieut.-Col. Geo. W. Goethals, Chairman
and Chief Engineer.
William Howard May, Secretary to the
Chairman.
M. B. DePutron, Assistant to the Chairman.
C. A. McIlvaine, Chief Clerk.
John K. Baxter, Assistant Chief Clerk.
H. S. Parish, Surveying Officer.
Caleb M. Saville, Assistant Engineer.
Lieut.-Col. H. F. Hodges, Assistant Chief
Engineer.
C. O. Carlson, Secretary.
Edward Schildhauer, Electrical and Mechanical
Engineer.
Henry Goldmark, L. D. Cornish, H. F. Tucker
and T. B. Mönliche, Designing Engineers.
Civil Engineer H. H. Rousseau, Assistant
to the Chief Engineer.
J. C. Parsons, Secretary.
A. B. Nichols, Office Engineer.
P. O. Wright, Jr., Architect.

Central Division.

Headquarters, Empire.

Maj. D. D. Gaillard, Division Engineer.
A. E. Bronk, Chief Clerk.
Louis K. Rourke, Assistant Division Engineer.
A. S. Zinn, Resident Engineer.
Mark W. Tenny, Assistant Engineer.
R. W. Hebard, Assistant Engineer.
W. L. Thompson, Assistant Engineer.
Geo. H. Rungles, Assistant Engineer.
Fred A. Potts, Assistant Engineer.

Atlantic Division.

Headquarters, Gatun.

Maj. Wm. L. Sibert, Division Engineer.
R. M. Sands, Chief Clerk.
Maj. Chester Harding, U. S. A., Assistant Division
Engineer.
Maj. Edgar Jadin, U. S. A., Resident Engineer.
Maj. J. P. Jervey, U. S. A., Resident Engineer.
Capt. G. M. Hoffman, U. S. A., Assistant En-
gineer.
Capt. Horton W. Stickle, U. S. A., Assistant En-
gineer.
L. G. Thom, Assistant Engineer.
F. C. Stanton, Assistant Engineer.
R. B. Smith, Superintendent of Dredging.

Pacific Division.

Headquarters, Corozal.

S. B. Williamson, Division Engineer.
E. A. LeMay, Chief Clerk.
John M. G. Watt, Assistant Division Engineer.
W. G. Comber, Resident Engineer.
A. I. Campbell, Acting Resident Engineer.
H. O. Cole, Assistant Engineer, (Office).
Wm. F. M. Acheson, Assistant Engineer,
James MacFarlane, Superintendent of Dredging.

Mechanical Division.

Headquarters, Culebra.

Geo. D. Brooke, Superintendent of Motive
Power and Machinery.
F. W. Doty, Chief Clerk.
Earle J. Bauta, Mechanical Engineer.
A. L. Robinson, Electrical Engineer.
R. C. Cummings, Master Mechanic, Gorgona
Shops.
W. O. Johnson, Master Mechanic, Empire
Shops.

Subsistence.

Headquarters, Cristobal.

Maj. Eugene T. Wilson, U. S. A., Subsistence
Officer.
W. F. Shipley, Chief Clerk.
Lieut. Frank O. Whitlock, U. S. A., Assistant
Subsistence Officer.

Quartermaster's.

Headquarters, Culebra.

Maj. C. A. Devol, U. S. A., Chief Quarter-
master.
C. H. Mann, Chief Clerk.
Lieut. R. E. Wood, U. S. A., Assistant Chief
Quartermaster.
Capt. Courtland Nixon, U. S. A., Depot Quar-
termaster, Montt Hope.
C. L. Parker, C. C. McColley, Inspectors.

District Quartermasters.

B. C. Poole, Ancon and La Boca.
C. E. Heisey, Bns Obispo.
A. R. Bennett, Corozal.
Ira A. Giles, Cristobal.
J. A. Simmons (acting), Culebra.
C. F. Allen, Empire.
R. M. Gamble (acting), Gatun.
R. C. Shady, Gorgona.
J. M. King, Las Cascaidas.
Roy R. Watson, Pedro Miguel and Paraiso.
M. R. Currie, Porto Bello.
J. H. Humphreys, San Pablo and Tabernilla.

Civil Administration.

Headquarters, Ancon.

Jo C. S. Blackburn, Head of the Department.
H. D. Reed, Executive Secretary.
G. A. Ninas, Chief Clerk.
Tom M. Cooke, Chief, Division of Posts, Cus-
toms and Revenues, Ancon.
Herman A. Gudger, Deputy Collector, Ancon.
E. Lewis Baker, Deputy Collector, Cristobal.
George M. Shontz, Prosecuting Attorney, Ancon.
Grosvenor A. Porter, Acting Chief of Police,
Ancon.
D. E. McDonald, Chief Clerk.
C. E. Weidman, Fire Chief, Cristobal.
Geo. L. Campen, Supt of Public Works, Ancon.
C. R. Sargent, Chief Clerk.
J. J. Reidy, Asst. Supt. Public Works, Cristobal.
H. L. Smith, Superintendent of Schools, Ancon.
Edgar P. Beck, Treasurer of Canal Zone, Empire.

Canal Zone Judiciary.

Headquarters, Ancon.

Supreme Court—H. A. Gudger, Chief Justice.
Walter Emery, Clerk, Ancon.
Lorin C. Collins, Associate Justice, Cristobal.
Wesley M. Owen, Associate Justice, Empire.
Circuit Court, First Circuit—H. A. Gudger,
Judge, Ancon.
Walter Emery, Clerk.
Circuit Court, Second Circuit—Wesley M. Owen,
Judge, Empire.
Elbert M. Goolsby, Clerk.
Circuit Court, Third Circuit—Lorin C. Collins,
Judge, Cristobal.
Nelson R. Johnson, Clerk.
M. C. Rerdell, Senior District Judge, Cristobal.
S. E. Blackburn, District Judge, Ancon.
Edgar S. Garrison, District Judge, Empire.
J. B. March, District Judge, Gorgona.
Thomas F. Brown, Jr., District Judge, Cristobal.

Law.

Headquarters, Washington, D. C.,

Richard Reid Rogers, General Counsel,
Washington, D. C.
George M. Shontz, Attorney for Isthmian Canal
Commission and Panama Railroad Company,
Ancon.
George H. Bartholomew, Assistant Attorney.

Sanitation.

Headquarters, Ancon.

Col. W. C. Gorgas, Chief Sanitary Officer.
Capt. Robert F. Noble, U. S. A., Executive Officer.
Harry E. Boway, Chief Clerk.
H. R. Carter, Director of Hospitals, Ancon.
Surgeon J. C. Perry, P. H. and M. H. S., Chief
Quarantine Officer, Ancon.
Lieut.-Col. John I. Phillips, U. S. A., Superin-
tending Ancon Hospital, Ancon.
Maj. C. C. McCulloch, Jr., U. S. A., General In-
spector, Ancon.
J. F. Leys, U. S. N., Superintendent Colou
Hospital, Cristobal.
Surgeon Claude C. Pierce, P. H. and M. H. S.,
Quarantine Officer, Colou.
Dr. Fleetwood Gruver, P. H. and M. H. S., Quar-
antine Officer, Panama.
Dr. A. E. Mayner, Acting Health Officer, Pan-
ama.
Dr. M. E. Coimor, Health Officer, Colou.
Joseph A. LePrince, Chief Sanitary Inspector,
Ancon.
C. L. Stockenberg, Superintendent of Plum-
bing, Culebra.

Disbursements.

Headquarters, Empire.

Edward J. Williams, Disbursing Officer.
Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.

W. W. Warwick, Examiner of Accounts
Thomas L. Clear, Chief Clerk

Purchasing Department.

Headquarters, Washington, D. C.

Capt. F. C. Boggs, U. S. A., General Pur-
chasing Officer.
C. F. Dole, Chief Clerk.

Capt. Courtland Nixon, Purchasing Agent on
the Isthmus.
Maj. Wendell L. Simpson, U. S. A., Purchas-
ing Agent, 24 State Street, New York City.
F. C. Nordsiek, Assistant Purchasing Agent, 24
State street, New York City.
S. E. Redfern, Assistant Purchasing Agent,
Custom House, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.

(New York office, 24 State Street.)

H. J. Slifer, Assistant to the President, and
General Manager, Colon.
G. E. Geer, Assistant to the General Manager.
R. Budd, Chief Engineer.
J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Pan-
ama Railroad Steamship Company, of the Royal Mail
Steam Packet Company, of the Hamburg-American
Line, and of the United Fruit Company's Line, the
Panama Railroad Company's dates being subject to
change:

NEW YORK TO COLON.

Colon	.....	P. R. R. Thursday	.....	Apr. 8
Prinz Joachim	H.-A.	Saturday	Apr. 10
Panama	.....	P. R. R. Wednesday	.....	Apr. 14
Magdalena	R.-M.	Saturday	Apr. 17
Advance	.....	P. R. R. Tuesday	.....	Apr. 20
Prinz Aug. Wilhelm	H.-A.	Saturday	Apr. 24
Allianca	.....	P. R. R. Monday	.....	Apr. 26
Orinoco	R.-M.	Saturday	May 1
Colon	.....	P. R. R. Monday	.....	May 3
Panama	.....	P. R. R. Saturday	.....	May 8
Prinz Joachim	H.-A.	Saturday	May 8
Advance	.....	P. R. R. Friday	.....	May 14
Oruba	R.-M.	Saturday	May 15

Persons desiring to meet friends or relatives upon
arrival of Panama Railroad steamers at Cristobal
should apply in advance of arrival at the Customs
office, room 8, building No. 1, Cristobal, for customs
line permits, which are necessary to obtain admi-
tance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and
Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca	.....	P. R. R. Wednesday	.....	Apr. 14
Colon	.....	P. R. R. Tuesday	.....	Apr. 20
Orinoco	R.-M.	Tuesday	Apr. 20
Panama	.....	P. R. R. Monday	.....	Apr. 26
Prinz Joachim	H.-A.	Tuesday	Apr. 27
Advance	.....	P. R. R. Sunday	.....	May 2
Oruba	R.-M.	Tuesday	May 4
Allianca	.....	P. R. R. Saturday	.....	May 8
Prinz Aug. Wilhelm	H.-A.	Tuesday	May 11
Colon	.....	P. R. R. Friday	.....	May 14
Tagus	R.-M.	Tuesday	May 18
Panama	.....	P. R. R. Thursday	.....	May 20
Prinz Joachim	H.-A.	Tuesday	May 25
Advance	.....	P. R. R. Wednesday	.....	May 26

NEW ORLEANS TO COLON.

Ellis	.....	U. F. C. Saturday	.....	Apr. 10
Parismina	.....	U. F. C. Saturday	.....	Apr. 17
Cartago	.....	U. F. C. Saturday	.....	Apr. 24
Abangarez	.....	U. F. C. Saturday	.....	May 1
Parismina	.....	U. F. C. Saturday	.....	May 8
Cartago	.....	U. F. C. Saturday	.....	May 15
Abangarez	.....	U. F. C. Saturday	.....	May 22

COLON TO NEW ORLEANS

Ellis	.....	U. F. C. Tuesday	.....	Apr. 20
Parismina	.....	U. F. C. Tuesday	.....	Apr. 27
Cartago	.....	U. F. C. Tuesday	.....	May 4
Abangarez	.....	U. F. C. Tuesday	.....	May 11
Parismina	.....	U. F. C. Tuesday	.....	May 18
Cartago	.....	U. F. C. Tuesday	.....	May 25
Abangarez	.....	U. F. C. Tuesday	.....	June 1

COLON TO BARBADOS, CALLING AT TRINIDAD.

Magdalena	.....	R.-M.	Tuesday	.....	Apr. 27
Orinoco	.....	R.-M.	Tuesday	.....	May 11

The Panama railroad steamships sail at 3 p. m.
from dock at Cristobal direct to New York.
Sailings of the French line (Cie. Générale Trans-
atlantique) for Venezuelan ports, Martinique and
Guadeloupe on the 3d and 20th of each month.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, APRIL 21, 1909.

No. 34.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or request for information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Cucaracha Slide.

Throughout the dry season the Cucaracha slide has been moving perceptibly, but two steam shovels have been able to excavate the material as it moved toward the Cut and have even been able to push back the line of encroachment. On April 9, a portion of the bank in the slide into which one of the shovels was working fell of its own weight, and a few days later more material fell onto the steam shovel berm. Work was interfered with only temporarily and the berm on which the steam shovels are working was cleared in a few days. The material that fell was all within the Canal prism, and in the long run the break will be an advantage, as it will facilitate excavation.

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for the month of March is published in other columns of this issue of THE CANAL RECORD. The grand total of excavation for the month was 4,062,632 cubic yards, of which 2,339,033 were removed by steam shovels, 1,695,342 by dredges, and 28,257 cubic yards by hand and scraper. This grand total includes 182,245 cubic yards of material which were removed for the construction of handling plants, stipping of dam sites, etc., which is not chargeable to actual Canal construction. The total excavation for Canal work proper amounted to 3,880,337 cubic yards.

The laying of concrete in the spillway at Gatun was begun on March 17, and 2,447 cubic yards of concrete had been placed in position at the end of the month. During the month 26,735 cubic yards of rock from Bas Obispo were dumped in the toe of Gatun Dam, the total to date for this purpose being 308,549 cubic yards.

During the month 8,020 cubic yards of crushed rock were produced at Porto Bello

and at Nombre de Dios 2,345 cubic yards of sand were dredged and shipped to Gatun.

The average daily number of laborers employed on actual Canal construction was 14,319.

During the month the Panama Government granted authority to the Commission to police its reservation at Porto Bello, and on March 27 four white officers of the Canal Zone police were stationed at that place. These officers will enforce the laws of the Republic of Panama and will deliver to the Panamanian authorities all persons arrested by them.

Electric Current for Colon and Cristobal.

The electrical subdivision of the Mechanical Division is working on an electric light pole-line to connect Cristobal and Colon with the large power generating plant in process of erection at Gatun. This will be a permanent plant, and when in operation will permit of the discontinuance of the electrical generating plants now in Colon and Cristobal, as the Gatun plant will furnish, in addition to the current required there, all the current necessary for the use of the Isthmian Canal Commission and the Panama railroad in Colon and Cristobal.

Subsistence Department Storehouse.

A storehouse for cereals and miscellaneous supplies will be built for the Subsistence Department at Cristobal, just south of the bakery, near Dock 11, and alongside one of the railroad tracks that run to the dock. It will be 200 feet long, 50 feet wide, and two stories high. The first story will be built of concrete blocks and the floor will also be of concrete. The second story will be of frame construction. In addition to the storage space it will contain a coffee roasting plant and the packing office.

About 2,500 barrels of flour are used each month in the bakery and sold at the commissaries, and it is proposed to keep in store at all times at least 1,000 barrels. Next to flour rice is used in the greatest quantity. Two grades of rice are used in the hotels and messes and sold in the commissaries. The first is Carolina rice and the second is known as Rangoon rice. Carolina rice is used principally in the hotels and sold to Americans. It is polished and looks more tempting than the Rangoon rice. The latter grade is not polished, and therefore retains the nutriment found in the outer skin of the grain. The West Indian laborers will not eat the rice from which the skin has been removed. Twenty barrels of Carolina rice are used monthly and about 100 tons of the Rangoon. The Carolina rice is purchased in the United States and the Rangoon through an agency at Hamburg, Germany.

Beans and peas also form a large factor. About 125 barrels of split peas, 40 barrels of

dried green peas, 60 barrels of red kidney beans, 40 barrels of lima beans, and 60 barrels of white navy beans are used monthly. About 50 barrels of cornmeal are sold, and in addition the Subsistence Department disposes of 50 cases of 50 pounds to the case, of corn meal, 40 cases of hominy, and 410 cases of other cereals. The new storehouse will also be used for supplies of salt, sugar and vinegar. About 900 barrels of sugar, 500 barrels of salt, and 50 barrels of vinegar are used each month.

March Money Order Business.

During the month of March, 1909, the sixteen post-offices in the Canal Zone in which money order business is done, sold 16,084 money orders aggregating \$444,694.16, an increase of \$28,544.35 over the amount reported for February. Of the \$444,694.16 in March, \$322,779.62 was drawn in orders payable in the United States and elsewhere, and \$121,914.54 in orders payable in the Canal Zone. The fees collected amounted to \$1,892.47, and the amount paid and repaid was \$124,470.55.

In the number of orders drawn Cristobal was first, with 3,059; Empire second, with 1,903, and Ancon third, with 1,805. In the total amount issued, Cristobal was first, with \$80,213.06; Gorgona second, with \$49,247.18, and Ancon third, with \$45,422.65. Of the amount payable in the United States, Cristobal was first, with \$67,251.91; Ancon second, with \$38,698.72, and Empire was third, with \$34,082.13. In orders payable in the Canal Zone, Gorgona was first, with \$17,908.31; Cristobal second, with \$12,961.15, and Pedro Miguel third, with \$11,349.19. In the amount paid and repaid, Cristobal was first, with \$18,541.41; Empire was second, with \$16,600.62, and Gorgona was third, with \$12,280.48.

The average of all the orders issued was \$27.65, the highest being at Pedro Miguel, where 842 orders, amounting to \$29,602.77, were sold, an average of \$35.16, and the lowest was at Empire, where 1,903 orders, aggregating \$42,506.91, were sold, an average of \$22.34.

Fruits and Vegetables.

Enough bananas are still raised on the Isthmus to supply the Subsistence Department with between 300 and 400 bunches each week, although it is generally supposed that the low prices offered at Colon, and the general cessation of the banana culture in the revolution of 1901, together with the fact that the native can make more money working on the Canal, had wiped out the banana industry. This supply represents the purchase at one market only, Gatun, and larger quantities could be obtained if desired. The bananas are served raw at the messes for European laborers and at the labor kitchens, and are greatly appre-

NOTES OF PROGRESS.

(Continued.)

ciated by the men. Very little other produce grown in Panama is purchased by the Subsistence Department, because a sufficient quantity is not offered, nor is the supply steady. Oranges served in the hotels and sold in the commissary come principally from Jamaica, sweet potatoes from Barbados, and yams and avocados from Jamaica.

Rapid Work by Steam Shovels.

Fourteen shovels in the Empire construction district of the Central Division, on April 13, 1909, excavated 22,693 cubic yards of rock and earth in eight hours, an average of 1,621 cubic yards per shovel for the day. On the same date, 15 shovels working in the Culebra construction district, Central Division, excavated 25,165 cubic yards, an average of 1,678 cubic yards per shovel for the day.

Compressed Air in Culebra Cut.

The pipe-line which now runs from Miraflores to Matachii, and which is used for the purpose of furnishing compressed air for operating all sorts of machinery, including the many drills in Culebra Cut, has recently been considerably extended. That portion of it between Paraiso and Bas Obispo consists of 10-inch double strength wrought iron pipe. The line carries a pressure of 100 pounds. This line when located was clear of the Canal prism and slopes, but the recent changes in the width of the Canal through Culebra Cut, and slides in the vicinity of Culebra and Empire have necessitated the moving back of large lengths of the line. As at present located the pipe-line lies back of Culebra Hotel.

Panamanian Machete Men.

About a thousand men are engaged in clearing the ground in the ship basin at Gatun and up to the ten-foot contour in the bed of Gatun Lake. In the ship basin, which is about 1,400 acres in extent, all vegetation is cut low, and large stumps are grubbed out. After drying the material is burned. The clearing will be completed in a few weeks, and the burning of the material will also be finished this season unless the rainy weather begins unexpectedly early. All the work in the ship basin is done by laborers employed directly by the Central Division. In the channel the work consists of cutting trees and grass close to the ground. No stumps are removed as the water will be 75 feet deep at the shallowest point in this section of the channel, and ships will not anchor as they will in the basin. The work in the channel is done by a contractor, who employs about 200 men and by laborers of the Central Division.

This is the only part of the work where Colombians, as the native Panamanians call themselves, are employed in large numbers. Practically all the men engaged in the clearing are natives. They are more expert with the machete than are either the West Indian or European laborers, and are not averse to this class of work. Those employed by the Commission get their meals and are quartered at Gatun and at a camp recently established on the east bank of the Chagres River, opposite the mouth of the Trinidad River. No sick camp has been opened at the new camp, which is known as La Boca del

Trinidad, but a field surgical and medicine chest has been supplied, and liquid quinine is furnished free and is used by a majority of the men. The men working for the contractor are supplied with meals by him.

Oil as Fuel at Miraflores Power Plant.

At Miraflores the Mechanical Division is erecting a 225,000 gallon tank for the storage of oil for fuel in the electrical plant that will supply power for the construction of the locks at Pedro Miguel and Miraflores. This tank is four and one half times the size of the water tank located on Ancon Hill. The riveting work will be done by pneumatic machinery, an air line having been run to the site for this purpose.

Visit of Congressmen.

A Congressional party, comprising the following members of the House of Representatives, were passengers on the *Panama*, which arrived at Cristobal on April 20. They will return to the States on the *Panama*, sailing from Cristobal on Monday, April 26:

- D. R. ANTHONY, JR. (R.), and wife, of Kansas.
- W. A. ASHBROOK (D.), and wife, of Ohio.
- W. P. BORLAND (D.), of Missouri.
- C. F. BOOHER (D.), of Missouri.
- G. F. BURGESS (D.), of Texas.
- P. P. CAMPBELL (R), and wife, of Kansas.
- C. D. CARTER (D.), of Oklahoma.
- P. T. CHAPMAN (R.), and daughter, of Illinois.
- M. F. CONRY (D.), of New York.
- BEN CRAVENS (D.), and wife, of Arkansas.
- J. H. DAVIDSON (R.), of Wisconsin.
- C. V. FORNES (D.), of New York.
- H. M. GOLDFOGLE (D), of New York.
- J. A. GOULDEN (D.), of New York.
- R. L. HENRY (D.), of Texas.
- WILLIAM HUGHES (D.), of New Jersey.
- W. D. JAMIESON (D.), and wife, of Iowa.
- A. W. KOPP (R), of Wisconsin.
- G. A. LOUD (R.), brother and two daughters, of Michigan.
- JAMES McLACHLAN (R.), of California.
- J. M. MILLER (R.), and wife, of Kansas.
- G. W. NORRIS (R.), of Nebraska.
- J. F. O'CONNELL (D.), of Massachusetts.
- J. T. ROBINSON (D.), and wife, of Arkansas.
- J. H. STEPHENS (D.), and daughter, of Texas.
- EDWARD T. TAYLOR (D.), and wife, of Colorado.

Applicants for Married Quarters.

There were 342 more applicants for married quarters on April 1 than could be supplied. Of this number 76 were on what is known as "List No. 1;" that is, the applicants were in the employ of the Commission on the Isthmus prior to January 1, 1908. Applicants who entered the service subsequent to that date are on "List No. 2." The number of applicants on each list is as follows:

PLACE.	List No. 1.	List No. 2.
La Boca.....	3	25
Ancon.....		15
Ancon Hospital.....	4	3
Corozal.....	2	5
Pedro Miguel.....	2	7
Paraiso.....	1	1
Culebra.....		34
Empire.....		34
Las Cascadas.....	15	13
Bas Obispo.....	1	8
Gorgona.....		21
Tabernilla.....	1	14
Gatun.....	17	32
Cristobal.....	29	83
Porto Bello.....	1	5
Total.....	76	266

The two applications on "List No. 1" at Pedro Miguel represent employes occupying quarters at other places who wish to transfer. At Cristobal 12 of the 29 applications on "List No. 1" are employes of the Panama Railroad Company. Two type-18 quarters

have been authorized for Gatun and four type-17 quarters for Ancon Hospital.

The oldest application on "List No. 1" was made for quarters at Cristobal on January 2, 1908, and the next oldest was made for quarters at Las Cascadas on October 5, 1908. None of the other applications on "List No. 1" has been standing more than five months. The oldest application on "List No. 2" was filed on January 1, 1908.

Slide at Old Culebra.

The earth in the slide at Old Culebra is moving slightly toward Culebra Cut. Steam shovels are at work removing the slide and making a bench around the edge of the hill in order that the railroad tracks to the air compressor and crusher at Rio Grande may be thrown back from the edge of the Cut and so kept open during the coming wet season. It has been found necessary to move the Quartermaster's saw-mill and three dwelling houses which were in the way of the shovels.

Corrections in Medal List.

The publication in THE CANAL RECORD of the list of employes who are entitled to Canal Medals has enabled the Chairman's office, through the persons interested, to make the following additional corrections in the lists previously published:

ISTHMIAN CANAL COMMISSION EMPLOYEES.
Names omitted:

Huntington, Linn M., Aug. 10, 1904.
Gardiner, Ralph, June 24, 1905.

Additional names:
Zuberbier, Herman, June 1, 1904.
Mendes, A. S., May 16, 1905.

Changes in names:
Wassell, Hardin E., to Wassell, H. Eugene, Oct. 9, 1906.
Crowell, Gustavus B., to Crowell, Gustavus V. Nov. 16, 1904.
Taylor, Richard B., to Taylor, Richard G., Oct. 24, 1906.

Fish for Canal Employes.

The fresh fish sold in the P. R. R. commissaries and served in the Commission hotels and messes is purchased from a merchant in the city of Panama, and between 4,000 and 5,000 pounds are consumed each week. Two grades are purchased, the first, for the Commission hotels and for sale in the commissaries, includes Spanish mackerel, red snapper and grouper; and the second grade, which is as fresh and nutritious but less in demand in the local market, is served in the European laborers' messes on Fridays. The fish are caught in Panama Bay by native fishermen every morning and are delivered to the contractor on the morning they are taken. The Subsistence Department furnishes ice in which the contractor packs the fish for delivery at the commissaries along the line.

Improvements at Bakery.

The machinery in the bakery at Cristobal has been rearranged with a view to greater economy in the use of power. Under the new arrangement it is possible to run the oven independently of the other machinery, and in case of a breakdown of the regular motor to run all or part of the plant by an auxiliary motor.

Change in Panama Time.

The clocks in the city of Panama were moved forward 18 minutes on April 16, which makes the official time of the city agree with the standard time of the 75th meridian in use on the Panama railroad.

P. R. R. RELOCATION.

Work in Gatun Lake Region—Methods Employed.

Work on the relocation of the Panama railroad, with the exception of that on the Miraflores tunnel, is at present confined to the stretch between Gamboa and Gatun, because this is the portion of the line that must be in operation before the water in Gatun Lake is allowed to rise above an elevation of 20 feet above sea-level, which is the elevation of the lowest points on the operated line of the railroad between Tiger Hill cut-off, near Gatun, and Bas Obispo, the beginning of Culebra Cut. The lowest point on the relocation between Gatun and Gamboa will be temporarily at elevation 50 feet. There is no hurry about the stretch of nine miles between Gamboa and Paraiso as the relocation in this section runs on a berm of the Canal through Culebra Cut and cannot be used to advantage until the excavation in the Cut is completed. From Gatun to Gamboa, however, the work must be pushed in order that the operation of the railroad may not impede the Canal construction and that railroad traffic may not be interfered with by the water in Gatun Lake. Between Paraiso and Corozal, a distance of about five miles, there is comparatively little work to be done, and this will be completed as soon as possible, as the traffic over the main line between Paraiso and Corozal is daily increasing. The purpose of completing this section of the relocation at an early date is in order that it may be used for the Panama railroad trains, and the present main line may be turned over to the construction trains.

There is no doubt that the relocated railroad will be ready for operation between Colon and Gamboa, a distance of 31 miles, within two years. The permanent track is now in use from Colon to Gatun, a distance of seven miles, and a construction track has been extended up the Gatuncillo Valley from Gatun, a distance of nearly two miles. From this point to the end of the track that extends north from Gamboa bridge, a distance of 15 miles, the work is being prosecuted at three points—Monte Lirio, at the crossing of the Gatuncillo River, seven miles south of Gatun; Frijoles, 14 miles south of Gatun, and a point near Caimito, 17 miles south of Gatun.

Closing up the gap between the end of the track that has been extended up the Gatuncillo Valley from Gatun and the north end of the stretch already laid at Frijoles forms the greater part of the work now in hand. A mile of grading has been done beyond the end of the track near Gatun, a mile has been graded at Monte Lirio running south from the Gatuncillo River, and the grading has been completed for a mile north from Frijoles. Grading gangs are at work on one-fourth of the remaining eight miles. Clearing through the jungle, which includes the cutting not only of the ordinary grass, but also of some giant hardwood timber, is half completed.

The work near Frijoles is reached by a spur track-running back from that station on the operated line along the Frijolita River east into the jungle about two miles. This work was begun at the beginning of the present dry season, and already two miles of track have been laid and an additional

mile has been graded. The additional mile that has been graded reaches south from the track toward the north end of the track near Caimito, and there is a gap of two miles between these two points. Grading is making good progress from both sides of this gap, and it is expected that by July the Frijoles stretch of track will be joined with that at Caimito, making a connection between the operated line at Frijoles and Gamboa bridge on the relocated line.

Eight miles of construction track have been laid in the section between Caimito and Gamboa Bridge and the grading is being pushed north toward Frijoles. The line lies across the valleys of the little rivers that flow into the Chagres from the eastern side of the watershed, and the construction is therefore alternate cut and fill, with the proportion of embankment largely in excess of the cuts. A part of the embankment was made by driving trestle and filling with spoil from Culebra Cut. Over 12,000 feet of trestle have been built, and most of it has already been filled.

Three systems of labor have been tried in the work between Gamboa and Gatun: (1) Construction by the railroad company's own labor forces; (2) an outright contract at a fixed price per yard; (3) what is known as "task work." In all work except grading and clearing the railroad company employs men by the hour and directs them through its own foremen.

The outright contract is made with a construction man on the Isthmus who agrees under bond to do excavation and grading at a flat rate; the measurement of material to be made by cross section. Three classes of material are recognized—earth, loose rock, and solid rock. The company furnishes dynamite, tools, Decauville cars and tracks. The contractor supplies labor and supervision, and agrees to accept the decision of the chief engineer of the Panama railroad with regard to the classification of material, in case dispute arises. No locality is specified in which work is to be done, the contractor agreeing to do it wherever directed and in the manner desired by the railroad company's engineers. At present he has a force of men at work in the jungle near Buena Vista, between Frijoles and Gatun, and, although this is the most isolated part of the line, no difficulty is experienced in keeping the men at work, and the grading is done to the satisfaction of the company. So satisfactory has this method proved that another contract is under consideration.

"Task work" has developed unsuspected working ability in the West Indian laborer. He is paid 10 cents for each Decauville car load of material (½ cubic yard) moved. The engineers of the company give stakes and direct the work, the company furnishes Decauville cars and rail, and picks and shovels. No classification of material is made as the company does all the blasting necessary to get rock into small enough pieces to be handled by one man. A number of negroes cooperate, some doing the digging and loading and others the dumping and spreading. They work hard and steadily until their "task" is done. The company requires that at least 15 cars be loaded for each man. The work is thus advanced more rapidly than if the men were allowed to determine the length of their own "task," and the equipment furnished by the company is kept

more constantly in use. Frequently the "task" is finished in six hours while on an hourly basis one man could hardly move 15 cars of material in nine hours. The company profits, because the work moves rapidly, it saves on supervision, and as the men often work in two shifts it keeps its Decauville equipment in use from 12 to 15 hours a day. The only supervision necessary, in addition to that of the engineering force, is that of the "taskmaster" who sees to it that the cars are filled and dumped and keeps account of the number. Working under this system is economical only under certain conditions, that is, where the work is all of one class and where the amount of excavation makes it unprofitable to use steam shovels.

When Gatun Lake is at its normal level of 85 feet above the sea, all the valleys crossed by the relocated line will be filled with water on both sides of the track up to that elevation. As there is a large predominance of embankment the railroad will present the appearance of having been constructed on a series of fills that connect an alternate series of peninsulas projecting into the lake. All the valleys, excepting the Gatuncillo and Chagres, are being bridged with reinforced concrete culverts kept below subgrade, so that there will be a continuous roadbed over the openings.

The Chagres is already spanned by the bridge at Gamboa and the Gatuncillo will be crossed by a bascule bridge, which will give access to the large lake area east of the railroad. This bridge has been authorized, although the details have not been completed to the point where bids can be requested. The clear channel when the lift is up will be broad enough to permit of the passage of any ship that can pass through the Canal locks. In other words the upper lake basin will be accessible to ships larger than any now afloat.

Several smaller rivers are crossed requiring arch culverts of large size, and as the elevation at which the road is being built is high above the stream beds, many of the culverts are very long. Two of these large culverts may be seen from the operated line between Pedro Miguel and Miraflores. They are built of concrete, have a 20-foot span, and are 24 feet high. Longer than these but otherwise the same are the culverts over the Juan Grande, Frijoles, Frijolita, and Agua Salud rivers between Gamboa and Gatun.

Red Cross Dance at Culebra.

The dance held at Culebra on the night of April 16, for the benefit of the Red Cross, added \$650 to the treasury of the local organization. Since the dance a number of people have sent in the pay for their ribbons, and a few ribbons have been returned. All those who do not wish to pay for the ribbons will kindly return them at once to the treasurer in Culebra, in order that the accounts for the dance may be closed up.

Fourth of July at Cristobal.

A meeting of citizens of Cristobal will be held at the Commission clubhouse on Friday night, April 23, at 8 o'clock, for the purpose of effecting a permanent organization and arranging a program for the celebration of Fourth of July. A committee of nine, appointed at the meeting last Friday night, will make a report.

CANAL WORK FOR MARCH.

Monthly Report of the Chairman to the Secretary of War.

CULEBRA, C. Z., April 17, 1909.

The Honorable the Secretary of War, Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of March, 1909:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
<i>Steam Shovel Excavation—</i>					
In prism.....	Cubic yards.....	130,311	1,941,641	139,877	2,211,829
Auxiliary.....	Cubic yards.....	25,023	87,794		112,817
Total.....	Cubic yards.....	155,334	2,029,435	139,877	2,324,646
<i>Dredge Excavation—</i>					
In prism.....	Cubic yards.....	603,046		924,388	1,527,434
<i>Hand and Scraper Excavation—</i>					
In prism.....	Cubic yards.....		24,653		24,653
Auxiliary.....	Cubic yards.....			3,604	3,604
Total.....	Cubic yards.....		24,653	3,604	28,257
Total Canal proper.....	Cubic yards.....	758,380	2,054,088	1,067,869	3,880,337
<i>Accessory work outside of Canal proper—</i>					
Steam shovel.....	Cubic yards.....	5,430	5,397	3,560	14,387
Dredge.....	Cubic yards.....	167,908			167,908
Total.....	Cubic yards.....	173,338	5,397	3,560	182,245
Total excavation.....	Cubic yards.....	931,718	2,059,485	1,071,429	4,062,632
Explosives used.....	Tons (2240 lbs).....	40.78	414.80	33.2	488.78
Rock drilling.....	Feet.....	59,670	399,451	46,565	445,786
New track laid.....	Miles.....	5.74	20.90	3.42	29.06
Track removed.....	Miles.....		13.80		13.80
Material placed in dams.....	Cubic yards.....	139,659	26,735	55,506	221,900
Rock crushed.....	Cubic yards.....	8,020	5,166	7,878	21,064
Cement used.....	Barrels.....	3,654		297	3,951
Concrete placed.....	Cubic yards.....	3,364		79	3,443
New roads built.....	Miles.....	0.65	1.83	1.20	3.68
Water mains laid.....	Feet.....	2,534	1,178	1,570	5,282
Sewers laid.....	Feet.....	834	1,749	528	3,111
Open drains and ditches dug.....	Feet.....	1,000	9,360		10,360
Open drains and ditches cleaned.....	Feet.....			245,676	245,676
Daily average number of laborers.....		3,743	8,539	2,037	14,319
Rainfall.....	Inches.....	2.99	0.21	1.11	

Atlantic Division.

GATUN LOCKS.

Excavation—Shovel excavation was continued in the lock chamber, and auxiliary shovel excavation was made to the south of the cement house for the barrel burning plant, and to the east of the locks for a railroad connecting the 75-foot level with the high line of the Panama railroad. Dredge excavation by dredge No. 85 was continued at the north end of the lock excavation. The dredge excavation by dipper dredge *Mindi* between the cableway dock and cement shed dock was completed.

Unloading Cableway Dock—The construction of this dock was completed.

Cement Shed—During the month the framing of the main posts and roof trusses was commenced, and at the end of the month was 50 per cent completed. The first cantilever truss was assembled and erected.

Barrel Burning Plant—The excavation for the fire pit in the barrel burning plant was commenced, and 416 cubic yards of hand excavation was made.

Division Storehouse Dock—The construction of this dock was commenced and completed, 110 piles being driven and approximately 5,000 square feet of decking laid. The dock is now ready for service, including a launch landing and incline leading from the launch landing to the level of the storehouse platform.

Storage Pile Tunnels—These tunnels are

completed and ready for the installation of the valves.

Automatic Electric Road—During the month 1,340 cubic yards of earth and loose rock were removed from the excavation for the roadbed. The grading was completed. The rock ballast throughout the entire length of the road was also completed, and the road is now ready for the track to the approach trestle of the mixer building.

Industrial Electric Road—The excavation for the roadbed of this railroad was commenced, and 300 cubic yards of loose rock and earth were removed. At the end of the month, 1,200 feet of 3-track and 500 feet of

completed. During the month, all forms for the first floor were built and put in place. The erection of the superstructure was commenced, and 70 per cent of the framing completed. Posts for turbine room were set up, and two trusses put in place. The discharge culvert was completed during the month, and all masonry work completed excepting finishing the paving and construction of the water table around the building. All conduit has been placed in the boiler room floor and in one-half of the turbine room floor. Three base condensers have been set.

Drafting Room—Work has been continued on erection details. Plans for all-steel metal forms for the locks were completed and forwarded.

GATUN DAM AND SPILLWAY.

Stripping—Work was continued stripping the area to be covered by hydraulic fill in the valley east of the spillway, and was practically completed over the bottom of the valley and a short distance up the sides of the hills. The bed and banks of the old Chagres were thoroughly cleaned of rock and debris down to original clay, and by the end of the month all preparations were completed, and the dredge was ready to begin pumping material into this channel. The muck ditch across Gatun Island was completed, and its continuation along the axis of the dam carried some distance into the adjacent hills.

Hydraulic Fill—No material was pumped into the central part of the dam during the month, the one available dredge being utilized in filling a swampy section in the north toe and in dredging the French canal between the spillway dock and the lock slip, where stone and sand barges had been grounding. Three 20-inch drain pipes were installed along the south side of Spillway Hill, which will act as permanent outlets for the surplus of water from the hydraulic fill.

Emplacements—The construction of the north rock fill, east of the spillway and to elevation + 24 was continued, using Bas Obispo for the drainage system along the toe of the dam and north of saue in the old river channels, and waste material from excavation at Mindi and the locks for other sections. On the south toe, dumping of material from the locks and Mindi excavations was continued both east and west of the spillway on the lower level, and east of the spillway on the higher level.

Concreteing—The laying of concrete began on March 17, the construction of the floor north of the spillway dam being first undertaken. To the end of the month 2,447 cubic yards were placed.

PORTO BELLO.

At this point work on the power plant site, quarry operations and carpentry work were continued. During the month 8,020 cubic yards of crushed rock were produced.

NOMBRE DE DIOS.

Work was actively pushed at this point, and during the month 2,345 cubic yards of sand were dredged and shipped to Gatun.

HARBOR AND CHANNEL SECTION.

Dry Excavation Below Sea Level, Mindi—During the month 28,957 cubic yards of earth and 41,756 cubic yards of rock were excavated by two 70-ton Bucyrus steam shovels and one Model 91 Marion steam shovel, an average of 23,571 cubic yards per month of 27 working days.

Dredging, Uccan to Mindi—Three dredges

2-track roadbed were completed, ready for ballast.

Mixer Building—All foundations and floors in this building were completed. The main timber work was erected up to the third floor. Eight 2-yard mixers, with their superhoppers, were erected and placed in position. Erection of the 4-track approach trestle was commenced, and is 75 per cent completed.

Cableway Towers—During the month the riveting on the four tail towers of the lock cableways was completed. The counterweights for the tail towers of the two unloading cableways were placed and the towers painted. The single unloading tail tower was erected. The single head tower of the unloading cableway was erected, and the machinery placed in it and in one of the duplex head towers. A temporary power line was brought across the lock and connected with the head towers of the unloading cableways. This line has also been extended to the tail towers of the unloading cableways and to the head towers of the lock cableways.

Power House—Work on the power house was satisfactorily continued during the month. About 11,250 square feet of basement floor and 2,000 square feet of walls have been given a water-proof coat of tar and Period roofing paper. About 3,000 square feet of floor was finished by masons, the boiler room section having been com-

removed from the prism 426,864 cubic yards of earth and 34,344 cubic yards of rock. In addition, the *Mindi* removed 14,047 cubic yards of earth and 31,000 cubic yards of rock from the approach channel to the Gatun locks, and 2,400 cubic yards of earth from the slip at pier No. 14.

On March 31st, 40 feet of water could be carried from 0 to Mile 2 + 4,950 feet; 30 feet to Mile 3 + 750 feet; 20 feet to Mile 3 + 1,650 feet; and 15 feet to Mile 4 + 4,900 feet, the end of the Cut.

MUNICIPAL ENGINEERING.

The usual work of this subdivision was satisfactorily performed during the month, and included work on the Gatun roads, roads at Cristobal, water works at Gatun, Cristobal and Mount Hope, and various building construction and maintenance.

Central Division.

During the month of March the total amount of material excavated in the Central Division was 2,065,827 cubic yards, of which 808,524 cubic yards were classified as earth and 1,257,303 cubic yards as rock.

Of this quantity 2,041,174 cubic yards were removed by steam shovels, and 24,653 cubic yards by hand in the Bohio district.

The quantity of material removed from the Canal prism was 1,966,294 cubic yards, while 87,794 cubic yards were removed from the Obispo Diversion, 6,342 cubic yards cast over above grade at Matachin and 5,397 cubic yards removed at incline track at Matachin.

The daily average number of steam shovels at work during the month was 56.93 as compared with 56.05 for the month of February.

For comparison with the work done during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels	Classification of material.		Av. No. of steam shovels working during month	W'kg days in month	Av. amount excavated per shovel per 8-hour day.
		Rock	Earth			
1908:						
Mar.....	cu. yds. 1,617,352	cu. yds. 830,510	cu. yds. 786,842	53.65	26	1,159
1909:						
Mar.....	2,041,174	1,248,197	792,977	56.93	27	1,328

Rainfall at Empire: 1908, 0.41 ins.; 1909, 0.21 ins.

The above table shows that the average output per shovel day was over 14½ per cent greater in March, 1909, than in the corresponding month of the previous year.

During the month 185,816 cubic yards of material excavated from the prism were transported to the relocation of the Panama railroad between Caimito and Gorgona, and dumped as filling in the embankment for the new roadbed, the total to date for this purpose being 773,084 cubic yards.

During the month 26,735 cubic yards of rock from Bas Obispo were transported to Gatun, a distance of 23 miles, and dumped in the toe of the dam, the total to date for this purpose being 308,549 cubic yards.

The following work has been done at Gatun and Boca Mindi:

At the anchorage basin at Gatun, timber has been cut on 264 acres, 192 acres of which are completely cleared, trees burned and roots grubbed; while on the balance—72 acres—the timber has merely been cut. In

addition, approximately 100 acres have been worked by machete gangs.

In the channel clearing work between Gatun and Boca Mindi, the timber has been felled on 282 acres. Of this amount 60 acres have been burned over once, and 115 acres partially prepared for burning.

In the contract work with Charles Alberts at Gatun, 223 acres have been cut, the timber on 28 acres of which has been piled and burned.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

The total excavation during the month amounted to 239,516 cubic yards in this subdivision.

At Pedro Miguel, in addition to the regular operations, excavation of the tail track for approaches to the storage trestle was completed; the framing of the west trestle was completed, and driving of the pile trestle approach was begun. Excavation of the core of the west dam was continued and the filling of same begun.

At Miraflores excavation for the power house was practically completed and placing of concrete footings begun. Excavation for diversion of the Cocoli River was well advanced. The excavation and foundation for the cement storage shed was begun. Filling in puddle core of the west dam was continued. Extension of the track on the dike along the east side of the prism between Miraflores and La Boca was begun, with a view to obtaining direct rail communication between the wharf for unloading sand, which is under construction, and the lock site.

At Ancon quarry the preliminary work of clearing and grading the site for the crusher plant and installation of tracks was continued.

DISTRICT NO. 2—DREDGING, AND LA BOCA SHIPWAYS.

Five dredges were in operation during the month, securing the following output:

Dredge	Type.	Cubic yards.		Remarks.
		In pr'm	Aux'ly	
Culebra	Suction	310,161	.....	Scow measurement
Gopher	Ladder	172,477	.....	Place measurement
Mole...	Ladder	125,159	.....	Place measurement
No. 14.	Ladder	140,141	.....	Place measurement
Dipper.	Dipper.	117,758	.....	Place measurement
Total.	.....	865,696	.....

The necessary maintenance of floating equipment was taken care of, and a large amount of other mechanical work was performed at the shops.

General work of clearing and grubbing in in the Canal prism south of Miraflores lock site was continued until March 9, during which time an area extending over 107,000 square feet was grubbed and cleared of stumps, roots, brush, etc.

After March 9 the force was transferred to the work of clearing, grubbing and grading for the diversion ditch on the east of the Canal between the Miraflores lock site and La Boca. The excavation of this diversion has been begun with an orange peel dredge. Decauville equipment has also been used in removing a high point extending across the site of the proposed ditch.

DISTRICT NO. 3—MUNICIPAL AND BUILDING WORK.

A large number of jobs of building and municipal work were completed, including work at the filtration plant, Ancon steam plant, the La Boca quarry, the Rio Grande crusher, the Ancon reservoir, the Ancon

corral, the Panama-Corozal road, the Corozal-Pedro Miguel road, the maintenance of water works and sewers, the construction and maintenance of ditches and drains for sanitary work, and the construction and maintenance of buildings.

Mechanical Division.

The manufacturing and repair work of this division was satisfactorily performed.

Relocation of Panama Railroad.

Work on the Corozal line revision was continued. During the month 9,318 cubic yards of earth and rock were excavated and 10,831 cubic yards of material placed in embankment.

The above work consists in changing the line of the present Panama railroad south of Corozal, in order to reduce the great curvature in the line at that point.

During the month on the relocation work proper 101,186 cubic yards of excavation were accomplished, and 296,556 cubic yards of embankment. At the end of the month the total quantity of excavation accomplished was 987,214 cubic yards, and the total quantity placed in embankment was 3,860,020 cubic yards.

The necessary work of constructing trestles for filling and the construction of bridges and culverts was continued.

The work of excavating and timbering the full section of the Miraflores tunnel bore has progressed from each end; there remains about twenty days' work to complete this.

During the month, 9,753 linear feet of permanent track were laid, making a total to date of 83,891 linear feet.

The permanent depot at Gatun has been completed and is ready to be put into use.

The force of laborers during the month averaged 2,183 men.

Quartermaster's Department.

During the month there were 212 additions to the gold force and 235 separations, making a net decrease of 23.

There were received from Barbados 530 West Indian laborers, who were assigned to the Panama Railroad Company for service on the relocation work. An additional shipment of approximately the same number is expected to arrive before the middle of April.

The construction of the following additional quarters has been authorized: At Ancon—I type-10 married quarters, 1 type-20 married quarters, 4 type-17 married quarters. At Culebra—I type-10 married quarters. At Gatun—2 type-18 bachelor quarters.

Subsistence Department.

The operation of the Hotel Tivoli during the month shows a profit of \$3,787.06. There was a loss of \$558.11 on the line hotels, and a profit was made on the operation of the kitchens and mess halls. The net operations of the Subsistence Department for the month show a profit.

Department of Civil Administration.

COURTS.

The Supreme Court held three sessions in March, and two civil cases were disposed of. In the Circuit Courts 14 civil and 36 criminal cases were disposed of, and in the District Courts 90 civil and 550 criminal cases were disposed of.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

The total revenues of the Canal Zone in March aggregated \$23,433.01. The general revenues amounted to \$14,678.29.

The postal revenues were \$6,860 on ac-

count of stamp sales, \$2.25 on account of newspaper postage, and \$1,892.47 on account of money order fees. Money order sales during the month amounted to \$444,690.16, of which \$322,780.62 was payable in the United States and foreign countries and \$121,909.54 in the Canal Zone. Eighty-one dispatches of mail were made to foreign ports by the Cristobal exchange office.

Twenty-one vessels entered at and 19 cleared from the port of Ancon, and 22 vessels entered at and 22 cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The Panama Government granted to the Commission authority to police its reservation at Porto Bello, and on March 27 four white police officers of the Canal Zone were stationed at that point. These officers will enforce the laws of the Republic of Panama, and will deliver to the Panamanian authorities all persons arrested by them.

On March 12 Adolphus Coulson, a Barbadian, who was convicted on March 1, 1907, of murder in the first degree and sentenced to be executed on September 13, 1907, was hanged at the Culebra penitentiary.

On March 23 a negro woman, Cecile Pelage, a native of Guadeloupe, was murdered at Bas Obispo by an American negro, Benjamin Armstrong. Armstrong, after cutting the woman's throat with a razor, attempted suicide in the same manner.

The number of arrests during March was 561, as compared with 472 in February, an increase of 89.

DIVISION OF PUBLIC WORKS.

The usual business of this Division was conducted during the month. The amount of water consumed in Panama during the month was 29,063,000 gallons; the total consumption in Colon during the month was 21,207,730 gallons.

DIVISION OF FIRE PROTECTION.

Twenty fires occurred during the month, 17 in the Canal Zone, 2 in Colon and one in the city of Panama. The estimated damage to property in the Canal Zone was \$617.

DIVISION OF SCHOOLS.

The total enrollment in the white schools during the month was 675, and the average daily attendance 523. In the colored schools the total enrollment was 1,421, and the average daily attendance 901.

Department of Sanitation.

The health conditions on the Isthmus continue to be very satisfactory, and a comparison of the death rate for the same month in former years, both for the employes and for the total population, shows a decrease.

There has been no outbreak of disease at any point, and no case of yellow fever, plague or smallpox during the month. The last case of yellow fever developed in May, 1906, and the last case of plague in August, 1905.

Respectfully,

GEO. W. GOETHALS, *Chairman.*

Missing Man.

Information is desired in regard to John MacDonald, who left Winthrop, Mass., for Panama in June, 1908. Any one having knowledge concerning him is requested to communicate with A. P. Mason, San Pablo, Canal Zone.

Concert by I. C. C. Band.

The I. C. C. band will give a concert at Las Cascadas on Sunday, April 25, at 5.30 p. m., and at Hotel Tivoli on Sunday, May 2,

LIMON BAY BREAKWATER.

Report of the Special Board to Investigate the Subject.

The Board appointed on September 12, 1908, to consider the projects for breakwaters in Limon Bay made its report to the Chairman and Chief Engineer on March 25, 1909. The report has been approved and is as follows:

The project for the protection of the Atlantic entrance to the Canal, on which the Board of Consulting Engineers based its estimate of \$5,300,000 in 1906, consisted of an east jetty, extending from deep water to Manzanillo Point about one mile long, and a west jetty, extending from deep water to the head of Limon Bay parallel to the Canal, about 4½ miles long.

The project submitted by Maj. Wm. L. Sibert, Division Engineer of the Atlantic Division, provides for two breakwaters; one west of the Canal entrance and 1-96/100 miles long, with its outer end in 44 feet of water and extending toward Toro Point, and one east of the Canal entrance one mile in length and extending towards Manzanillo Bay. The cost of these breakwaters is estimated to be \$11,432,000.

The Board held its first meeting at Culebra on September 17, 1908, and after reviewing all the available information and considering Major Sibert's report, decided that the Mindi River, at its mouth, should be gauged and the silt discharge ascertained both at Boca Mindi, near Limon Bay, and in the French canal below its connection with the Mindi River. The information thus obtained is contained in Major Sibert's letter of February 6, 1909, and accompanying letters. The results may be summarized as follows:

Mindi River: (Results of 25 observations at mouth, from October 29, 1908, to December 24, 1908.)

Maximum water discharge, 5,249 cubic feet per second.

Minimum water discharge, 2,257 cubic feet per second.

Average water discharge, 3,891 cubic feet per second. Maximum sediment discharge in 24 hours, 1,680 cubic yards.

Minimum sediment discharge in 24 hours, 722 cubic yards.

Average sediment discharge in 24 hours, 1,231 cubic yards.

French Canal: (Results of 22 observations.)

Maximum water discharge, 2,507 cubic feet per second.

Minimum water discharge, 814 cubic feet per second. Average water discharge, 1,567 cubic feet per second.

Maximum sediment discharge in 24 hours, 949 cubic yards.

Minimum sediment discharge in 20 hours, 223 cubic yards.

Average sediment discharge in 24 hours, 498 cubic yards.

The above results show that the silt deposited from the two channels in question in the Canal channel now being excavated, is only a small proportion of the total silting in this channel and as such is practically negligible.

Prior to the receipt of this information, the Board felt the necessity of ascertaining, more or less generally, the deterioration of the channel in Limon Bay, both from the effects of the prevailing strong breezes from the north—known locally as the "trade winds"—and also from the occasional severe storms, or "northerly," that occur in the winter months, and the Division Engineer of the Atlantic Division was requested to have such records kept of the condition of the channel as would give adequate in-

formation on this point. Acting Division Engineer Harding reported, under date of November 7, 1908, that the fill in the channel during one month (September 25 to October 25, 1908) in the outer three miles, and when no unusual weather conditions existed, amounted to about 272,000 cubic yards.

A "norther" of moderate severity occurred from February 1 to 3, 1909. Two members of the Board visited Colon on the morning of February 2, and observed the effects of the "norther," so far as they were in evidence. Division Engineer Sibert's report of the effect of the "norther," so far as the deterioration of the channel is concerned, is dated March 17, 1909.

This report and all foregoing reports and blue prints mentioned herein have been filed in your office.

Surveys of the channel prior to the "norther" had been made on December 24, 1908, and January 26, 1909, and surveys after the "norther" were made on February 10 and March 3.

Any results must be considered as more or less approximate. A layer one foot thick over the entire 500-foot bottom width, from the outer end of the dredge channel to the head of the cut, contains about 450,000 cubic yards. The data obtained, however, clearly show that the fill due to the "norther" was considerable, and indicate that about 700,000 cubic yards of fill occurred between the survey of December 24, 1908, and that of March 3, 1909. Of this amount the fill throughout the entire channel caused by the "norther" as shown by surveys immediately before and after the "norther," was about 400,000 cubic yards. To January 1, 1909, the fill has increased the total original excavation about two-thirds.

Based upon the information described hereinbefore, the Board is of the opinion that silting, due to sediment reaching from Limon Bay through the French canal and through Boca Mindi, is relatively of little importance and can easily be controlled by dredging. The effect of the ordinary wash of waves in Limon Bay, and the effect of "northerly" and other unusual storms, is to shoal the channel to an extent which, while it could be handled by dredging, if uniform, nevertheless should be prevented by artificial structures. Unless this be done, a single storm of unusual severity and of long duration might so fill a portion of the dredge channel as wholly to interrupt navigation for a considerable period. To obviate this possibility the Board is agreed that breakwater protection for Colon harbor is desirable.

In passing upon the trace to be given the breakwater, the Board has not omitted from consideration the fact that the Consulting Board of 1905, both in its majority and minority report, recommended a west breakwater substantially parallel to the dredge channel in Limon Bay, instead of substantially perpendicular to the same. The result of adopting the trace recommended by the Board of Consulting Engineers would be to give a relatively long and narrow sheltered area within which entering waves might not dissipate their energy sufficiently to permit vessels to ride easily within the sheltered area and at the docks on the water front. Such has been the experience on the Great Lakes with harbors entered between parallel piers. It has been found necessary

to provide a stilling basin, either within or exterior to the piers, to obviate inconvenience and dangers resulting from the racing of the waves in the channel between the piers.

While the parallel breakwater would undoubtedly protect the dredged channel, yet it would discard at once the advantage usually recognized as important, of sheltering as large an anchorage area as possible.

While it may readily be possible that there will be, south of Limon Bay, an artificial anchorage excavated so that vessels may moor closer to Gatun locks, yet the Board considers that the existence of a large sheltered basin in Limon Bay, immediately inside the throat of the entrance, will always remain a distinct advantage to navigators.

For these reasons the Board favors so directing the breakwater as to shelter an anchorage area as well as to protect the channel and inclines to the general direction recommended by the Division Engineer, rather than to that recommended earlier by the Board of Consulting Engineers.

It may be noted that while the estimated cost of the breakwater along the lines recommended by the Division Engineer is very much greater than the cost stated for the breakwater by the Board of Consulting Engineers, yet this difference does not result from the trace adopted.

The breakwaters recommended by the Consulting Board to protect the entrance of the proposed sea-level canal, although in water of less average depth than that proposed by the Division Engineer, nevertheless, on account of their greater length, would contain practically the same amount of material, if built with the same slopes, while breakwaters on similar lines, to protect the entrance now proposed for the 85-foot level canal, would be still longer and would probably contain even a greater amount of material. The discrepancy in estimated cost arises evidently from placing a different value on the unit price, and perhaps from a different estimate of the amount of material which will be lost by sinking into the soft bottom.

For the complete protection of the harbor, the breakwaters should converge in a general direction toward the outer end of the dredged channel from Toro Point, on one side of the channel, and from a point north of the mouth of Manzanillo Bay, on the other.

As the general direction of storms is from the north or west of north, the Board believes that adequate protection of the harbor and Canal channel can possibly be obtained by the construction of the west breakwater only, and that the construction of the east breakwater should be deferred until further observations have been taken and information obtained relative to the necessity for it.

If the bottom proves to be equally favorable everywhere the general direction for the breakwaters shown on the blue print submitted by Major Sibert is favored by the Board. It is the Board's view, however, that the exact location and type of the breakwaters are points intimately connected with the character of the bottom upon which they will rest, and that until more complete knowledge has been acquired no definite recommendations on these points can be made.

The Board believes that borings along and across the line of the proposed breakwaters should be made to develop the rock surface underlying the mud, over an area covering

the positions of the breakwaters recommended by Major Sibert and Major Jadwin.

It is the view of the Board that where the rock is found close to the surface, a breakwater placed with its body directly upon the bottom will probably be the most economical; if, however, it be found that for a considerable distance there is a great depth of soft material over the rock, the use of a mattress under the body of the structure may effect a saving; if this latter condition be found to exist, it is suggested that experiments be undertaken with mattresses of bamboo fascines, or other suitable material, loaded with rock, to ascertain whether they will have sufficient durability to warrant their use.

Judging from experience at different harbors in the United States, the estimate submitted for the construction of the breakwaters proposed is ample. If, however, the borings show that the material over the rock is of a depth and character such that movement under the mass of the breakwater may take place to the extent which has been found in certain other localities on the Isthmus, the amount of rock which would be required to make a suitable rubble mound cannot be estimated with accuracy. If this condition be found to exist, the Board believes that study should be given to other types of breakwaters of lighter cross-section although possibly of greater cost per unit of volume. Very respectfully,

H. F. HODGES, *Senior Member of Board.*
D. D. GAILLARD, *Member of Board.*
H. H. ROUSSEAU, *Member of Board.*

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, April 17, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. Diver'n).
Height of low water above sea-level, feet.....	125	92	46	1	0	0
Maximum height above mean sea-level, feet.						
Sunday, Apr. 11.....	127.2	94.0	47.8	3.0	1.0	0.9
Monday, Apr. 12.....	127.4	94.2	49.4	4.0	0.9	0.8
Tuesday, Apr. 13.....	127.2	94.2	49.8	4.4	1.1	1.0
Wednesday, Apr. 14.....	125.6	92.9	48.0	3.1	1.2	1.1
Thursday, Apr. 15.....	125.4	92.7	47.6	2.4	1.1	1.0
Friday, Apr. 16.....	125.2	92.6	47.5	2.2	0.9	0.8
Saturday, Apr. 17.....	125.4	92.6	47.5	2.1	1.0	1.0

Rainfall, April 1 to 17, 1909, Inclusive.
(MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day.	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	.45	1.79
Brazos Brook.....	.85	2.82
Gatun.....	.35	1.63
Bohio.....	1.20	1.87
<i>Central Division—</i>		
Tabernilla.....	.62	1.18
San Pablo.....	.22	.63
Bas Obispo.....	.40	.49
Gamboa.....	.49	.57
Empire.....	.35	.41
Camacho.....	.32	.39
Culebra.....	.05	.05
<i>Pacific Division—</i>		
Rio Grande.....	.02	.02
Pedro Miguel.....	.01	.01
La Boca.....	.03	.08
Ancon.....	.33	.33
<i>Atlantic Coast—</i>		
Porto Bello.....	3.81	5.43
Nombre de Dios (to 5 p.m. Apr. 10)	.34	.75
<i>Upper Chagres.</i>		
El Vigia.....	.34	.64
Alhajuela.....	.07	.15

COMMISSION CLUBHOUSES

Activities of the Young Men's Christian Association.

REPORT FOR MARCH, 1909.

Total membership.....	1,230
Total number of bowling games.....	5,888
Number different tournaments: billiard, pool chess, etc.....	7
Total number of tournament players.....	142
Total number pool and billiard games.....	12,330
Total income from soda fountain.....	\$2,141.78
Number different men using gymnasium.....	110
Total attendance of men using gymnasium.....	601
Number enrolled in chess and checker clubs.....	34
Number enrolled in glee clubs.....	6
Number enrolled in dramatic and minstrel clubs.....	35
Number enrolled in camera clubs.....	15
Number enrolled in bible classes.....	30
Number enrolled in educational classes.....	39
Number of members of library.....	541
Total number of books withdrawn.....	1,227
Number of Sunday meetings.....	1
Average attendance.....	90
Number of imported entertainments.....	8
Attendance.....	1,796
Number of local entertainments.....	3
Attendance.....	700
Number of functions outside association management.....	10
Attendance.....	1,650
Number of afternoons for women.....	8
Attendance.....	294
Number evening functions to which women were invited.....	19
Attendance.....	805
Different men on committees.....	32
Number of men called on in hospitals.....	78
Number of letters written at public tables.....	3,979
Total attendance at buildings.....	46,884
Average attendance per day at buildings.....	1,512

BOYS' DEPARTMENT (AGES 10-16).

Number of members.....	59
Number of afternoons open to boys.....	45
Total attendance.....	528
Attendance at gymnasium exercises.....	333

CRISTOBAL.

The clubhouse has been fitted throughout with Tungsten electric lights, which add to the attractiveness of the building at night.

The pool and billiard tables have lately been thoroughly overhauled and recovered, and are now in first-class condition.

In the bowling alleys, ten pins have displaced duck pins. Local tournaments will be held for the purpose of selecting members for the regular team.

EMPIRE.

A chess and checker club was organized on Wednesday evening, April 14, at the Empire Y. M. C. A., and the following men were elected as officers: President, Mr. C. P. Rose; secretary, Mr. H. C. Russell; coach, Mr. Charles Pulsifer. The club will meet every Wednesday night, and all who are interested in the games of chess and checkers are invited to join.

The Empire duck pin bowlers won first place in the tournament which closed last Saturday night, with a lead of seven games over the Cristobal Y. M. C. A. team, which got second place. Each man on the Empire team will receive a gold medal, and a trophy goes to the association.

Last Saturday night, the Empire Y. M. C. A. indoor baseball team defeated the Gorgona team by a score of 18 to 16. The battery for Gorgona was Weiser and Cuff, for Empire, Moor and Ruerle; umpires, Kramer and Feutardo.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending April 27, 1909 (75th meridian time):

DATE.	High.	Low.	High.	Low.	High.
	A. M.	A. M.	P. M.	P. M.	P. M.
April 21.....	4.22	10.33	4.38	10.57	.....
April 22.....	5.06	11.18	5.22	11.41	.....
			P. M.		
April 23.....	5.49	12.03	6.05	.....	.....
		A. M.	A. M.		
April 24.....	.....	12.27	6.35	12.50	6.51
April 25.....	.....	1.16	7.23	1.41	7.39
April 26.....	.....	1.37	8.17	2.36	8.36
April 27.....	.....	3.04	9.18	3.41	9.42

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

OFFICIAL CIRCULARS.

Acting Assistant to the Chairman.

CULEBRA, C. Z., April 14, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Mr. C. A. McIlvaine will act as Assistant to the Chairman during the absence of Mr. M. B. DePutron, who has entered on his leave this date.

GEO. W. GOETHALS, Chairman and Chief Engineer.

Maximum Age Limits.

CULEBRA, C. Z., April 12, 1909.

CIRCULAR No. 176A.

The rule prescribing maximum age limits will not be enforced against ex-employees of the Isthmian Canal Commission or of the Panama Railroad Company, originally appointed before they had reached the maximum age, who have been separated from the service less than six months and are in sound physical condition.

GEO. W. GOETHALS, Chairman.

Request for Reduced Rate of Transportation.

CULEBRA, C. Z., April 12, 1909.

CIRCULAR No. 186A.

Hereafter, in making request for the reduced rate of transportation and remission of customs duties on employes' shipments, six copies of Form No. 164-C. E. will be required.

GEO. W. GOETHALS, Chairman.

Pay of West Indian Laborers.

CULEBRA, C. Z., April 14, 1909.

CIRCULAR No. 243.

Effective May 1, 1909, it is ordered that the designations and rates of pay of West Indian laborers be fixed as follows:

- 1. The designations Axeman, Carpenters' Helpers, Machefemen, Dumpmen, Jackmen, Painters' Helper, Laborer B, and Trackman B, will be discontinued and replaced by the general designation Laborer.
2. All West Indian laborers will be paid ten cents per hour.
3. Pitmen will be paid 13 and 16 cents per hour, and the rate of 20 cents will be abolished.
4. The maximum rate for switchmen and riggers will be 13 cents per hour.
5. The rates given are United States currency value.

GEO. W. GOETHALS, Chairman Isthmian Canal Commission, President Panama Railroad Company.

Taking Boarders Prohibited.

CULEBRA, C. Z., April 15, 1909.

CIRCULAR No. 244.

After May 1, 1909, employes occupying quarters belonging to the Isthmian Canal Commission and the Panama Railroad Company are prohibited from taking any persons as boarders who are not members of their immediate families.

GEO. W. GOETHALS, Chairman Isthmian Canal Commission, President Panama Railroad Company.

Waste of Water.

DEPARTMENT OF CIVIL ADMINISTRATION, DIVISION OF POLICE AND PRISONS.

ANCON, C. Z., April 14, 1909.

CIRCULAR No. 456.

The attention of all police officers in this division is again called to Circular No. 422 from these Headquarters, dated April 16, 1908, relative to the misuse and unnecessary waste of water from the different stand-pipes, faucets, etc., throughout the Canal Zone.

The following paragraph showing extract of ordinance covering this subject is herewith quoted for the benefit of all concerned:

Nor shall any person or persons wilfully or otherwise misuse or waste or cause to be misused or wasted, water supplied from the water mains owned and operated by the Isthmian Canal Commission and the Government of the Canal Zone. Any person or persons violating any provision of this section shall be deemed guilty of a misdemeanor and upon conviction shall be punishable by a fine of not less than \$5 nor more than \$25, or by imprisonment for a term not exceeding 30 days, or by both such fine and imprisonment.

In order to obviate and correct the abuse complained of, all commanding officers are directed to immediately issue necessary instructions to all officers under their command to carefully observe and see that the provisions of section 10, above quoted, are not being violated and to arrest and prosecute any one guilty thereof.

G. A. PORTER, Acting Chief of Police.

FOUND—On south bound train, April 4, a gold watch. Owner may have same by giving train number and identifying watch. R. H. Brown, Gorgona.

LEGAL NOTICES.

United States of America, In the Second Judicial Canal Zone, Circuit, Empire.

To any and all persons whom it may concern: Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 190 hectares of the lands known as "Palenquilla and Frijol Grande," situated in the Canal Zone near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$1,900; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY, Clerk of the Circuit Court, Second Judicial Circuit, Empire, C. Z., April 15, 1909.

United States of America, In the Second Judicial Canal Zone, Circuit, Empire.

To any and all persons whom it may concern: Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 74 hectares of the lands known as "Santa Cruz," situated in the Canal Zone, and being a part of the lands of the upper Chagres Valley, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$740; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY, Clerk of the Circuit Court, Second Judicial Circuit, Empire, C. Z., April 15, 1909.

United States of America, In the Second Judicial Canal Zone, Circuit, Empire.

To any and all persons whom it may concern: Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 162.5 hectares of the land known as "Barro Colorado and Palenquilla," situated in the Canal Zone, near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$1,625; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY, Clerk of the Circuit Court, Second Judicial Circuit, Empire, C. Z., April 15, 1909.

United States of America, In the Second Judicial Canal Zone, Circuit, Empire.

To any and all persons whom it may concern: Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 72.5 hectares of the lands known as "Barro Colorado and Frijol Grande," situated in the Canal Zone, near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$725; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY, Clerk of the Circuit Court, Second Judicial Circuit, Empire, C. Z., April 15, 1909.

Contract Houses.

Contract 2 type-18 houses, Gatun, C. Z. Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p. m., Friday, April 30, 1909, when they will be publicly opened, for the erection by contract of 2 type-18 houses at Gatun, C. Z. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$400 conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals. C. NIXON, Purchasing Agent on the Isthmus.

Lost—Between Cristobal and Colon, on Sunday, April 11, 1909, one Eastman kodak, size 3-A; name, "C. F. Knowlton, Gorgona," inscribed in carrying case. Left in parcel rack of forward first-class coach on train arriving at Colon at 12.15 p. m. Finder please communicate with Tax Collector, Gorgona, and receive reward.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Table listing ship names, departure days, and dates for routes from New York to Colon. Includes ships like Magdalena, Prinz Aug. Wilhelm, Allianca, Orinoco, Colon, Panama, Prinz Joachim, and Oruba.

Persons desiring to meet friends or relatives upon arrival of Panama Railroad steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Table listing ship names, departure days, and dates for routes from Colon to New York. Includes ships like Colon, Orinoco, Panama, Prinz Joachim, Tagus, Oruba, Allianca, Prinz Aug. Wilhelm, and Colon.

NEW ORLEANS TO COLON.

Table listing ship names, departure days, and dates for routes from New Orleans to Colon. Includes ships like Cartago, Abangarez, Parismina, and Abangarez.

COLON TO NEW ORLEANS.

Table listing ship names, departure days, and dates for routes from Colon to New Orleans. Includes ships like Parismina, Cartago, Abangarez, and Parismina.

COLON TO BARBADOS, CALLING AT TRINIDAD.

Table listing ship names, departure days, and dates for routes from Colon to Barbados. Includes ships like Magdalena and Orinoco.

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York. Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES, ANCON, C. Z., April 21, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Table listing names of individuals whose letters were misdirected, such as Angel, Charles, Lynch, Charles, Baugher, Robert, Mackintosh, Jos., Begley, Pete, Malliora, John, Bellamy, J. E., Marrs, T. Walter, Billa, Simion, Mathes, George, Boatman, John J., McKennon, Capt. John T., Bremau, Mrs. F., Meyers, Mrs. A. J., Brown, Robert, Mitchell, Hugh, Bryun, James Augustine, Mounicke, Joseph, Buehm, Geo., Morgan, George, Burke, H. S., Murphy, Morris, Calvil, Mrs. S., Park, Chas. S., Clinton, G. P., Park, Leroy, Craig, J. D., Patch, Joseph Dorst, Crosby, Samuel J., Richardson, Nathan, Decker, Andrew, Kildbach, Wm. M., Diunick, J. B., Schneids, B. B., Egan, George, Shivers, Mrs. Mary G., Ferand, Romau A., Smith, Miss Sadie, Fitzgerald, J. P., Spear, Adolph G., Gibson, W. C., M. D., Stanley, Miss H. L., Gordon, Mrs. Victor D., Whipple, Mrs. C. E., Hall, James A., White, H. J., Hayden, John F., Whitney, Chas. A., Hill, C. W., Wigmore, Robt. G., Holst, Mrs. R. O., Wilber, Delbert H., Hunters, Mrs. Wm., Wilcox, Boss, Johnson, C. F., Wilds, Robt. E., Laymet, Henri, Willett, H. E., Leith, George W., Williams, Joseph D., Lonapegg, James, Wise, Dr. Olen L.

The steamship Hersilia arrived at Cristobal on April 12, with 35,066 cypress cross ties for the use of the construction divisions.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Replenishing Labor Supply

Seven hundred and fifty West Indian laborers arrived on the steamer *Solent* at Colon on April 21. Five hundred of them were assigned to the Panama Railroad Company for work on the relocated line, and the remaining 250 to the three construction divisions for work on the Canal. On March 24 the *Solent* landed 532 Barbadians at Colon for the Commission. If necessary more laborers will be imported, and no difficulty is anticipated in keeping up the force.

The importation of laborers at this time is due to increased work on the relocation of the Panama railroad, and also to the indisposition of idle laborers now on the Isthmus to accept the 10-cent rate of pay. It is estimated by the Quartermaster's Department that there are 5,000 idle West Indians on the Isthmus who came here to work on the Canal, and who were at one time in the employ of the Commission, but who will not accept work, although offered freely, at the prevailing rate of pay.

These laborers also show an increasing disposition not to work regularly, which is attributed to their living in the "bush"—away from Commission quarters and messes. Laborers living in the regular barracks and eating at the messes must work each day or be excused on account of illness. All but a few such laborers can be depended on to report each morning for work. On the other hand, the laborer who has his hut in the "bush" can work a few days a week and earn enough to subsist on for the balance of the week. The home-making instinct is proving, therefore, to be detrimental to the effectiveness of the labor force, and it is only in appearance that it makes for stability.

An instance of the instability of some of the West Indian labor force was furnished by a part of the ship load of laborers that arrived at Colon on March 24. Over 100 of them were set at work in one place, and the

following morning less than one-third reported for work. The balance had scattered to various points along the line of the Canal or had gone to Colon or Panama. It is believed that those who left their work after one day are men formerly employed on the Isthmus, who wished to work at some particular point, or who availed themselves of free transportation to the Isthmus without any intention of remaining in the service of the Commission or the Panama Railroad Company. In order to lessen this class of desertion the recruiting agent in Barbados has been directed not to accept laborers who have ever before been on the Isthmus.

Keeping Cars in Service.

During the month of March, 1909, the total number of dirt cars repaired by the Mechanical Division, including light and field repairs, at all points except Gorgona shops, was 11,190. The average number of cars remaining on hand in bad order each evening, exclusive of Gorgona, was 34. At Gorgona shops 372 cars were repaired, an average of between 12 and 13 per day. The low number of cars repaired at Gorgona is accounted for by the fact that at this point most of the work is on very heavy jobs, such as rebuilding and the renewal of broken sills.

Over 3000 cars were in construction service during March. The average number remaining on hand at all points in bad order each evening, including Gorgona, was only 130, which is a trifle over 4 per cent of the cars in service.

Supplies for the Commission.

On his recent visit to the States the Chief Subsistence Officer spent several days in the cities in which the Commission buys the greater part of its commissary supplies. He found that the general tendency of prices on foodstuffs is upwards, due principally to the short supply of cattle, and grain and the corner in wheat. Prices of foodstuffs in the commissaries in general are not higher than in the United States, and in many instances are lower. In manufactured articles, the market is good from the buyer's standpoint, and several advantageous orders for the commissaries were placed. One of these is an order for ten thousand pairs of shoes for immediate delivery.

Steamships Shawmut and Tremont.

In accordance with an order received from Washington the docking facilities at Cristobal are to be improved at once in order to accommodate the steamships *Shawmut* and *Tremont*, which will be used in carrying cement from New York to the Isthmus. In order to allow these ships to enter the harbor it will be necessary to do some dredging over the coral reef at Cristobal point, and to deepen the channel to the docks at Cristobal to 27½ feet. A temporary dock for cement will be constructed between dock

No. 11 at Cristobal and dock No. 14 at Mount Hope. The details of improvements in Cristobal harbor will be found in an official report published elsewhere in this issue of THE CANAL RECORD. The *Shawmut* and *Tremont* have arrived in New York after their voyage around South America from the Pacific coast of the United States, and the alterations necessary to fit them for the cement service will be made in New York.

New Office Building at La Boca.

The office of the Resident Engineer at La Boca was moved into the new office and storehouse building at that place on April 22. It is situated just north of the shipways and commands a view of the various activities in the shipyard. The building is 60 feet by 120 feet, one story in height with the exception of a portion of the southern end, which is two stories high. In this are the offices of the Resident Engineer and storekeeper. The northern end is used as a storehouse for spare parts of machinery, etc., and has a concrete floor.

Work on the new permanent dock and on the sand dock is in active progress. The excavation for the structure is finished, about 60 per cent of the piles have been driven, and several hundred feet of the dock timbers are in place. The rebuilding of the ladder dredge *Marmot*, which was launched at La Boca on March 25, is near completion, and it is expected that it will go into commission in a week or ten days. The rebuilding of the supply boat *Chame* is also nearly finished, and she will be in service in a short time.

March Record of Track Shifters.

The seven track shifting machines in the Central Division moved a total of 713,133 feet, or 135 miles of track during March. In the Tabernilla District track shifter No. 5 moved 227,095 feet, and No. 6 moved 140,463 feet, a total of 367,558 feet, or 69.6 miles, for the district. In the Bas Obispo District shifter No. 1 moved 71,017 feet, and shifter No. 7 moved 118,099 feet, a total of 189,116 feet, or 35.8 miles. In the Pedro Miguel District shifter No. 8 moved 69,429 feet; shifter No. 2 moved 50,808 feet, and shifter No. 9 moved 36,222 feet, a total of 156,459 feet, or 29.6 miles.

Lining Miraflores Tunnel.

Work is well advanced on the lining of the earth section of Miraflores tunnel, and there is no doubt that the concrete will be in place before the beginning of the rainy season. The rock section has been entirely lined, and the south portal has been extended so as to hold any material that may slide down that side of the hill. As originally cut the tunnel was 600 feet long and it is now 811 feet long. The greater part of the additional 211 feet representing the extension was made to hold the slide.

EUROPEAN LABORERS.

Contemplated Action of the Commission in Regard to Future Treatment of Them.

CULEBRA, C. Z., April 17, 1909.

HON. JUAN POTOS, *Charge d'Affaires, Spanish Legation, Panama, R. of P.*

Sir—I have the honor to invite your attention to certain matters connected with the employment of citizens of your country by the Isthmian Canal Commission as laborers, who were engaged for this service in Spain by a duly authorized representative of the Commission under certain conditions along the same general lines, as regards procedure, as Commission representatives recruit labor in the United States for the Commission.

In the case of laborers from Spain no formal agreement or contract has been made, but the printed conditions under which they were to be transported and under which work would be furnished them after their arrival on the Isthmus are considered as contractual obligations by the Commission. They have always been carefully observed and will be adhered to. These conditions, of course, do not apply to any labor employed on the Isthmus of Panama.

You are, no doubt, entirely familiar with the specifications or conditions referred to. They prescribe that the workman must be of robust constitution and that the work will be pick and shovel work; that the cost of transportation will be advanced by the Commission, the Commission to be reimbursed by monthly deductions from the pay of the employe. The conditions prescribe the hours of work and state that the wages will be at the rate of 20 cents American currency (40 cents silver) per hour for not less than nine hours per day; that the workman will be furnished with meals at a specified price and with living accommodations, hospital service, transportation to and from work, etc., free.

The Commission has been very careful to see that these obligations on its part were scrupulously adhered to and in case any of the citizens of your country, employes of the Commission, have had just cause for complaint, the matter has been quickly remedied.

Any written or implied contract between two parties to be binding requires observance of all obligations by both parties. The Commission, in recognizing and conforming to all of its obligations, expects and requires that the laborers under contract will furnish satisfactory service, and that their conduct shall also be satisfactory and up to the standard required for efficient work. There should be no misunderstanding on the part of the men, therefore, that in accepting employment with the Commission they must work diligently and to the best of their ability during the time for which they are paid, their conduct must be orderly and they must, in all respects, come up to the standard of good workmen. As stated before, the Commission expects to meet all of its obligations to the minutest degree, and it will likewise hold the laborers to the full measure of duty required of all of its workmen.

The only remedy for the Commission, in case any of these "contract laborers," for any reason, are disinclined to carry out their obligations, will be for the Commission to declare the contract under which these men were employed to be null and void, to take up their check, and in lieu thereof to issue

a new work check to them which will entitle them to employment at such rate of pay as the value of their services warrants. This is exactly the same course the Commission has always taken in regard to American citizens, both skilled and unskilled labor, who are recruited in the United States and sent to the Isthmus under a provisional agreement guaranteeing them first-class rate of pay. This obligates the employe to furnish services equivalent thereto, and it is the policy and practice of the Commission whenever the work of any of its American employes falls below the standard set for his rate of pay to cancel his contract and either discontinue his employment completely or issue him a new contract at a lower rate of pay commensurate with the value of the services which he is capable or willing to render.

Heretofore the Commission has not followed this practice with contract laborers from Spain, that is, whenever their services have been unsatisfactory or whenever they have chosen to leave the work on which they were engaged and needed, we have allowed them to retain their special checks which distinguish them as contract laborers entitled to receive 20 cents American currency per hour (40 cents silver) so that they were free to obtain employment elsewhere on the Canal at the same rate of pay notwithstanding the fact that previously they may not have been giving satisfaction at that rate of pay. In other words, we have been treating them more leniently than required by their contracts and more leniently than we have been treating our American employes.

This is not right and just to our American employes and in addition, this lenient treatment has led some of our Spanish contract laborers to take advantage of the consideration thus shown them by deliberately reducing the output of their work so that at the present time all of our superintendents and foremen are unanimously of the opinion that the efficiency of our 20-cent (40 cents silver) contract labor is much less now than it was a year ago. In addition, several instances have been reported to me which indicate that the conduct of our contract laborers, as a whole, verges on insubordination; that the orders of foremen and others in authority are not received with respect and executed as the necessities of the work require; that the leniency above mentioned has created and fostered a spirit among the men that inasmuch as they are allowed to retain their special checks, it is immaterial to them whether they are discharged or not and that it makes no difference to them how far they carry out the orders of their superiors; and that contract laborers are daily leaving each division and going along the work in search of places where they consider the foreman will be more lenient or where the service is easier.

The situation is a serious one and must be met at once.

I have gone over this matter at length with you in order that as the representative of all citizens of Spain on the Isthmus you can see the present situation exactly and so that you may be fully informed in advance of any steps contemplated by me in regard to their employment. My views and contemplated action are as follows:

First—That the conditions of employment

governing Spanish contract labor require each laborer to give satisfactory service at his rate of pay, that is, 20 cents U. S. currency (40 cents silver) per hour.

Second—That in case his services in regard to either work or conduct are not satisfactory at that rate of pay, it is right and proper to treat him in the same manner as American citizens and other employes of the Commission would be and are treated under similar circumstances.

Third—That in execution of the above the Commission has the right, and it is its duty, in carrying on the work in an economical manner as directed by law to cancel any laborer's original contract and to reduce his pay to such a rate as will be equivalent to the value of his services.

Fourth—That it is not necessary to consider at this time a combination of circumstances which might render the employment of a Spanish contract laborer undesirable at any rate of pay whatever, as such cases would be comparatively few in number and each one should be adjudicated separately.

In line with the above statement of fact and reasoning I desire that you should have information of my intention to put into effect the interpretation of the contracts of these laborers as explained hereinbefore, and that after due notice which will be furnished to each laborer upon unsatisfactory service or conduct under a 20-cent (40 cents silver) contract, his special check will be taken up and in lieu thereof he will be given a check which will entitle him to employment at such lower rate of pay as he is willing or able to earn.

I have no doubt that you will see not only the justice and propriety of this action, but also the necessity which has forced me to take it.

I beg to request your kind cooperation with me in this matter by explaining fully and clearly to all citizens of your country who come under the class of "contract laborers" the position which the Commission has taken.

Very respectfully yours,

GEO. W. GOETHALS,
Chairman and Chief Engineer.

A similar letter has been sent to the Consuls of Italy and Greece in reference to laborers from those countries.

Dredging Interrupted.

While at work in the Pacific entrance to the Canal, last week at the crossing of the Rio Grande, about a mile above La Boca, one of the ladder dredges of the Pacific Division struck an obstacle which it could not handle, and was obliged to cease work. A diver was sent down, and it was discovered that a chain of dredge buckets which had dropped from one of the dredges in the French days had been struck. The buckets will be moved from the prism after which the dredge will resume its work at the crossing.

Repairs to the "Cristobal."

The Panama railroad tugboat *Cristobal* is in the Cristobal dry dock undergoing general repairs. After the bottom has been caulked, new planks have been put in, and the boilers and engines have been overhauled, the tugboat will be placed in commission again. It is expected that the boat will resume its work in the harbor during the first week in May.

GATUN POWER PLANT.

Electricity for Handling Plants and Other Purposes.

One turbine in the power plant at Gatun has been erected and is ready to be tested as soon as steam can be supplied, and two others are being placed in position. As the boiler plant construction is behind the rest of the work, a small portable boiler may be installed to furnish sufficient steam to balance the turbines, after which the generators will be imposed upon them. A representative of the D'Olier Engineering Company, of Philadelphia, which has the contract for the boilers, is on the Isthmus to superintend the setting up of that part of the plant. It is expected that the boilers will be on the Isthmus by May 5, and the contractor will then push the installation, working day and night if necessary, in order to have the boilers under steam on July 1. All the other work preparatory to laying concrete in the locks at Gatun is ahead of the power plant, so that the completion of this plant is the determining factor in the beginning of work on the locks.

The power plant in question has a dual purpose. Primarily it will furnish the power for running one single and two duplicate unloading cableways which operate over the material wharves, and the cement, rock, and sand storage piles; operating the electric cars which will carry materials to the concrete mixers; running a battery of eight 2½-cubic yard cube concrete mixers; running the cars that will carry concrete from the mixers to the unloading cableways which stretch across the lock site; supplying power for operating four duplex cableways which will take the concrete from the cars and deposit it at any point desired in the lock site, and supplying current to three 20-inch centrifugal dredge relay pumps, motor-driven, for the hydraulic construction of Gatun Dam. Its secondary use will be to supply electric current for lighting Colon, Cristobal, Mount Hope, and Gatun, and power for running the manufacturing plants of the

Subsistence Department at Cristobal. After the Canal is in operation, it will be held in reserve to operate the locks and towing machinery, in case the hydraulic power plant should fail, either from accident or from lack of water. The hydraulic electrical power plant will be run by water wasted from Gatun Lake, while the electrical plant which is now being erected will be run by steam. The building for the power plant is nearing completion and all machinery excepting the boilers is on the Isthmus.

The power plant at Gatun will occupy a building 150 feet long, 77 feet wide, and 48 feet high from the ground floor to the peak of the gables. The building is in two parts, each part having a gable roof, and running parallel with the other, the dimensions of each being 150 feet long, and 38½ feet wide. The substructure is of concrete and the cellar is lined with concrete, while the superstructure is a wooden frame, the closed parts of which will be covered with corrugated iron. A floor plan showing the location of the principal pieces of machinery is appended.

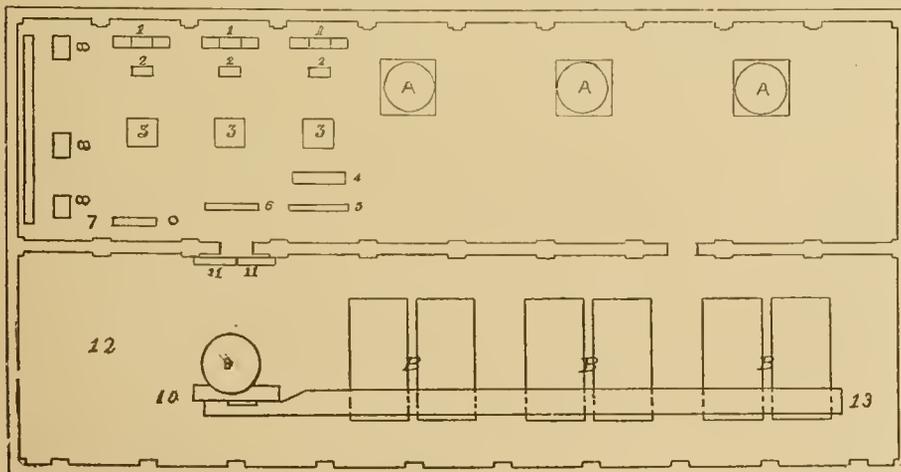
The equipment of the boiler room will consist of six water-tube boilers of the Keeler type in three batteries of twos. Each boiler has a nominal rating of 400-horsepower, is equipped with Foster superheaters, and will generate steam at 205 pounds absolute pressure and 150 degrees Fahrenheit of superheat. It is the intention to use crude oil as fuel, and to this end the combustion furnaces are very large, but they are also fitted with Ajax shaking grates in order that coal may be used if the emergency arises. The induced draft system includes two 90-inch fans, located near the stack, one directly connected to a vertical compound engine, and the other to a 100-horsepower induction motor. The induced draft fans are located on a balcony in the boiler room, on which are also located two lubricating oil filter and storage tanks. The equipment furnished under the boiler contract also includes two vertical boiler feed pumps and a Cochran open feed-water heater and purifier. The part of the boiler room not occupied by the boil-

ers, stack, and fan balcony may be utilized as a machine shop.

In the engine room will be located three Curtis 1500-k. w. vertical steam turbine base condenser generators, oil pumps, vacuum and circulating pumps, and accessory machinery. A general idea of the layout of the machinery is given in the floor plan. There are three sets of rotary converters, with three air blast transformers and reactance coil in each set, each transformer having a primary voltage of 2,200, a secondary voltage of 430, and a capacity of 185-k. w. For supplying air for the transformers two volume air blowers with direct coupled motors, having a capacity of 10,000 cubic feet per minute each, at ¾ ounces pressure to the square inch, will be installed. In the basement beneath this machinery is an air chamber into which air will be forced by the blowers to escape through flues or openings in the floor. There is one flue under each transformer and reactance coil, and air passing through these machines will carry off the heat due to electrical losses. Three rotary converters, a set of three transformers and one reactance coil, complete the three units of this part of the plant. One of these converters has a capacity of 300-k. w., and the other two of 500-k. w. each.

Between the units of transformers, reactance coils, and rotary converters, and the boiler room wall are located a controlling benchboard, an exciter switchboard, a feeder switchboard, and an air compressor. The turbo-generators are controlled from the controlling benchboard and all indicating instruments in connection with the generators and feeders are located on it. The air compressor is motor driven and supplies air at 150 pounds pressure to the square inch for the blowing system, for cleaning the electrical equipment, and to the boiler feed pump air chambers. Along the south end of the electrical room are located the "G. E., type K, form 3" oil switches by means of which each of the turbine generators and rotary converters is connected with the station bus. To this bus are connected switches of the same type controlling the feeder circuits for power for the entire handling plant.

FLOOR PLAN OF THE GATUN POWER PLANT.



- A—Three turbo-generators.
- B—Boilers.
- 1—Three sets of transformers, three transformers in each set.
- 2—Three reactance coils, one to each set of transformers.
- 3—Three rotary converters, one to each set of transformers.
- 4—Controlling benchboard.
- 5—Exciter switchboard.

- 6—Feeder switchboard.
- 7—Air compressor, motor driven.
- 8—Oil switches, one for each turbo-generator and rotary converter.
- 9—Stack 9 feet in diameter.
- 10—Induced draft fans.
- 11—Oil filter and storage tanks.
- 12—Machine shop.
- 13—Breaching connecting boilers to induced fan system.

Card of Thanks.

THE CANAL RECORD:

I very respectfully request to be allowed the privilege of a small space in THE CANAL RECORD, that I may be able to fulfill a debt of gratitude.

In my name and in the name of my family I sincerely wish to tender our sincerest thanks to all the persons who officially or privately aided me in being able to promptly leave with my little son to be in time for treatment in Washington, D. C., thus saving his life.

We also gratefully appreciate and esteem the sympathy which has been extended to us by all friends. With sincerest gratitude to one and all, I remain very respectfully,

DANIEL QUAYLE.

Bolho, C. Z., April 15, 1909.

Indiana Club.

All persons interested in organizing an Indiana club are requested to send their names, Isthmian address, together with their birthplace, or residence in that State, to Wayne O. Adams, Cristobal, C. Z.

DOCKS AT CRISTOBAL.

Atlantic Terminal Facilities—Plans for Permanent Wharves.

The Board appointed by the Chairman and Chief Engineer on February 9, 1909, to confer with the General Manager of the Panama railroad with regard to the construction of dock No. 12 at Cristobal, and the proposed extension of dock No. 11, has submitted its report and recommendations with the minutes of the meeting and charts. The recommendations of the Board have been approved in so far as they relate to dock No. 12, and such dredging as may be necessary to accommodate the steamships *Shavemul* and *Tremont*, which are to be used in the cement service between New York and Cristobal. The charts accompanying the report show Cristobal and Colon and a portion of Limon Bay, marked exhibit "B," and a plan "D" shows the style of dock found preferable by the Panama railroad after trial of various kinds of docks. An abstract of the report follows:

"There has been marked on the plan the 500-foot channel from the Canal to dock No. 12 and beyond, and the approximate amount of material to be dredged to obtain a depth of 33 feet below sea-level is marked on the map and also the additional amount required for a depth of 40 feet.

"The borings over the entire dredged area are incomplete. Coral is indicated in a number of places. For these reasons, the cost per cubic yard of material removed has been estimated at 50 cents. With these assumptions the approximate cost of dredging, resulting from the above, will be as follows:

Depth of channel, feet.....	33
Approach, cubic yards.....	777,000
In front P. R. R. wharves Nos. 11 and 12, cubic yards.....	483,000
In front I. C. C. wharf No. 13, cubic yards.....	266,000
Total, cubic yards.....	1,526,000
Unit cost.....	\$0.50
Total cost.....	\$763,000
Additional quantities if depth is increased seven feet, giving a final depth of forty feet, referred to mean sea-level:	
Depth of channel, feet.....	33-40
Approach, cubic yards.....	1,017,500
In front P. R. R. wharves Nos. 11 and 12, cubic yards.....	306,000
In front I. C. C. wharf No. 13, cubic yards.....	409,000
Total, cubic yards.....	1,732,500
Unit cost.....	\$0.50
Total cost.....	\$866,250

NOTE—The above does not include 173,000 cubic yards of earth and 32,000 cubic yards of rock in the trench along the proposed P. R. R. dock No. 12, which should be removed before dock No. 12 is constructed.

"In giving the above quantities, the Board does not mean to fix them as the maximum that will be necessary, as possibly a greater width of channel may be found desirable. They should, therefore, be considered more as being the minimum that must be removed in carrying out this project.

"The Board recommends that the dredging be done by the Commission, the cost of all original dredging in front of Panama railroad wharves to be paid for from appropriations for reconstruction and reequipment of Panama railroad; cost of all dredging in front of I. C. C. wharves to be defrayed from appropriations for the Department of Construction and Engineering; cost of dredging the channel between Cristobal Point and the Canal channel to be divided equally between the two appropriations; cost of maintenance to be divided between the Commission and Panama railroad on the same lines,

the portion for which the Panama railroad is liable to be paid from its earnings as operating expenses."

"The Board understands that the plan of constructing dock No. 12 of permanent material on such an extensive scale and likewise the subsequent proposed conversion of dock No. 11 into a permanent wharf is with a view to providing suitable permanent terminal facilities at the Atlantic end of the Panama railroad, such facilities as will be required and can be conveniently and economically used after the completion of the Canal as well as during its construction. The Board does not understand that it is called upon to report on the location for the permanent Atlantic terminal of the Panama railroad.

"If the selection of a site for these terminal facilities is limited to Cristobal, while the proposed site—docks Nos. 11 and 12—is not an ideal one, will require extensive dredging, and does not afford as much room as might be desirable for the construction of the necessary tracks, the Board believes that there is no appreciably better location to be found in the immediate vicinity. The project, as it presents itself to the Board, therefore, is as follows:

"1. That additional adequate terminal facilities on the Atlantic side are required by the Panama railroad at the present time and that appropriations are now available for undertaking this work.

"2. That a site has been selected by the Panama railroad as being suitable and available to provide these facilities now at a reasonable cost, and without inconvenience to Canal construction work, at Cristobal between Fox River and Cristobal Point.

"3. This location at Cristobal possesses advantages for the immediate undertaking of additional docking facilities, and unless future developments should change conditions, may prove to be the best site for the permanent Atlantic terminal of the Panama railroad after the completion of the Canal, in which case any work done now should be in accordance with a general approved plan for the complete project, which should be prepared in advance of undertaking any construction. However, even if another site should be selected and adopted some time in the future for the permanent terminal, it would not be inconsistent at the present time to proceed with the construction at Cristobal of a reasonable amount of docking facilities, such as the proposed dock No. 12.

"The construction of an extension to dock No. 11 at the present time, therefore, appears advisable and desirable, whether it becomes a portion of the permanent Atlantic terminal or not.

"It is understood that the early construction of dock No. 12 is especially desirable and necessary inasmuch as dock No. 11 is deteriorating rapidly and would have to be renewed or abandoned by the time dock No. 12 can be completed. This fact alone, renders it desirable to consider the matter of constructing permanent docking facilities immediately.

"With dock No. 12 constructed at the present time, the Board believes that the arrangement proposed by Mr. Slifer, on Plan 'D' herewith, is preferable for the following reasons and recommends its approval:

"A—The dock as projected conforms to approved harbor lines.

"B—The system of dock tracks shown has

been found by the experience of the Panama railroad transportation department to be the most satisfactory one for handling cargoes.

"C—The dock is near the main line of the Panama railroad and easy of access to both Cristobal and Colon.

"D—It is in close proximity to dock No. 11, the cold storage plant and the existing quarters of Panama railroad and Commission employes.

"E—The construction will involve less cost and less interference with and obstruction to the free use of the present water front, including the coal docks, the dry dock, and the cement wharf now being constructed.

"Attention is invited to the layout of tracks on Plan 'D' from which it would seem that the available area is somewhat limited and that the construction of tracks as contemplated will leave little room for future development of the yard and tracks without encroaching on the present laborers' barracks at Camp Bierd, or interfering with other tracks and construction. The proposed site, however, seems to be the best available in this immediate locality.

"With reference to the form and method of construction to be adopted, the Board has examined the estimates and plans of different forms of construction submitted; also current literature on the general subject of dock construction. As a result the Board has reached the conclusion that, if the dock is to be constructed as a permanent structure, a reinforced concrete wharf will be entirely practicable and the most economical form to adopt, where the depth to hard bottom is not greater than will permit the safe use of concrete piles. This involves, in general, the use of concrete piles driven so as to support safely the maximum load to which they will be subjected. Where the foundation is coral and possibly in the argillaceous sandstone shown in the borings, it will not be necessary to pierce the strata, unless it is underlain by softer material projecting above the lowest part of the channel in front of the wharf. This matter, as well as the number and location of piles, cannot be decided until after further investigations and tests. The piles should be rigidly attached to the floor system and further stiffened by longitudinal and lateral webs or braces of reinforced concrete. The entire dock should be provided with back anchors at proper intervals and be protected in front by fenders of approved design.

"For a wharf of this character, the Board recommends that, exclusive of dredging, the entire substructure, consisting of concrete piles, anchorage, fenders and reinforced concrete floors, be let to contract, bids to be invited on general plans and specifications prescribing concrete piles and reinforced concrete floors, but in no wise restricting competition to any particular method or system. It is also recommended that general specifications giving loads, unit stresses, etc., be so prepared as to permit consideration of designs submitted on any alternate method of construction such as cylinder piles or quay wall. By this method bidders would be furnished with plan of site, general specifications and other necessary data. The design would be made by them. It would be desirable for the contractor to be given the option of furnishing all material himself either from the States

or the Isthmus, or of purchasing any or all of same delivered at the site from the Panama railroad or the Canal Commission. Each bidder should be required to submit complete plans and specifications and bill of material. The contractor should also be allowed to use any available plant of the Panama railroad.

"Prior to the construction of a dock, the dredging of the trench along its front should be carried to the final depth decided upon. In accordance with the attached letter, marked 'E,' from Maj. Edgar Jadwin, dated March 5, 1909, the dredge *Mindi* can probably be spared for this work, and for the additional excavation immediately in front of the wharf, to the extent of approximately 500,000 cubic yards. If more dredging than this is contemplated, steps should be taken to purchase an additional dredge with its attendant transportation.

"The Board believes that it is advisable to have all intending bidders visit the site and become familiar with the conditions before the opening of bids and that the interval between the issue of circulars inviting bids and the opening of same should be not less than three months; also that bids should not be invited before dredging is well started in front of dock No. 12, in order that there may be no chance of the contractor being delayed or interfered with by the noncompletion of the dredging.

"In regard to the length of the wharf to be constructed under the first contract, the Board believes that proposals should include under Item I, the entire length of wharf required, with deductions therefrom, under Items II, III, etc., for the portions at each end which it might not be found advisable to proceed with at this time. In other words, to defer decision until the receipt of bidders' proposals. The superstructure, tracks, grading, and other similar work in connection with the wharf should be built and installed by the Panama railroad, including cranes and other cargo-handling machinery. Meanwhile the filling behind the dock, by the Panama railroad, and the dredging in front of same by the Commission should be taken in hand at once."

Personal.

Major E. T. Wilson, Subsistence Officer, returned to the Isthmus on the *Magdalena* on April 25 from a visit to the States.

Obituary.

Frederick P. Waldron, of Boston, Mass., died at Colon Hospital on April 17. He was seventy years of age, was married, and had been on the Isthmus about five years, residing at Cristobal.

Missing Men.

Information is desired in regard to Antonio Aney, a Spanish subject, who was last heard from at Empire, Canal Zone, on December 20, 1907. Any one having knowledge concerning him is requested to communicate with C. A. McIlvane, Acting Assistant to the Chairman, Culebra, C. Z.

If Mr. Claude Stone of Texas, who sailed for the Isthmus on April 10, will send his address to Box "W," La Boca post-office, he will receive information to his advantage.

A meeting of the order of Isthmian Construction Foremen will be held at Culebra on Sunday, May 2, at 2.30 p. m. All members are requested to be present as business of importance will be transacted.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

At the meeting of the Cristobal Woman's Club on April 7, Miss Temple, vice-president of the Chicago Woman's Club, was the guest of honor and made informal addresses on "The Open Door," and "The School Children's Aid Society." Mrs. Watson, wife of Ensign Watson of the Salvation Army, gave a review of the work done by the corps in Colon.

The home department presented a program consisting of papers on "A Cup of Tea, a Cup of Coffee, and a Cup of Chocolate," at the regular meeting on April 21. Mrs. Arthur Luther and Mrs. Pierce T. Murphy were the speakers. On April 26 the art and literature department held its final meeting for the year, a paper on "Julius Cæsar" being read by the chairman, Mrs. E. Lewis Baker. The department has held its meeting regularly on the fourth Monday of each month since October. Three of the Shakespeare plays have been studied, "Macbeth," "Merchant of Venice," and "Julius Cæsar." The annual meeting of the Cristobal Club is scheduled to take place on May 1, at 10 a. m.

Mrs. John Dickinson Sherman, second vice-president of the General Federation of Women's Clubs, has recovered from her recent illness and left the Isthmus on April 13 on the steamer *Parismina*. Mrs. Sherman was accompanied by Miss Temple of Chicago.

Mrs. Chester Harding entertained the Gatun Woman's Club on April 16, the guest of honor being Mrs. Lorin C. Collins, president of the Canal Zone Federation and Cristobal Woman's Club. Mrs. Charles Stoddard was elected chairman pro tempore of the botanical committee. The kindergarten, under the patronage of the Woman's Club, was opened on April 12. The report of the teacher, Miss Hanna given before the club, was encouraging. This is the first kindergarten that has been attempted in the Zone, and its progress will be watched with interest.

The meeting of the Ancon Woman's Club on April 21, was well attended. Owing to the departure from the Isthmus of the president, Mrs. C. C. McCulloch, Jr., her resignation was presented at this meeting, and she was unanimously elected an honorary member of the club. Arrangements have been made for a farewell reception to Mrs. McCulloch to be held at the clubrooms on Wednesday, May 5, from 3.30 to 5 o'clock.

A gift of books for the club library has been forwarded by Mrs. W. B. Ruggles. Arrangements for keeping the clubrooms open during the summer are being discussed. The department work will continue, and it is expected that, in charge of the educational department, the library will be opened at stated periods for exchange of books during the regular recess, from June to October.

The same action for keeping open during the summer is being taken by the Empire Club. The regular program which was scheduled for a period of six months, closes with a symposium of the Canal Zone on May 27. A series of special meetings will be arranged during the summer recess.

The women of the Methodist Church, Panama, have arranged for an all-day missionary rally which will take place at the church on Thursday, May 6. Visitors will be specially

welcome. A lunch will be served in the church building.

Church Notes.

Mr. Frank Hunter Potter will deliver an address at St. Luke's Church, Ancon, at the 10 o'clock service Sunday, May 2. Mr. Potter is the son of Bishop Alonzo Potter, of Pennsylvania, and accompanied his father on a visit to the Isthmus in 1865 when Christ Church, Colon, was consecrated.

A business meeting of the congregation of St. Luke's Church was held on Sunday morning, April 25, to consider the report of the committee on the memorial window to be placed in the church to those who died in the construction of the Panama Canal. The window will cost not to exceed \$250, and subscriptions have nearly reached that sum. The Woman's Guild at its Easter offering presented the sum of \$55 for the purchase of a baptismal font.

There will be a missionary rally at the Methodist Episcopal Church in Panama on Thursday, May 6. Morning and afternoon sessions will be held and a free luncheon will be served at the noon hour. A cordial invitation to attend is extended to all persons interested.

Cristobal Union Sunday School.

The report for the first quarter of the Cristobal Union Sunday school is as follows:

Average attendance per Sunday	85
Highest attendance for one Sunday.....	91
Average collection.....	\$4.96
Amount of contributions sent to missions.....	\$18.89

Anniversary Dinner.

May 4 will be the fifth anniversary of the commencement of Canal construction by the United States, and arrangements are being made for a dinner at the Hotel Tivoli, at 7.30 p. m. on that date, for the purpose of getting together all Americans on the Isthmus who were connected with the Canal Commission in 1904. There are nearly one hundred 1904-men still on the Isthmus, and it is probable that most of them will be present.

Visit of Warships.

The U. S. S. *South Dakota* arrived in Panama Bay on Friday, April 23 and, after taking coal and supplies aboard, sailed for Amapala, Honduras, on April 26. The U. S. naval transport *Buffalo* arrived on Saturday, April 24. She will take 300 sailors to the Pacific fleet who were brought from the Atlantic coast on the U. S. naval transport *Prairie*, which arrived at Cristobal on Monday, April 26.

I O. O. F.

All Odd Fellows and ladies are requested to attend the memorial service in connection with the 90th anniversary of the order, conducted by the Rev. J. H. Sobey, for Canal Zone Lodge, No. 3, of Culebra, at Empire on Sunday, May 2, 1909, at 7.30 p. m. A special train will leave Culebra at 7 p. m.

Basketball.

A basketball team has been organized at Cristobal, and has elected R. H. Luce, captain. Games are desired with teams along the Line. Communications in regard to games should be addressed to H. C. Helt, manager, care of Cristobal Y. M. C. A., Cristobal, C. Z.

The steamship *Waverly* arrived at Cristobal on April 17 with 1,500,000 pounds of pig iron for Gorgona foundry, and oak and yellow pine lumber for car repair work.

MARCH SHOVEL RECORD.

Best Monthly and Daily Records in the Three Construction Divisions.

The steam shovels at work on Canal excavation in March removed 2,352,903 cubic yards of material, all but 116,421 cubic yards of which were taken from the Canal prism.

The high record for the month was made by shovel No. 207 (90-ton) at work in the Empire district, which took out 54,127 cubic yards in 27 working days, an average of 2,005 cubic yards per day. The best record for shovels in the 70-ton class was made by No. 122 working in the Bas Obispo district, which removed 53,043 cubic yards, an average of 1,965 per day.

The highest daily record during the month, which was also the highest single day's excavation ever made by one shovel on the Canal work, was made by shovel No. 220 (90-ton) in the Empire district on March 2, when 3,941 cubic yards of rock and earth were removed in a working day of eight hours.

The highest daily record of excavation in the Central Division, since American occupation, was broken four times during March. The best record previous to March 1 was made on February 27, when 59 steam shovels excavated 77,064 cubic yards, an average of 1,306 cubic yards per shovel. That record was surpassed as follows:

DATE.	No. shovels at work.	Total yardage.	Average per shovel.
March 25	57	77,533	1,360
March 30	56	77,669	1,387
March 24	58	77,857	1,342
March 19	55	78,033	1,419

The best monthly and daily records of steam shovels in the three divisions for the month of March are as follows:

**Best Records for the Month
CENTRAL DIVISION.
TABERNILLA DISTRICT.**

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
254	46,064	5,118	51,182	27
253	32,833	14,071	46,904	27
127	25,553	18,505	44,058	27

BAS OBISPO DISTRICT.

122	53,043	.....	53,043	27
256	13,088	35,386	48,474	26
255	1,861	44,668	46,529	26

EMPIRE DISTRICT.

207 .....	.....	54,127	54,127	27
206	35,034	15,014	50,048	27
262 .....	.....	47,504	47,504	27

CULEBRA DISTRICT.

205 .....	.....	47,966	47,966	27
217	45,599	45,599	27
124	33,200	33,200	27

OBISPO DIVISION.

210	1,076	38,000	39,076	27
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ATLANTIC DIVISION.

GATUN LOCKS.

112	24,080	11,186	35,266	27
102	2,150	16,102	18,252	27

MINDI.

251	89	31,059	31,148	24
120	15,211	5,385	20,596	26

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS.

258	26,910	26,910
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MIRAFLORES LOCKS.

156	23,120	23,120
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**Best Records for One Day.
CENTRAL DIVISION.**

Shovel No.	Location.	Date.	Character of material excavated.	Cubic yds. excavated.
254	Tabernilla.....	Mar. 1	Earth.....	2,180
253	Tabernilla.....	Mar. 5	Earth.....	2,120
256	Bas Obispo.....	Mar. 10	Soft rock.....	2,530
255	Bas Obispo.....	Mar. 2	Earth and rock	2,300
202	Bas Obispo.....	Mar. 11	Earth.....	2,300
220	Empire.....	Mar. 2	Rock and earth	3,941
209	Empire.....	Mar. 6	Rock.....	2,855
219	Culebra.....	Mar. 31	Rock and earth	2,940
217	Culebra.....	Mar. 5	Rock and earth	2,680

ATLANTIC DIVISION.

112	Gatun Locks.....	Mar. 23	Clay and rock..	1,860
102	Gatun Locks.....	Mar. 26	Clay and rock..	1,650
251	Mindi.....	Mar. 25	Rock.....	2,603
101	Mindi.....	Mar. 12	Rock and earth	1,872

PACIFIC DIVISION.

259	P. Miguel Locks	Mar. 18	Rock.....	1,950
156	Miraflores Locks	Mar. 5	Rock.....	1,600

Panamanian Currency.

THE CANAL RECORD:

Will you please answer through THE CANAL RECORD, the following questions?

Does the United States Government guarantee the parity or value of Panama silver? If so, to what extent?

Does the Isthmian Canal Commission reserve the right to pay gold employes in Panama silver? A. B. CLARDY.

Empire, C. Z., March 18, 1909.

The above letter was referred to the Examiner of Accounts, who makes the following explanation:

The Government of the United States has not specifically guaranteed the value of Panamanian money, though it has agreed to make the coin of the Republic of Panama legal tender within the Canal Zone, and to cooperate with the Republic to maintain the parity of Panamanian silver by the sale of drafts upon the funds of the Commission.

By the General Conditions of Employment, effective July 1, 1907,

The Commission reserves the right to pay in any

money, the value or parity of which is guaranteed by the United States. Being on the gold roll will not in future confer any special privileges.

Contracts with employes engaged in the United States stipulate that payment shall be made in United States currency, and the Commission is bound by its contracts. In the absence of such agreements the Commission has the right to pay in Panamanian money.

It is a mistaken notion that Panamanian silver is a depreciated currency. The standard coin of the Republic is the gold Balboa, equal in value to the American dollar, and the silver coins are subsidiary to the Balboa, their parity being guaranteed by the Republic. The fact that the Balboa has not actually been coined does not affect the value of the silver coins.

March Revenue Collections.

The report of the Collector of Revenues of the Canal Zone for the month of March shows the following amounts were collected during the month: Distillation licenses, \$226.42; burial permits, \$10; escheated estates, \$75; taxes, licenses, fees, and costs (Tax Collector), \$10,902.45; fees, costs, etc. (District Judges), \$2,857; total, \$14,070.87.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES.
ANCON, C. Z., April 28, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Backus, Wm. I.	Howard, J. L.
Barlow, Wm. John	Hurd, Walter G.
Barrows, Arthur	Jones, G. A.
Beidler, Mrs. Archibald	Kelley, M. J.
Booth, Mrs. Emma	Lacey, R. A.
Burns, Jno.	Langley, E. L.
Barton, F. S.	Linne, G. A.
Butler, H. C.	Lovell, E.
Clark, George	Morrell, George W.
David, Joseph	Osborne, Earl W.
Droge, Fred	Ryberg, Oscar A. (2)
Gebhardt, Mrs. Catherine	Sheridan, B. M.
Guigan, Mrs. Beulah (2)	Shorten, John
Hartzell, Ira C.	Thorne, Mrs. Chas. L.
Hartwood, Robert and Lizzie	Traum, Morris
Hosica, Chas. P.	Wilson, Ben (2)
	Witmer, Wm. H.

LABOR FORCE FOR MARCH.

The report of the Chief Quartermaster for the month of March shows that the number of Isthmian Canal Commission employes actually at work on March 31, was 25,733, of whom 4,381 were "gold" employes, and the remainder were on the "silver" or labor roll. The Panama railroad force was 6,484, and the Panama railroad commissary force numbered 779. Thus the total number of persons at work on the Canal and railroad on the 31st day of March was 32,996. During the month 212 people were added to the "gold" roll and there were 235 separations, the net decrease in the force being 23. Five hundred and thirty laborers from Barbados were imported during the

month and assigned to the Panama Railroad Company for work on the relocated line.

The number of family quarters occupied by "gold" employes was 1,477, and the occupants numbered 4,516; bachelor quarters by "gold" employes, 2,029, and the occupants numbered 3,276. The family quarters occupied by West Indians numbered 964, and the occupants 3,205; bachelor quarters, 298; number of occupants, 4,619. The family quarters occupied by European laborers numbered 329, and the occupants 1,047; bachelor quarters, 142; number of occupants 5,360.

A statement of the force actually at work on March 31, 1909, follows:

DEPARTMENT.	Gold Men.	SILVER MEN.						Total Gold and Silver Men.		
		Monthly.	Artisans.		European Laborers.		West Indian Laborers.			
			32c. & over.	26c.	40c.	32c.			26c.	20c.
Construction and Engineering.....	3,252	2,172	4,374	1,821	4,439	466	1,619	2,466	17,357	20,609
Department of Civil Administration.....	339	172	27	.....	.....	.....	.....	.....	199	538
Department of Sanitation.....	451	582	75	.....	4	.....	6	151	818	1,169
Quartermaster's Department.....	230	1,040	261	.....	247	12	298	507	2,365	2,595
Subsistence Department.....	69	596	2	1	.....	.....	.....	.....	599	668
Disbursements.....	31	9	.....	.....	.....	.....	.....	.....	9	40
Examiner of Accounts.....	109	5	.....	.....	.....	.....	.....	.....	5	114
Totals.....	4,381	4,576	4,739	1,822	4,690	478	1,923	3,124	21,352	25,733

Panama railroad force, 6,484; Panama railroad commissary force, 779.

OFFICIAL CIRCULARS.

Use of French Machinery -Form 209-C. E. Approved

CULEBRA, C. Z., April 21, 1909.

To ALL CONCERNED:

To carry out the requirements of Circular 73-revised, Form 209-C. E., has been approved for use. This form is carried in stock by the Stationer and Printer and a supply can be secured from him.

By direction of the Chairman.

C. A. MCILVAINE,
Acting Assistant to the Chairman.

Acting Division Engineer—Pacific Division

CULEBRA, C. Z., April 20, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Effective this date, Mr. John M. G. Watt will act as Division Engineer of the Pacific Division during the absence of Mr. S. B. Williamson.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Taboga Sick Leave Certificate.

OFFICE OF DIRECTOR OF HOSPITALS.

ANCON, C. Z., April 23, 1909.

CIRCULAR LETTER NO. 32.

All Stations—In accordance with letter of the Chairman of April 22, to the Chief Sanitary Officer, you are advised that effective after April 30, certificates of disability will not be issued to employes on account of treatment at Taboga Sanitarium, except when the patient has been sent to the Sanitarium from Ancon or Colon Hospitals, after treatment in said hospitals.

Those going as patients direct from line physicians must have the certificate as heretofore. Such employes will be cared for at Taboga Sanitarium free of charge, but certificate of disability covering their stay at Taboga cannot be issued by the Superintendent of the Sanitarium, and they will lose their pay while there.

The status of nonemployes and employes not going as patients will be as hitherto.

By direction of the Chief Sanitary Officer.

H. R. CARTER, *Director of Hospitals.*

Changes in District Quartermasters

CULEBRA, C. Z., April 22, 1909.

CIRCULAR.

Effective this date, Mr. John M. King, District Quartermaster, is transferred from Las Cascadas to Culebra, for station.

Mr. Mark D. Smith is transferred to Las Cascadas, as Acting District Quartermaster at that place.

C. A. DEVOL, *Chief Quartermaster.*

Contract Houses.

Contract 2 type-18 houses, Gatun, C. Z. Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p. m., Friday, April 30, 1909, when they will be publicly opened, for the erection by contract of 2 type-18 houses at Gatun, C. Z. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$400 conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals. C. NIXON, Purchasing Agent on the Isthmus.

LEGAL NOTICES.

United States of America, In the Circuit Court, Canal Zone, Third Judicial Circuit.

To all whom it may concern: Notice is hereby given that on Thursday the first day of July, 1909, in the court house in Cristobal, Canal Zone, at 10 o'clock a. m., there will be an inquiry into the estates of:

Kendal Thomas, who died intestate on or about March the 3d, 1907 at Mount Hope, Canal Zone, leaving no heirs, possessed of the following personal property: personal belongings of little value; Isthmian Canal Commission pay certificates for \$156.67, and \$207.52, United States currency.

Robert Grattis, who died intestate on or about March the 16th, 1906, at Cristobal, Canal Zone, leaving no heirs, possessed of the following personal property: personal belongings of little value and 20 cents United States currency.

Unknown man, who died intestate on or about March the 7th, 1909, at Bohio, Canal Zone, leaving no heirs, possessed of the following personal prop-

erty: one small purse containing \$1.60 Panamanian currency.

Aristida Fnkala, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: 80 cents Panamanian currency and one French copper coin.

Mekeil Zapatos, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: one English pound, 60 francs French and \$2.30 Panamanian currency.

Demetro Apostol, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: \$8.60 Panamanian currency, and one bank book showing deposit of \$25 United States currency.

Pursuant to the petitions praying that said property be escheated filed herein by Tom M. Cooke, Collector of Revenues, in accordance with Sections 779, 780 and 781 of the Code of Civil Procedure of the Canal Zone, at which time and place persons claiming the said estates may appear and be heard before the court.

NELSON R. JOHNSON,

Clerk of Circuit Court, Third Judicial Circuit.

United States of America, In the Second Judicial Canal Zone, Circuit, Empire.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 190 hectares of the lands known as "Palenquilla and Frijol Grande," situated in the Canal Zone near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$1,900; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY,

Clerk of the Circuit Court, Second Judicial Circuit, Empire, C. Z., Apr 15, 1909.

United States of America, In the Second Judicial Canal Zone, Circuit, Empire.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 74 hectares of the lands known as "Santa Cruz," situated in the Canal Zone, and being a part of the lands of the upper Chagres Valley, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$740; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY,

Clerk of the Circuit Court, Second Judicial Circuit, Empire, C. Z., April 15, 1909.

United States of America, In the Second Judicial Canal Zone, Circuit, Empire.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 162.5 hectares of the land known as "Barro Colorado and Palenquilla," situated in the Canal Zone, near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$1,625; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY,

Clerk of the Circuit Court, Second Judicial Circuit, Empire, C. Z., April 15, 1909.

United States of America, In the Second Judicial Canal Zone, Circuit, Empire.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 72.5 hectares of the lands known as "Barro Colorado and Frijol Grande," situated in the Canal Zone, near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$725; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY,

Clerk of the Circuit Court, Second Judicial Circuit, Empire, C. Z., April 15, 1909.

Launch Service to Taboga.

The steamer *Sanndal* leaves the dredge landing at La Boca at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at La Boca about 4.30 p. m. in time to make connections for the 5.30 train at Panama.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 4, 1909 (75th meridian time):

DATE.	High.	Low.	High.	Low.	High.
	A. M.	A. M.	A. M.	P. M.	P. M.
April 28	.....	5.10	10.29	4.54	11.03
April 29	.....	5.21	11.45	6.08	.....
			P. M.		
April 30	12.22	6.28	12.53	7.07	.....
May 1	1.24	7.23	1.39	7.51	.....
May 2	2.09	8.06	2.20	8.33	.....
May 3	2.45	8.44	2.52	9.07	.....
May 4	3.16	9.19	3.21	9.39	.....

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, April 24, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gambua.	Bohio.	Gatun (Canal).	Gatun (W. D.)
Height of low water above sea-level, ft.	125	92	46	1	0	0
Maximum height above mean sea-level, feet.						
Sunday, Apr. 15	125.5	92.7	47.6	2.1	0.8	0.8
Monday, Apr. 19	125.4	92.7	47.6	2.2	1.0	1.0
Tuesday, Apr. 20	125.2	92.6	47.5	2.2	1.1	1.1
Wednesday, Apr. 21	125.2	92.6	47.6	2.2	1.1	1.0
Thursday, Apr. 22	125.3	92.7	47.8	2.3	1.1	1.0
Friday, Apr. 23	125.8	92.9	47.7	2.3	1.0	1.0
Saturday, Apr. 24	125.6	92.9	48.1	2.4	0.9	0.8

Rainfall, April 1 to 24, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period
<i>Atlantic Division—</i>		
Cristobal	.45	1.93
Brazos Brook	.85	3.34
Gatun	.53	2.37
Bohio	1.20	3.89
<i>Central Division—</i>		
Tabernilla	.86	2.94
San Pablo	.74	2.35
Bas Obispo	1.44	4.32
Gambua	2.02	4.25
Empire	.88	1.99
Camacho	.87	2.25
Culebra	.42	1.59
<i>Pacific Division—</i>		
Rio Grande	.65	1.79
Pedro Miguel	.60	1.28
La Boca	1.00	1.59
Ancon	1.30	1.87
<i>Atlantic Coast—</i>		
Porto Bello, (to 5 p. m. Apr. 22)	3.81	7.24
Nombre de Dios	.78	3.09
<i>Upper Chagres</i>		
El Vigia	.70	1.86
Alhajuela	1.17	2.68

Lidgerwood Unloaders in March.

The eleven Lidgerwood unloaders in the Central Division, during the month of March, unloaded a total of 3,332 trains composed of a total of 58,309 cars. Of this number, 1,613 trains composed of 27,421 cars were unloaded by five unloaders at Tabernilla; 758 trains composed of 13,590 cars, were unloaded by three unloaders at Miraflores dumps, and 961 trains, composed of 17,298 cars, were unloaded by three unloaders at La Boca. As all the cars were of 20-yard capacity, the material unloaded represented about 1,166,150 cubic yards.

LOST—A pair of nose glasses between the Commissary and top of hill at Empire. Finder is requested to leave them at the Empire post-office and receive reward.

LOST—A bunch of keys. Reward offered if returned to any ticket agent of Panama railroad.

PERFORMANCE OF STEAM SHOVELS

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS
The subjoined tables show the monthly records of steam shovel work in Canal excavation since American occupation

CENTRAL DIVISION.						ATLANTIC DIVISION.					
PERIOD.	Working days.	Average number of shovels at work.	Output per shovel (cubic yards.)		Rainfall (inches). Empire.	PERIOD.	Working days.	Average number of shovels at work.	Output per shovel (cubic yards.)		Rainfall (inches.) Gatun.
			Per day.	Per month.					Per day.	Per month.	
1906—						1907—					
January.....	26	12.83	363	9,430	1.28	July.....	19½	1.83	323	8,393	11.12
February.....	23	12.48	587	13,494	0.57	August.....	27	7.70	580	15,647	16.37
March.....	27	12.37	716	19,335	0.45	September.....	24	8.12	783	18,790	8.03
April.....	24	12.33	720	17,289	11.42	October.....	27	9.00	897	24,232	19.27
May.....	27	12.41	581	15,684	7.54	November.....	24	9.00	938	22,514	14.27
June.....	26	14.81	539	14,026	6.92	December.....	25	9.00	1,233	30,833	5.53
July.....	25	16.64	378	9,441	14.61	1908—					
August.....	27	16.93	536	14,461	11.84	January.....	26	10.72	1,274	33,115	3.18
September.....	24	21.33	568	13,664	7.41	February.....	24	11.76	1,235	29,628	1.29
October.....	27	22.67	532	14,373	3.97	March.....	26	13.54	1,296	33,711	2.81
November.....	24	20.46	459	10,833	21.05	April.....	25	14.00	1,260	31,492	1.47
December.....	25	22.68	491	12,267	8.15	May.....	25	12.18	1,055	26,361	17.30
1907—						June.....	26	10.18	1,046	27,208	13.33
January.....	26	31.04	702	18,248	0.08	July.....	26	8.31	1,096	28,505	13.67
February.....	23	39.87	674	15,966	0.13	August.....	26	7.23	1,088	28,295	15.88
March.....	25	43.88	741	18,530	0.16	September.....	25	7.32	973	24,331	8.52
April.....	26	44.12	765	19,884	0.09	October.....	27	8.88	832	22,471	12.22
May.....	26	31.70	833	21,674	6.22	November.....	23	8.57	819	18,834	8.87
June.....	25	38.28	651	16,266	13.53	December.....	26	6.15	1,067	27,730	7.95
July.....	26	43.38	680	17,670	9.85	1909—					
August.....	27	39.85	739	19,679	11.28	January.....	25	7.00	765	19,124	7.17
September.....	24	39.42	815	19,563	10.96	February.....	23	5.74	949	21,826	4.12
October.....	27	39.85	792	21,383	15.44	March.....	27	6.48	888	23,971	2.99
November.....	24	44.88	772	18,541	10.40	April.....					
December.....	25	48.84	923	23,066	1.47	May.....					
1908—						June.....					
January.....	26	51.53	1,989	27,003	0.75	July.....					
February.....	24	54.00	1,112	26,690	0.00	1910—					
March.....	26	53.66	1,152	29,947	0.41	January.....	25	5.50	686	17,849	0.00
April.....	25	53.04	1,184	29,596	1.36	February.....	25	5.50	753	18,829	0.76
May.....	25	53.24	894	22,344	12.91	March.....	25	6.75	525	13,116	8.65
June.....	26	55.15	1,011	26,294	8.21	April.....	26	5.30	701	18,217	4.98
July.....	26	52.57	1,071	27,848	11.79	May.....	26	5.80	824	21,441	5.66
August.....	26	52.58	1,122	29,184	8.11	June.....	26	5.91	846	21,992	7.39
September.....	25	49.68	1,178	29,444	9.76	July.....	26	6.59	818	20,455	7.56
October.....	27	49.55	1,177	31,766	8.87	August.....	27	6.77	742	20,034	8.41
November.....	23	50.91	1,156	26,577	4.46	September.....	23	7.00	713	16,396	8.65
December.....	26	50.73	1,209	31,421	5.09	October.....	27	6.11	838	21,793	10.27
1909—						November.....	26				
January.....	25	51.80	1,183	29,576	2.28	December.....	26				
February.....	23	56.05	1,260	28,986	1.50	1911—					
March.....	27	56.93	1,327	35,824	0.21	January.....	25	6.42	840	21,512	3.08
April.....						February.....	23	7.18	650	14,950	3.26
May.....						March.....	27	7.30	710	19,161	0.59
June.....						April.....					
July.....						May.....					
August.....						June.....					
September.....						July.....					
October.....						August.....					
November.....											
December.....											

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.			
Prinz Aug. Wilhelm.....	H.-A.....	Saturday.....	Apr. 24
Allianca.....	P. R. R.....	Monday.....	Apr. 26
Orinoco.....	R.-M.....	Saturday.....	May 1
Colon.....	P. R. R.....	Monday.....	May 3
Panama.....	P. R. R.....	Saturday.....	May 8
Prinz Joachim.....	H.-A.....	Saturday.....	May 8
Advance.....	P. R. R.....	Friday.....	May 14
Oruba.....	R.-M.....	Saturday.....	May 15

Persons desiring to meet friends or relatives upon arrival of Panama Railroad steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.			
Panama.....	P. R. R.....	Monday.....	Apr. 26
Prinz Joachim.....	H.-A.....	Tuesday.....	Apr. 27
Advance.....	P. R. R.....	Sunday.....	May 2
Oruba.....	R.-M.....	Tuesday.....	May 4
Allianca.....	P. R. R.....	Saturday.....	May 11
Prinz Aug. Wilhelm.....	H.-A.....	Tuesday.....	May 11
Colon.....	P. R. R.....	Friday.....	May 14
Tagus.....	R.-M.....	Tuesday.....	May 18
Panama.....	P. R. R.....	Thursday.....	May 20
Prinz Joachim.....	H.-A.....	Tuesday.....	May 25
Advance.....	P. R. R.....	Wednesday.....	May 26

NEW ORLEANS TO COLON.			
Abangarez.....	U. F. C.....	Saturday.....	May 1
Parismina.....	U. F. C.....	Saturday.....	May 8
Carlago.....	U. F. C.....	Saturday.....	May 15
Abangarez.....	U. F. C.....	Saturday.....	May 22

COLON TO BARBADOS, CALLING AT TRINIDAD.			
Carlago.....	U. F. C.....	Tuesday.....	May 4
Abangarez.....	U. F. C.....	Tuesday.....	May 11
Parismina.....	U. F. C.....	Tuesday.....	May 18
Carlago.....	U. F. C.....	Tuesday.....	May 25

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, and from Colon at 1.30 p. m. via Port Limon, for New Orleans.

Port of Cristobal.
The following steamers arrived at the port of Cristobal during the week ending April 24:

April 17, *Haverly*, from Mobile, Ala., with 750 tons pig iron for Gorgona foundry; 27,543 feet white oak lumber, and 39,206 feet yellow pine lumber, for car repairs, Gorgona.

April 19, *Prinz Joachim*, from New York, with 9 packages material for cableways, Gatun Handling Plant, and 186 coils Manila rope for stock.

April 20, *Panama*, from New York, with 3,000 barrels of cement for Gatun Spillway; 6 churn drills, for Central Division; 12 rock drills, for Pacific Division; 3 Scotch marine boilers for La Boca claps; 9,000 rail braces for Gatun Locks and cableways; 10 flat cars, and other material, for electrical railway, handling plant, Gatun; 20 ton ingot copper for Gorgona foundry. This steamer also carried an assorted cargo of general stock, the total aggregating 1,100 tons.

April 23, *Parismina*, from New Orleans, with 12 reels of wire rope for Lidgerwood unloaders, for Mechanical Department; 3 packages of coral supplies; 1,334 boxes fire brick for stock, and 25 cows and 1 bull for Ancon dairy.

The following steamers have recently arrived at La Boca: April 19, *Neves*, from North, and *Chile* from South; April 20, *Chiriqui*, from Intermediate ports; April 21, *Baracota*, from Central America; April 23, U. S. S. *South Dakota*, from North. Departures were: April 20, *Arivoca*, for Southern ports; April 22, *Ecuador*, for Guayaquil; April 23, *Mones*, for Southern ports.

COMMISSION CLUBHOUSES.

CULEBRA.

The Gorgona indoor baseball team defeated the Culebra team on Saturday evening, April 24, by a score of 18 to 16.

A dual track meet between teams from the Cristobal and Culebra Y. M. C. A. is being arranged for Decoration Day. The program will consist of regular track and field events and a baseball game.

The chess match between teams from the Cristobal

and Culebra Y. M. C. As, held at Culebra on April 24, resulted in a victory for the Culebra team by a score of 9½ to 8½.

GORGONA.

An exhibition of moving pictures will be given in the clubhouse on Monday evening, May 3.

The second of the monthly Prize Services which are held on the last Sunday evening of each month took place at the Commission clubhouse on April 25. An address was made by Judge Thomas E. Brown, Jr., of Cristobal.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

"La Boca" Now "Balboa."

WAR DEPARTMENT, WASHINGTON,
(CULEBRA, C. Z.,) April 29, 1909.

My Dear Colonel Goethals: The President, in a letter to me of April 6, 1909, has called to my attention a suggestion from the Peruvian Minister at Panama, which is as follows:

In conversation with Mr. Pardo he suggested to me that it would be becoming for the Peruvian Minister to Panama to agitate the question of changing the name of the Canal entrance at the Pacific from the meaningless La Boca (really "The Mouth") to "Balboa," in honor of the discoverer of the Pacific Ocean. Following upon this suggestion I respectfully beg to submit to you in my capacity of representative of Peru (the nation which Balboa's discovery most benefited) that as the Atlantic entrance of the Canal is named "Cristobal Colon" for the great navigator and discoverer of our Continent, so should the Pacific entrance be named after the intrepid Balboa its discoverer.

The President expresses no view in regard to a change. It seems to me that the idea is a good one. Will you please confer with me in regard to it? Sincerely yours,

(Sgd.) J. M. DICKINSON.

Col. Geo. W. Goethals, Chairman Isthmian Canal Commission, Culebra, C. Z.

CULEBRA, C. Z., April 30, 1909

CIRCULAR No. 245.

By direction of the President, it is ordered that the Pacific entrance of the Canal, heretofore known as "La Boca," shall hereafter be named "Balboa" in honor of the discoverer of the Pacific Ocean.

GEO. W. GOETHALS
Chairman and Chief Engineer.

Another Rebuilt Clapet.

An old French single screw clapet or self-propelling barge, known as Clapet No. 2, which was raised from the bottom of Folks River last year, and which has since been at the Cristobal marine shops being rebuilt, will be put in commission about May 6. Many of the plates in the hull had to be replaced, but most of the frames were found to be in good condition. The machinery that was in the vessel was taken out, over-

hauled and replaced and, with the addition of new boilers the clapet is as good as ever. New towing bits, capstan, and steam steering gear have been added and electric lights will be installed on the vessel.

Open Hearth Steel Rails.

A shipment of 1,300 gross tons of open hearth steel rails manufactured by the Bethlehem Steel Company arrived at Cristobal last week for the Panama railroad. The consignment is composed of 1,000 gross tons of 70-pound rails and 300 gross tons of 90-pound rails. The 70-pound rails will be laid on the permanent line between Colon and Gatun and between Corozal and Panama. The old 70-pound rails now in use between these points will be used in construction work on the relocated line. The new 90-pound rails will be used on the sharp curves between Las Cascadas and Tabernilla to replace the 90-pound Bessemer steel rails that have been in use on these curves. Owing to the heavy traffic on this section of the railroad the 90-pound Bessemer rail has been worn out in from ten to twelve months. The chemical composition of the open hearth rail is as follows:

	70-pound, Per cent.	90-pound, Per cent.
Carbon.....	.65-.75	.70-.80
Phosphorus shall not exceed.....	.035-.04	.035-.04
Silicon, shall not exceed.....	.20	.20
Manganese.....	.80-1.05	.80-1.05

The uniformly high temperature of the climate on the Isthmus is especially favorable for the use of the high carbon rail and it will give excellent service on account of its hardness.

The Panama Railroad Company has also ordered 165 pairs of switch points, 600 sheared splice bars, 120 rigid frogs, 103 spring rail frogs, 4 double spring frogs, and 2 manganese frogs, all to be of open hearth steel and to be used at various points where the heavy traffic demands it. It is expected that they will be delivered on the Isthmus in the near future.

Work at Gatun.

There were 7,478 cubic yards of concrete laid in the Gatun spillway during the month of April, an average of 299 cubic yards per day for the 25 working days. This makes a total of 9,925 cubic yards laid to date. When completed the floor of the spillway, for its entire width of 285 feet, will be covered with concrete for a distance of 960 feet north of the spillway dam. The thickness of the floor will vary from four feet at the dam to one foot at its north end. The concrete is being laid in monoliths, 20 by 30 feet in horizontal dimensions. At present only one crane is being used for depositing the concrete in place, but another crane will be at work in the near future.

All the towers of the unloading cableways at Gatun are completed, one set of the du-

plex towers has a complete cableway and the main cable of the duplex line in place, and one of the unloading buckets has been hung. The framing of the cement dock shed is nearly completed and three-quarters of the structure has been roofed. The electric cranes for the cement shed are due to arrive on the Isthmus on May 7, and the shed is ready for their installation. The pit for burning cement barrels is 75 per cent completed, and the storage pile site is ready for the delivery of crushed rock and sand.

The roadbed for the automatic electric road is ready for the track, material for which is on the ground. The eight concrete mixers are all in place, and the mixer shed completed. Seven of the eight towers of the lock cableways are up and the last one is well under way.

Pedro Miguel Locks.

The five steam shovels working in the Pedro Miguel lock site took out nearly 100,000 cubic yards of rock and earth in April. They are loading on two tracks and working very close together. The excavation in the lock site is so far advanced as to permit of no doubt that it can be kept well ahead of the concrete laying which is expected to be begun in August.

In the north approach to the locks the west storage trestle is completed and ready for the laying of railroad tracks, and the work on the east storage trestle has advanced so far that practically all the concrete foundations are finished, and pile driving on the approach has begun. The contractor who has the order for the handling cranes will have a crane in operation in August, and the boilers for the power plant at Miraflores the part of the work which is now behind, will leave Baltimore for the Isthmus this week. The mixing plant will form part of the machinery on the two cranes which will operate between the storage piles.

Concrete will be hauled from the mixer cranes, a maximum distance of less than half a mile, to the chamber cranes which will place it in the lock chamber. A three-foot gauge railroad, with a maximum grade of three per cent, will be used in hauling the concrete from the mixing cranes to the placing cranes. Ten locomotives, each capable of handling loads of thirty tons, have arrived from the H. C. Porter Company of Pittsburg, having been delivered set up on the Isthmus. These locomotives are designed for burning oil as fuel, but can also use coal. They have cylinders 8 by 14 inches, weigh about 28,000 pounds, saddle water tanks with a capacity of 350 gallons, and tractive power of about 4,000 pounds. Each locomotive will haul a train of two cars and a maximum load of about 15 tons. They will be equipped with air brakes, and adapted to stopping and starting quickly.

EX-PRESIDENT AMADOR.

His Death—Various Manifestations of Honor.

The death of Dr. Manuel Amador Guerrero, ex-President of the Republic of Panama, occurred at his home in Panama City, Sunday afternoon, May 2. He had been in failing health for over a year past, and the end was not unexpected. Dr. Amador was nearly 77 years of age, and although a native of Cartagena, Colombia, his residence on the Isthmus covered a period of 60 years. He became prominently identified with the events leading up to the separation from Colombia, and was the unanimous choice of the National Assembly, as the first president of the new Republic. His term expired on September 30, 1908.

By decree, President Obaldia ordered that all flags be displayed at half mast for a period of three days, and that the funeral ceremonies be given presidential honors. The remains were borne from the family residence to the National Palace on Monday morning, May 3, where they laid in state until 4 p. m., when the funeral procession was formed and proceeded to the cemetery, where Dr. Eusebio A. Morales delivered the oration, and the national band played the national hymn.

The following message was received from President Taft:

WASHINGTON, D. C., May 2, 1909.

Mrs. Amador Guerrero, Panama:

Mrs. Taft and I extend to you our heartfelt sympathy in your great sorrow and deeply regret the passing away of a great friend. WM. H. TAFT.

The Chairman of the Isthmian Canal Commission issued the following order:

CULEBRA, C. Z., May 3, 1909

CIRCULAR No. 286.

As a mark of respect to the Republic of Panama, it is ordered, by direction of the Secretary of War, that all work be suspended for five minutes on Monday, May 3, at 4 o'clock p. m., the hour fixed for the funeral of the late ex-President Amador.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

In his letter of condolence transmitted to the Panama Government, the Secretary of War of the United States, who is visiting the Isthmus, announced that in honor of the memory of ex-President Amador, the new fortifications that are to guard the Pacific entrance to the Canal would be named Fort Amador.

Accident at Cucaracha.

An accident occurred in Culebra Cut, near the north end of the Cucaracha slide, at 7.30 a. m., on May 1, resulting in the death of two European laborers and the injury of nine others.

A gang of men were at work at the time in a deep trench at the bottom of the Cut, out of which an inclined track had been laid to a higher level. A train of loaded cars had just been made up on this incline, and as the engine backed down to make the connection, the coupling failed to work. The consequent jar loosened the train from its position and started it down the 5½ per cent grade. Gathering momentum rapidly the train entered the trench, and before the crew had time to scramble up the steep sides, the cars struck a switch and four of them left the track and were piled up among the men, killing Demetrio Mikethoros outright, and causing injuries to Antonio Gonzalez that led to his death soon afterwards. The seriously injured are: Juan Rodriguez, suffer-

ing from a compound fracture of both legs below the knee, and Michael Damdounelli, compound fracture of left leg below the knee. The injured were taken to Ancon Hospital for treatment.

Visit of the Secretary of War.

The Honorable Jacob M. Dickinson, Secretary of War, accompanied by his wife, Major-General J. Franklin Bell, Chief of Staff, United States Army, and a party of seven people, sailed from Charleston, South Carolina, for Cristobal on the U. S. S. *Mayflower*, on April 21, stopped at Kingston, Jamaica, for two days, and arrived at Cristobal on April 28, where he was met by the Isthmian Canal Commission. The party accompanying Mr. Dickinson consists of: Miss Edna Owsley, of Chicago; Mr. and Mrs. James Ross Todd, of Louisville; Dr. and Mrs. W. G. Ewing, of Nashville; and Lincoln R. Clark, confidential clerk to the Secretary of War. Secretary and Mrs. Dickinson are the guests of Lieut.-Col. George W. Goethals at Culebra, and the other members of the party are at Hotel Tivoli.

Fourth of July Celebration.

At a meeting held in Commissioner Blackburn's office on Saturday, May 1, to arrange for the celebration of the Fourth of July, it was decided to have the general celebration for the Isthmus at Ancon, and to assist as far as possible the committee having in charge the local celebration at Cristobal. Mr. Blackburn was elected chairman of the executive committee, and was authorized to name the various subcommittees to raise funds and arrange details.

Gatun-Mount Hope Road.

A barge load of rock from Porto Bello was delivered at Mount Hope on April 24 for the Mount Hope-Gatun road. The subgrade of the road is finished throughout its entire length, and the rock will be distributed from Mount Hope and Mindi, as rock from Porto Bello is now being delivered at both points.

Over a Ton of Quinine.

Over a ton and a quarter of quinine was issued by the Department of Sanitation in the calendar year 1908, in the effort to prevent malaria by administering prophylactic doses, in supplying quinine tonic to the silver employes on the work and to gold employes in the Line hotels, and in curing the 12,372

cases that were treated in the hospitals and the 23,000 cases that were treated in the sick camps. The drug costs about \$3.15 a pound. The average number of employes in 1908, was 43,890 and the average amount of quinine issued to each employe was therefore .975 ounces. The number of pounds issued in each month and the number of malaria cases in hospitals were as follows:

MONTH.	Pounds Avordupois.	No. malaria cases treated in hospitals.
January.....	601.416	646
February.....	122.187	574
March.....	32.353	533
April.....	150.655	407
May.....	106.312	397
June.....	80.241	630
July.....	446.031	1,728
August.....	165.539	1,525
September.....	110.250	1,410
October.....	686.184	1,822
November.....	122.449	1,460
December.....	51.350	1,213
Total.....	2,674.967	12,372

Quinine is dispensed free to any one who applies for it, whether he be an employe of the Commission or not, because the fight to keep the Canal force healthy is greatly aided by the decrease in malaria among the people living in the villages of the Canal Zone. In addition to the hospitals there are two regular channels of distribution, the dispensaries, at which all persons are served, and the quinine dispensers who visit the labor camps. The general advice to take at least three grains a day for prophylactic purposes is not heeded by every one, and the use of quinine is not urged upon people except when the malaria rate runs unusually high. It is probable that some of the quinine issued is not used, although the amounts issued are usually only enough for a week or ten days. The quinine dispensers visit the messes for European laborers once a day and offer the drug, but do not press it on the men unless there has been an unusually large number of cases of malaria in their camp. No quinine is offered to the negro laborers except in camps where the number of malaria cases is exceptionally high.

Cristobal Court No. 8, I. O. P. K.

Cristobal Court, No. 8, Independent Order of Panamanian Kangaroos, will hereafter meet every Friday evening at 8 p. m., in the I. C. C. lodge hall at Cristobal. Visiting members cordially invited to attend.

STATEMENT OF CLASSIFIED EXPENDITURES TO FEBRUARY 28, 1909.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1908. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Department of Civil Administration.	Department of Sanitation.	Department of Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.....	\$1,446,407.73	\$4,636,630.37	\$13,410,795.01	\$4,296,732.98	\$19,345,697.87	\$43,136,263.96
Fiscal year 1908.....	704,610.15	2,310,212.01	16,680,660.46	1,494,956.41	11,684,215.15	32,874,654.18
Fiscal year 1909:						
July, 1908.....	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August, 1908.....	77,019.80	145,570.37	1,599,556.90	60,798.76	517,046.09	2,400,291.92
September, 1908.....	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
October, 1908.....	59,612.51	155,676.68	1,448,614.64	67,696.17	727,544.14	2,459,144.14
November, 1908.....	59,374.12	147,957.24	1,369,805.86	77,406.64	480,139.10	2,134,682.96
December, 1908.....	65,526.32	166,321.70	1,500,404.77	70,936.43	893,337.24	2,696,526.46
January, 1909.....	51,416.82	164,605.80	1,550,843.72	65,209.51	1,418,185.90	3,250,261.75
February, 1909.....	60,782.04	139,368.18	1,453,781.43	54,105.63	596,564.67	2,304,601.95
Total.....	2,679,514.67	8,194,330.82	42,103,414.84	6,332,552.90	36,910,446.48	96,220,259.71

INTERLOCKING SIGNAL WORK.

Controlling the Heavy Traffic Over the P. R. R. Main Line.

The first installation of an interlocking system of signal and switch operation on the Panama railroad was introduced at Miraflores on March 1, 1908, at the junction of the P. R. R. main tracks, Miraflores dump and Miraflores lock connecting tracks, where the number of trains averaged 240 for each eight hour service.

The interlocker or machine controlling the switches and signals was made on the Isthmus, and the plant was installed by the forces of the Telegraph and Telephone Department. Although rather crude, the machine demonstrated the value of this method of operation, and installations followed rapidly at important junctions. The old interlocking plant at Miraflores was eventually taken out, and a thoroughly modern system based upon the best signal practice in the States and consistent with the requirements on the Isthmus, was installed. Since April 30, 1908, interlocking plants have been installed at the Gorgona crossovers, near the south end of old Alligator curve; Matachin crossovers, at the junction of the Canal outlet and Matachin dump tracks; Las Cascadas crossovers, at the junction of the Canal inlet tracks; Paraiso crossovers, at the junction of the Canal outlet and inlet tracks; Miraflores crossovers, at the junction of Miraflores dump and lock tracks, and at the north leg of La Boca wye, at the junction of P. R. R. main tracks and La Boca wye.

The advantages in the operation of a number of switches and signals through an interlocker may be summarized as follows:

First—One man does the work of several, thereby avoiding the possibility of misunderstanding.

Second—The interlocker is so arranged that the setting up of conflicting routes is impossible; thus the danger of collision is almost entirely eliminated.

Third—The clearing of any signal by means of an interlocked lever secures or locks up all the switches in the route over which the train movement is to be made, thus preventing the possibility of running through interlocked switches where a signal is provided to protect the same.

Fourth—The control of all of the switches in the layout from one small building.

Fifth—The placing of the operator in actual contact with the dispatcher and other officials by telegraph and telephone.

The interlocking machines used on the Panama railroad are of the Saxby and Farmer improved type, and all machines are provided with preliminary latch locking. The raising of the latch upon any lever actuates the lock mechanism in connection with all other levers of the same machine, thus preventing the operation of any lever, excepting in proper order. Any lever being in the wrong position with reference to its lock or signal lever, will prevent the clearing of a signal, as it is impossible to raise the latch preliminary to the lever movement; thus a complete check is provided against clearing a signal unless route governed by such signal is properly set. When a signal is cleared, the locking actuated by the latch of the signal lever thoroughly locks all conflicting

routes, thus preventing the clearing of any signal for a conflicting movement. All levers and like parts of machines are interchangeable and are so arranged that they can be removed without interference with other levers.

The interlocking machines were made up on the Isthmus from parts ordered in the States, the interlocking layouts, including the peculiar design of the interlocking bed necessary for each particular layout, being designed and assembled on the Isthmus.

The switches, facing point locks and detector bars are connected to the levers operating them with 1-inch plugged pipe of extra good quality, the pipe lines being spaced at 2¾-inch centers and supported on antifriction pipe carrier foundations, spaced at 7-foot centers, the changes in direction being made by means of cranks securely mounted upon concrete foundations. The expansion and contraction of the pipe lines is compensated by means of standard compensators, properly spaced, so that the adjustment of any switch once properly made, will not require attention. All facing point switches on main tracks are locked in position by means of facing point plunger locks, which securely lock the switch when in proper adjustment, but immediately indicate any defect in the switch adjustment by preventing the reversal of the lock lever, thus preventing the clearing of all signals governing movements over the same until the trouble is removed.

The control of signals is usually effected by means of No. 8 double galvanized steel wires, the changes in direction being made around malleable iron wheels having an 8-inch sheave. Galvanized chain of ¼-inch cross section is provided in the signal control wires to operate around the wheels.

Detector bars are provided on all facing point switches on main tracks in connection with interlockings, their function being to prevent the operation of the switch under traffic. The detector bar consists of a steel strip ¾ inch by 2½ inches by 50 feet, supported by link clips attached to the outside of the rail. In its normal position, the detector bar is one-fourth inch below the top of the rail. This detector bar is connected to the same lever operating the facing point lock, so that the act of locking a switch also raises the detector bar to a point three-fourth inch above the rail. As the wheels of a train extend over the outer edge of the rail, it is at once apparent that the detector bar prevents the operation of the lock, and thus secures the switch point against improper operation under a train.

Distant switch signals have been installed at Mount Hope, Tabernilla, Mamei, and Pedro Miguél. In these installations the signal control is effected by means of a two-lever switch and signal arrangement, which provides a signal lever interlocked with the

switch lever. The arrangement is such that a signal may be cleared only when the switches over which the signal governs movements is set for the main track. This method necessitates the attention of a switch tender, and its value may be said to be in the advance indication of the position of the switch or of a conflicting movement over the same, which is given to approaching trains on main tracks.

Automatic and semi-automatic signals are now in use at Barbacoas Bridge and Black Swamp, where the double track merges into a gauntlet track. These signals are operated electrically, being controlled by track circuits with energy supplied at one end of each of the various track sections, and a relay in series with the track at the control or opposite end. A train entering a section thus energized will cause the signal to operate, for the well-known reason that the greater part of electric current will always take the path of lowest resistance. This shunts out the relay by providing a path for the current through the wheels and axle of the train; and as all the signal circuits are controlled by track relays, the principle of automatic control is very evident.

Repairs to Dredge No. 82.

Dredge No. 82 which has been undergoing repairs at the Cristobal marine shops will be put back in commission within a few days. This was the first of the 20-inch pipe line suction dredges to be put in service on Canal construction and began work on the dam site at Gatun in the Atlantic Division about a year ago. It was almost continuously at work up to February 20, when it was taken to the Cristobal marine shops. Since that time it has been completely overhauled and is now in first class condition.

At Balboa Shipways.

The Panama railroad tug *Bolivar* will be laid up for repairs within the next few days. New boilers are to be installed, and the boat will have a general overhauling. She has been in service almost continuously for the past 22 years, and has not undergone extensive repairs since 1900.

Work on the old French ladder dredge *Marmot*, recovered a short time ago from the bottom of the Canal, will be completed on Friday, May 7. She will be put to work at once dredging the channel alongside the new dock which is to have a depth of 15 feet at low tide. The *Marmot* is equipped with the small scratch type of buckets.

Six barges recently purchased by the Commission from the Panama railroad are undergoing repairs and remodeling of hatches at the Cristobal marine shops. They will be used in hauling cement from the docks at Cristobal up the old French canal to Gatun.

WEATHER CONDITIONS, CANAL ZONE, APRIL, 1909.

Stations.	Pressure (reduced to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.			
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches.	Station average per month.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Date.
Cristobal.....	29.881	80.1	86	24	72	14	83	3.56	4.23	18	8,659	N.	27	4
Bas Obispo.....	29.877	78.9	91	18	65	11	91	5.90	2.44	12	3,405	N.W.	21	15
Culebra.....	29.898	79.9	94	15	67	15	86	2.56	3.76	10	6,194	N.W.	31	11
Ancon.....	29.862	81.4	95	8	71	13	86	2.92	2.30	8	6,103	N.W.	23	4

DRAINING CULEBRA CUT.

Diversion Channels, Gravity, and Pumping Systems.

The drainage of Culebra Cut presents two distinct tasks: (1) To keep the water of the surrounding country out of the channel; (2) to rid the channel of the water that collects in it from rainfall and seepage. A system of diversion channels solves the first, and the second is accomplished by gravity drains and pumping. So well is the dual system working that in the rainy season of 1908 but little inconvenience was caused by the great amount of rainfall along the Cut, from Bas Obispo to Pedro Miguel, a distance of nine miles.

It is the excessive rainfall that makes the problem one of consequence, for the territory that would naturally drain into Culebra Cut is only about 26 square miles in area, and the so-called rivers that carry the run-off of the region are only creeks under normal conditions, even in the rainy season. During rain storms, however, and for a short time after, they carry off a large amount of water. Likewise a large amount falls into the Cut during a storm and provision must be made against its collecting, and flooding the tracks and steam shovels. At three points along Culebra Cut in the rainy season of 1908-1909, from May 1 to January 30, the rainfall was:

	Inches.
Bas Obispo.....	67.65
Empire.....	69.20
Rio Grande.....	50.15

From its sources in the mountains of Darien the Chagres river runs in a southwesterly direction until it strikes the hills at Bas Obispo, where it turns at almost a right angle and flows in a northwesterly direction to the Caribbean Sea. The line of the Canal through Gatun Lake follows in general the channel of the Chagres to Bas Obispo, where in holding to its southeasterly direction across the Isthmus it encounters the hills of the Continental Divide. From this point to near the summit of the watershed, it makes use of the natural depression between the hills through which ran the Obispo River, which rises near the summit at Culebra and flows north into the Chagres at Bas Obispo. On the southern or Pacific side of the Divide the Canal utilizes a similar depression, the valley of a small stream called the Rio Grande.

The natural channels of these streams cross the line of the Canal several times, and present a considerable obstacle to dry excavation. From the very beginning of their work on the Cut the French contended with this obstacle. When the Americans assumed control in 1904 diversion channels, suitable for keeping the water of the Obispo and its tributaries out of the Canal as then planned, had been dug on both sides of the Cut.

On the east side a ditch took the water of the Obispo river and carried it to a point opposite Empire whence it was intended to carry it across the Cut on an aqueduct (K. 52) and turn it into the diversion channel on the west side. Another ditch took the water on the east side between Empire and Las Cascadas to a point opposite Haut Obispo, where it flowed through the natural channel of the Obispo River to the Chagres River, and during high water part of it flowed through a tunnel at Bas Obispo and a diver-

sion ditch into the Obispo River and thence into the Chagres River. This tunnel is now known as the Camacho diversion tunnel. It was the intention to build an aqueduct similar to that at Empire across the Cut at Las Cascadas (K. 48.5) to take the water collected from the east side of the Cut, from the region between Empire and Las Cascadas, and allow it to join the water in the Obispo river at Haut Obispo. On the west side of the Cut the water from the region between Culebra and Las Cascadas was collected in a ditch and allowed to flow into the Cut near Las Cascadas, to join the water in the Obispo River at Haut Obispo. On the southern slope the Rio Grande was entirely diverted by the French and not allowed to flow through the bottom of the Cut.

The greater width of the Canal as planned by the Americans made it necessary to build diversion channels farther away from the Cut than were the ditches dug by the French. There is one channel on each side—the Obispo Diversion on the east, and the Camacho on the west. Each takes the run-off from the summit of the Divide to the Chagres River, draining a region $5\frac{1}{2}$ miles long and containing 9.8 square miles in the case of the Obispo, and $6\frac{1}{2}$ square miles in the case of the Camacho. Surveys for this work were made in 1905 and the work of excavation was begun in September 1906.

The Camacho diversion was completed in 1908. Its course lies from Culebra along the west side of Culebra Cut to the Chagres River, into which it empties through the Obispo River at a point half a mile north of Bas Obispo. It is about four miles long. From Culebra the water is carried in a diversion ditch which follows part way the old course of the Camacho River to Haut Obispo. Haut Obispo is the point where the Obispo River, before its diversion, crossed Culebra Cut, and the Camacho diversion water flows into the old channel of the Obispo at this point. The old channel of the Obispo is utilized from Haut Obispo to Bas Obispo where the river was deflected sharply by a hill, and its course again crossed the line of the Canal. The prism of the Canal is so close to the hills at this point that a suitable diversion ditch could not be built around the face of the hill, and the French had therefore built a tunnel which at time of high water carried part of the water into a diversion ditch on the northerly side of the hill whence it flowed into the Obispo River and thence into the Chagres River.

The Americans utilized as much as possible of the old French diversion, including the tunnel which is 420 feet long, and 16 feet high from the floor to the crown of the arch, with a minimum cross-section of 170 square feet. The greater part of the work consisted in joining the diversion ditch dug by the French, which opened into the Cut at Las Cascadas, with the old channel of the Obispo River at Haut Obispo, revetting the sides of the ditch where it runs through Whitehouse yard, and cleaning out the old French tunnel and the ditch between the north end of the tunnel and Obispo River. About 85,000 cubic yards of material were excavated, and on March 26, 1908, the work was completed. No reliable data are available as to the amount of run-off through this channel, but it was enough to delay the work in the Cut several times, and would

have been more troublesome when the excavation had reached the lower levels. The principal streams diverted from the Cut by the Camacho diversion, are the Camacho, San Juan, and Mandinga rivers.

From an old French map based on surveys made before excavation was begun in Culebra Cut, it appears that the Obispo River crossed the line of the Canal ten times and touched the center line four other times without crossing between its source east of Gold Hill near Culebra and its mouth at the Chagres River, below Bas Obispo. The distance along the center line of the Cut is 5 miles. The Obispo's principal tributaries are the Massambi and Sardinilla rivers, and the area of the watershed on the east side of the Cut is 9.8 square miles.

The amount of run-off in the dry season is slight and, at the end of the dry season, 1909, there was no water at all in the river opposite Empire. The total flow in the rainy season is not known exactly, as the French records are somewhat mixed and their weirs at times were completely submerged. The largest recorded flow is that of September 21, 1894, when the water in the Upper Obispo River passed kilometer 53.2 between Culebra and Empire at the rate of 2,706 cubic feet per second and the discharge was 36,995,000 cubic feet in 48 hours. On this basis, the discharge of the river at Haut Obispo, where it crosses Culebra Cut, was 6,000 cubic feet per second. The Obispo Diversion, now in process of construction, is designed to carry that amount of water safely. To this end the minimum width of the channel is 50 feet. When completed the diversion will be 5.05 miles long.

The Obispo Diversion begins at a point on the east side of the Cut opposite Culebra near Gold Hill and runs along the east side of the Canal, and practically parallel to it, to a point opposite Haut Obispo, where the channel of the river crosses the line of the Canal. Here the hills lie so close to the Cut that the diversion could not be constructed between them and the Canal and, therefore, the channel has been carried behind these hills, and through a saddle between them and the hills farther east. When the diversion is completed, about June 1, the water collected in the channel on the east side of the Cut will flow into the Chagres River at a point half a mile above Gamboa and about a mile from where the Canal itself crosses the Chagres between Bas Obispo and Matachin.

The construction of the Obispo diversion involved about 1,078,000 cubic yards of excavation, the building of $1\frac{1}{2}$ miles of dyke, the driving of sheet piling along 896 feet of dykes, and the driving of 1.6 miles of trestles, from which dirt was dumped to make the dykes. The work was begun in 1906, but was not pushed until October, 1908, and since that time not less than two steam shovels have been kept busy at this work. At present three steam shovels are operating in the last big cut that must be made before the channel will open into a ravine through which the water will flow to the Chagres. This cut is 97 feet deep and 250 wide at the top, and some of the most difficult work experienced in Canal construction, on account of the heavy grades encountered, has been on this part of the diversion.

On the southern slope the only stream that crosses the line of the Canal between the

summit on the Continental Divide and the end of Culebra Cut at Pedro Miguel is the Rio Grande. This stream has been dammed at a distance of half a mile from the Cut and its water is impounded in the Rio Grande reservoir, whence it is piped to the Canal Zone settlements between Culebra and Panama, and to the city of Panama. In the dry season all the water from this river is held in the reservoir, and in the rainy season the overflow is allowed to take the course of the French diversion. Up to the present time the excavation in the Cut has not gone below the point where the water may drain by gravity into the old French diversion channel just south of the Pedro Miguel lock site.

The Cut begins at Bas Obispo, where the Chagres River changes its course from southwest to northwest. At this point low water in the river is about 43 feet above mean sea-level, and high water is about 70 feet above mean sea-level. The bottom of the Canal through the Cut is to be at elevation 40 above mean sea-level. A steam shovel is now working at elevation 38 at Bas Obispo, two feet below the proposed bottom.

In draining this section of the Cut one pump at present suffices, but when the general level of the Cut is brought below the low water point of the river, more pumps will be necessary. The plan for draining the Cut is to place the summit as far north as Whitehouse and allow the surface water from Whitehouse to Pedro Miguel to drain through the locks at Pedro Miguel at approximately 20 feet above mean sea-level. This will give a grade of about 3 feet to a mile between Whitehouse and Pedro Miguel, sufficient to allow the water to run off by gravity. A steam shovel cut will be made through the center of the channel from Whitehouse to Pedro Miguel at an average depth of 9 feet below the floor of the channel. Lateral ditches will carry the surface water into this main ditch through which it will be drained through the lock site.

The culvert under the old line of the Panama railroad through which the French turned the water from their excavation for locks at Pedro Miguel is being lowered to elevation 40 to take the drainage from Culebra Cut and divert it into the channel of the Rio Grande west of the lock site, until the floor of the lock is finished, when the river will be turned through the lock itself.

Between Whitehouse and the Chagres River at the north end of the Cut, a distance of two miles, the water will flow by gravity into a sump near a dyke which has been built between the Cut and the channel of Chagres River. Through this barrier or dyke, two 24-inch pipes will be run at elevation 46 above mean sea-level, two at elevation 52, and two at elevation 60. Each pipe will be fitted with a valve and the greater part of the water that may collect in the Cut during a flood will flow into the Chagres through these pipes. What water remains below elevation 46 will be pumped out.

The water that collects in the north end of the Cut from rain, or that remains below elevation 46 as a result of a flood, will be collected in a sump near the barrier on the north end. The steam shovel that is now two feet below the bottom of the Cut will continue its excavation to elevation 30, making the sump referred to. It will then make a cut through the center of the Canal

rising gradually to grade 40 at the summit near Whitehouse. Lateral ditches will be run to this central drainage ditch and the water will thus be collected in the sump. During ten months of the year not over 1,000 gallons of water a minute will collect in this sump, and during periods of storm or floods the amount that collects will probably not be more than 8,000 gallons a minute and this only for a few hours at a time.

In view of this, three large pumps, which will discharge 12,000 gallons of water a minute under 80 pounds head of compressed air, will be installed. One of these, run at quarter speed, will do all the work under ordinary conditions. The pumps will be horizontal duplex, piston pattern, with a steam cylinder 16 inches in diameter, water cylinder 22 inches in diameter and stroke 18 inches. The intake will be 16 inches in diameter, the discharge pipe 14 inches, the steam pipe opening $2\frac{1}{2}$ inches and the exhaust $3\frac{1}{2}$ inches. These pumps will be of one size and all their parts will be interchangeable. They will be capable of withstanding 75 pounds pressure in the water cylinders at all times and of making 90 strokes per minute with each piston. The pumps will be run by compressed air from the mains along the Cut, but two auxiliary boilers for generating steam will be installed for an emergency.

Personal.

The resignation of Captain George R. Shanton, as Chief of Police of the Canal Zone, went into effect on May 1, at the expiration of his leave, and he was succeeded by Captain Grosvenor A. Porter. Captain Shanton was Chief of Police in the Canal Zone during the first five years of American occupation. He assumed his duties as Colonel and Chief of Insular Police at Porto Rico, with headquarters at San Juan, on April 1, 1909.

Miss Mary Gurley McCulloch, daughter of Major C. C. McCulloch, Jr., Medical Corps, U. S. A., was married to Dr. William McCully James, of Ancon Hospital, at St. Luke's Church, Ancon, on Saturday evening, May 1, by the Ven. Archdeacon Henry B. Bryan. A reception at the residence of the bride's parents followed the marriage ceremony.

Dr. A. E. Mayner, Acting Health Officer at Panama, sailed on Tuesday for the United States via Jamaica. During his leave he will visit San Diego and other Pacific coast points. Dr. John G. Evans has been detailed as Acting Health Officer during his absence.

Obituary.

William Lamb died at Colon Hospital on April 28. He was born in England 39 years ago, was a naturalized American citizen, and was married. He had been on the Isthmus twenty-eight months and resided at Cristobal. His death was the result of a hand-car accident. While sitting on the car his head came into contact with the moving handle, causing a fracture of the fourth vertebra.

Brotherhood of St. Andrew.

All members of the Brotherhood of St. Andrew living on the Isthmus, together with all men who desire to join the Brotherhood, are invited to meet at St. Luke's Chapel, Ancon, on Sunday morning, May 9, at 11.15, directly after the morning service, for the purpose of forming a chapter of the order.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Empire Woman's Club held a reception on April 29 in honor of the president, Mrs. E. H. Ash, who is leaving the Isthmus for her home in the States. There was a large attendance. The reception was preceded by a business meeting, when it was decided to continue the work of the Club throughout the summer. Election of officers will be held during the present month.

The Women's Christian Temperance Union of Empire will hold a mother's meeting on May 6, when a program will be given. The public is cordially invited.

The following officers have been elected by the Pedro Miguel Woman's Club to serve for the ensuing six months: Mrs. H. W. Shick, president; Mrs. H. Girdner, vice-president; Mrs. H. E. Weber, secretary; Mrs. G. E. Brown, treasurer.

The social meeting of the Las Cascadas Woman's Club was held at the home of Mrs. Charles R. Lingo on Thursday, April 29, with a good attendance.

At the regular meeting, April 29, the Gorgona Woman's Club decided to abandon department work for the present. There has been a large increase in the membership recently, and as many strangers are included in the number it is considered wise to continue the social meetings until the members have familiarized themselves with the various phases of club activity.

The Daughters of Rebekah, Gorgona, have fixed May 22 for the date of their flower dance, which will be given in the Commission clubhouse. There will be no special train, but visitors from the Line will be cared for over night by special arrangement of the committee. Tickets to admit two will be sold at \$1.00. The dance is for the contingent fund which the order is obliged to carry.

The Paraiso District of the Canal Zone Branch of the American National Red Cross gave a dance in the lodge hall on April 24. Arrangements for the dance, including the decorations and supper were in the hands of the executive committee, Mr. R. C. Smith, chairman, Mrs. Wm. Lowe and Mr. A. C. Hobbler. A large number of guests were present from Pedro Miguel, a special train being run for their accommodation.

Isthmian Sunday School Convention.

A convention of the Isthmian International Sunday School Association will be held at Gatun on Sunday, May 16, at 2 p. m. There will be a short song service, prayer and an address by Justice W. M. Owen on "The Modern Bible Class" at the opening of the meeting. Addresses by M. J. Stickel, Cristobal; H. K. Higgins, Gatun; J. C. Forman, Empire, and Judge J. K. March, Gorgona, will follow, after which there will be a "Round Table" discussion on Sunday school work, lasting thirty minutes, conducted by Rev. J. W. Holland. The meeting will close with an address by H. L. Stutz, Cristobal, followed by music and the benediction.

Missing Man.

Information is desired in regard to Ellis J. Rogers, of West Nanticoke, Pa. He was last heard from in December, 1908. Any one having knowledge concerning him is requested to communicate with the American Minister, Panama.

NAVIGATING CANALS.

Relative Merits of Sea-level and Lock Canals.

Although the type of canal at Panama is probably definitely settled in favor of the lock system, there continues to be more or less agitation and discussion of the subject not only in the daily press, but to some extent in the technical press, though it must be said that the latter almost unanimously support the decision in favor of the lock type. The opposition to it comes chiefly from a few engineers whose opinions were not given the weight to which they seem to think they were entitled, and some of whom are interested in special methods of prosecuting such work.

So far the men who are to use the channel seem to have been overlooked, but it is they, and not the engineers, who will justify or confound the judgment of those who determined the type. We need not here discuss the arguments advanced by each side, but will consider both types as they affect navigation.

The total length of canal is approximately 50 miles; in the sea-level type about two-fifths of this is made up of curves, in the lock type about one-seventh. In the sea-level type these curves are sinuous; in the lock type they merely represent the center line of the canal at the intersection of straight portions, or ranges. In actual navigation the ship is kept steadily on one range until she closes the range on the next course, and where these shifts of wheel occur the channel is widened by the suppression of the interior angle to give abundant room to swing or pass another ship.

It is impossible to steady a ship on a constantly changing course, even in daylight, because there is nothing to steady her by, leaving out of the question the influence of bottom drag, of which we will speak later, and in this the army engineers who have had the benefit of long experience in laying out, constructing and maintaining ship channels as actually demanded by navigation, have evidenced the value of their experience. Navigation of such a channel at night, when even the bank is not visible is entirely impossible, whereas straight reaches with simple range lights are as easily negotiated by night as by day, so long as the lights can be picked up, even with a glass. Of course ranges on curves are not feasible and lighted buoys in a curving channel are altogether impracticable.

In width of channel the proposed sea-level type is little more than a continuous ditch, with a bottom width of 150 feet. The lock type has a least bottom width of 300 feet and this for only about eight miles; for about 22 miles, 500 feet width and for about 20 miles across Gatun Lake, it will be from 800 to 1,000 feet wide. These widths allow, even in the shallowest portions, of a considerable amount of swing, and human power has not yet been able to prevent this swing in narrow or shallow channels, even with no current. The narrower the channel the greater the tendency to swing, and as the ship always makes for the nearest bank, when "hunting" is once begun, it becomes increasingly more difficult to arrest because of the increased angle of helm necessary to steady her. Passing other ships

in such a channel is a matter of most serious difficulty, because the cross-section of the two ships in such a large proportion of the total channel section that violent disturbing eddies and currents are set up, chiefly by propeller action, and it is very doubtful indeed if two 60-foot beam ships, with the most careful and deliberate handling, could pass each other in a 150-foot channel without rubbing.

One of the advocates of the sea-level type in a letter to *Engineering News* gravely states that the tidal currents set up in the canal and reaching about 3 miles per hour, calculated on the entire area of cross-section of canal, would be no hindrance to navigation. He quotes instances of navigation in much higher currents, such as the lower Mississippi in flood, the North River at New York and some tropical streams navigated by flat-bottomed light draft boats.

It is almost a waste of space to point out that maneuvering or steering a ship in a current is almost entirely a question of the relative volumes of the ship and the stream. A ship which could be driven and steered at full speed up North River in any current could not be driven one foot at full speed (as actually suggested) in a canal or narrow stream. For that matter a ship of say 60-foot beam and 28 feet draft could not be driven 100 yards in the proposed sea-level canal at full speed, even with no current whatever. And as a ship can only be steered as she has motion relative to the surrounding water, a vessel travelling with a 3-mile current would necessarily have an actual speed of something over that in order to have steerage way, say, an additional 3 miles.

The control of such a ship in a sea-level canal under such conditions, to say nothing of meeting other ships, in a channel only 150 feet wide and at which point the current is consequently greatly accelerated, is something which only a man devoid of practical knowledge would consider without a shiver.

The author of the letter referred to quotes the Detroit River as an instance of navigating in a 4-mile current. There is no point in the Detroit River where such a current exists, but even admitting that it does it has no bearing on the case whatever. The Detroit River is wide, and except for a short distance at the lower end, relatively deep, so that speed is affected very little and except at one point steering not at all, and this point is always navigated at slow speed.

The time occupied in lockages is more than made up by the greater facility of navigation in the lock canal, but this time is not nearly so great as seems to be supposed. The average lockage at the Poe lock at the Soo, is about 40 minutes, and although the locks at Panama are slightly larger than the Poe, the arrangements for filling and emptying will doubtless be in proportion, and probably better, so that the three lockages should not consume over three hours at most. The author referred to also speaks of the experience with accidents to locks at the Soo, while as a matter of fact there have been none of any consequence in the entire 54 years, as we have had occasion to note in a previous issue. We question if a navigator can be found who, when he fully understands both plans, will not unhesitatingly declare for the

lock type, even though he may never have done any locking, while to those who have the problem has no terrors.—*Marine Review for April.*

Canal Quarters and Their Occupants.

In order that it may be determined in advance just what building construction must be done during the coming fiscal year data have been compiled showing the number of gold bachelors and family quarters and the number of occupants on April 1, 1909. The statement as given below includes 6 one-family quarters at Ancon, two bachelor quarters, and 1 one-family house at Gatun authorized but not yet constructed:

PLACE.	BACHELOR QUARTERS.				FAMILY QUARTERS.	
	No. of houses.	No. of rooms.	No. of occupants.	No. of occupants per room.	No. of houses.	No. of quarters.
Ancon.....	10	154	153	1.00	84	136
Las Obispo.....	6	69	95	1.37	32	43
Corozal.....	2	90	96	1.07	28	52
Culebra.....	13	259	230	0.89	142	212
Cristobal.....	33	403	734	1.82	72	186
East La Boca.....	3	72	109	2.51	9	24
Empire.....	21	268	483	1.80	112	230
Gatun.....	15	184	314	1.70	45	110
Gorgona.....	20	279	378	1.35	83	171
La Boca.....	2	72	61	0.85	18	25
Las Cascadas.....	7	92	116	1.26	43	95
Miraflores.....	3	13	27	2.07	2	2
Paraiso.....	8	95	46	0.49	48	59
Pedro Miguel.....	10	95	166	1.75	36	63
Porto Bello.....	4	37	93	2.51	7	19
San Pablo.....	9	53	96	1.81	13	13
Tabernilla.....	6	61	69	1.13	22	35
Total.....	172	2,196	3,266	1.49	784	1,475

Commission Clubhouses.

A smoker and reception was given at the Commission clubhouse on Thursday night, April 29, in honor of the new Y. M. C. A. secretary, Mr. E. R. Gobrecht. The program consisted of musical numbers, instrumental and vocal, speeches, readings, and refreshments consisting of punch, coffee, sandwiches and cigars. A large crowd was present.

Thirty men have entered a local handicap ten-pin tournament which was started at the Empire Y. M. C. A. Monday evening, May 3.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

ANCON, C. Z., May 5, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- | | |
|-----------------------|-------------------------|
| Bayne, Clarence W. | McRobert, W. W. |
| Chase, John D. | Myston, Ed. |
| Clince, James B. | Naylor, Michael |
| Courtney, Edgar | Newton, Frederic E. (2) |
| Dorr, Mrs. Henry (2) | Oyster, W. M. |
| Eyans, Mrs. F. M. | Phillips, John M. |
| Fisher, Mrs. Elsie R. | Praeger, Norman W. |
| Garriott, Clyde | Riddick, W. M. |
| Heenan, Jim | Sutherland, Timothy |
| Kessler, Oscar | Walling, Loren A. |
| Logan, Chas. H. | Wright, G. F. |
| McDonald, Mrs. E. | Younge, Master Eugene |

Concert by I. C. C. Band.

GATUN, C. Z.,

Sunday, May 9, 1909, at 2 p. m.

PROGRAM.

- 1 March—Chicago Post.....Brooks
- 2 Selection—A Gay Musician.....Edwards
- 3 { a Intermezzo—Vapance.....Williams
- { b A Southern Novelty—Moonlight in Dixie.....Clement
- 4 Overture—Pique Dame.....Suppe
- 5 Song for Cornet—As Long as the World Rolls On.....Ball
- Chas. E. Jennings.
- 6 Medley Selection—Hits of the Day.....Remick
- 7 { a Two-step—Hoopoe-Kack.....Allen
- { b Characteristique—Persian Lamb Rag.....Wenrich
- 8 Idyl—The Glow Worm.....Lincke
- 9 Selection—The Sunny South.....Lampe
- 10 March—Old Faithful.....Holzman

CHAS. E. JENNINGS, Musical Director.

A concert will be given at Empire, Sunday, May 16.

OFFICIAL CIRCULARS.

Rules for Rendering Bills.

CULEBRA, C. Z., May 1, 1909.

CIRCULAR No. 246.

Effective, May 1, 1909: The following rules for rendering bills will be observed by the Heads of Departments and Divisions of the Isthmian Canal Commission, and by the Panama Railroad Company:

1. A bill rendered by one department or division, against another department or division of the Isthmian Canal Commission will include all charges for the job for which the bill is rendered, unless the work extends through more than three calendar months. In the latter case bills will be rendered at the end of the third month and quarterly thereafter. The accumulated charges in suspense will be reported to the Examiner of Accounts monthly, on Form 132-C. E., under their proper headings and by divisions.

2. A bill rendered by the Isthmian Canal Commission, against the Panama Railroad Company, or by the Panama Railroad Company against the Isthmian Canal Commission, will include all charges for the job for which the bill is rendered, unless it is estimated the work will extend through more than six calendar months. In the latter case bills will be rendered monthly. The accumulated charges in suspense, in the case of charges by the Isthmian Canal Commission against the Panama Railroad Company, will be reported to the Examiner of Accounts monthly, on Form 132-C. E., under their proper headings.

3. It is the purpose of this circular to require that, so far as practicable, bills shall be rendered only for completed jobs. When a bill does not include all charges and a second bill is necessary, the reasons making necessary the second bill should be fully stated.

4. The requiring of a specific written authority for work, and the preparation of bills in accordance with established rules, will avoid many of the difficulties heretofore encountered in having bills accepted.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Injured Contract Laborers.

CULEBRA, C. Z., April 30, 1909.

CIRCULAR No. 247.

Contract laborers injured in the performance of their duties and partially disabled, who are subsequently given light employment, may be paid at the rate of 20 cents gold an hour, although the work to which they are assigned may not ordinarily carry that rate of pay.

GEO. W. GOETHALS, Chairman

Chief of Police.

ANCON, C. Z., April 29, 1909.

CIRCULAR No. 85.

Grosvenor A. Porter is, effective May 1, 1909, appointed Chief of Police of the Canal Zone, vice Geo. R. Shanton, resigned.

JO C. S. BLACKBURN,
Head of Department of Civil Administration.

Approved:
GEO. W. GOETHALS, Chairman.

Zone Liquor Licenses.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., April 30, 1909.

The Isthmian Canal Commission has authorized the issuance of liquor licenses in the Canal Zone for the year commencing July 1, 1909, at Rio Grande, Culebra, Empire, Las Cascadas, Bas Obispo, Matachin, Gorgona, Tabernilla, Bohio and Gatun.

The areas within which saloons may be located are as follows:

Rio Grande—On the west side of the old line of the Panama railroad, facing the railroad, in line with the saloons at present licensed there.

Culebra—On either side of the main street of the new town on the French dump east of the Panama railroad passenger station, and on lots 11 to 19, inclusive, block 1; lots 12 to 20, inclusive, block 2; lots 1 to 9, inclusive, block 4; lots 2 to 10, inclusive, block 5, as shown on the map of West Culebra prepared in the Resident Engineer's office at Empire, on October 5, 1908.

Empire—The area bounded by Second avenue, Main street, Seventh avenue and Front street.

Las Cascadas—The section known as the new town, where private houses are now located, on the west side of the Panama railroad.

Bas Obispo—On the west side of the Panama railroad, in line with the buildings in which four saloons are now located.

Matachin—On the main street of the town, on the east side of the Panama railroad, in line with the buildings in which saloons are now located.

Gorgona—Area bounded by Second street, Avenue

A, Fifth street and Central avenue, but no saloon will be permitted to face on Central avenue.

Tabernilla—On the front street of the town, east of the Panama railroad, facing the railroad and running a distance of about 500 feet in a northerly direction from the building in which a saloon is at present located, north of the Panama railroad passenger station.

Bohio—On the main street of the town, on the west side of the Panama railroad, fronting the railroad.

Gatun—Block 7 and 8 of the new town laid out by the Panama Railroad Company.

Owners of licensed saloons at present in operation in the towns of Empire, Las Cascadas and Gorgona, outside of the area prescribed herein, may make application for removal of licenses in present location, but this does not abridge the right of the Commission to cancel the licenses or require the removal of any such saloons under present regulations.

The areas prescribed are indicated on maps which may be seen at the offices of the Collector of Revenues, Ancon, and the Tax Collectors at Empire, Gorgona, and Cristobal.

Applicants for licenses are invited to submit their applications prior to June 1, 1909, in conformity with the regulations adopted by the Isthmian Canal Commission, April 27, 1907, and amendments.

TOM M. COOKE, Collector of Revenues.

Assistant to the Vice-President.

PANAMA RAILROAD STEAMSHIP COMPANY,
NEW YORK, April 26, 1909.

GENERAL ORDER No. 19.

Effective this day, T. H. Rossbottom, Secretary, is appointed Assistant to the Vice-president, with all the powers and authority associated with that position; his instructions will be respected accordingly by all officials and employees of the Company.

E. A. DRAKE, Vice-President.

Attorney for Panama Railroad Company.

PANAMA RAILROAD COMPANY,
COLON, R. P., April 25, 1909.

CIRCULAR LETTER No. 84.

Effective May 1, 1909, Dr. J. Cueva Garcia is appointed attorney for the Panama Railroad Company for practice in the Panamanian courts.

HIRAM J. SLIFER, General Manager.
G. M. SHONTZ, Attorney on the Isthmus.

Approved:

GEO. W. GOETHALS,
President, Panama Railroad Company.

Proposals for Buildings.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, C. Z., until 2 p. m., Saturday, May 15, 1909, when they will be publicly opened, for the erection by contract of one type-17 house, and three type-27 houses, Ancon Hospital grounds, and one type-10 house, Ancon, C. Z. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash, or money order for \$50, as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$100 for each house for which he is awarded contract, conditional upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals. Separate proposals will be received for the different type houses. C. NIXON, Purchasing Agent on the Isthmus.

Auction Sale.

On Saturday, May 8, 1909, at 10.00 a. m., there will be sold at public sale at the Ancon hospital dairy, nine (9) bull calves, ranging in age from ten days to two months. The dairy is located near the insane asylum buildings, in the rear of the hospital grounds. The terms of the sale will be cash. JOHN L. PHILLIPS, Superintendent, Ancon Hospital.

LEGAL NOTICES.

United States of America, } In the Circuit Court,
Canal Zone. } Third Judicial Circuit.

To all whom it may concern:
Notice is hereby given that on Thursday the first day of July, 1909, in the court house in Cristobal, Canal Zone, at 10 o'clock a. m., there will be an auction into the estates of:

Kendal Thomas, who died intestate on or about March the 3d, 1907, at Mount Hope, Canal Zone, leaving no heirs, possessed of the following personal property: personal belongings of little value; Isthmian Canal Commission pay certificates for \$156.67, and \$207.52, United States currency.

Robert Grattis, who died intestate on or about March the 16th, 1906, at Cristobal, Canal Zone, leaving no heirs, possessed of the following personal

property: personal belonging of little value and 20 cents United States currency.

Unknown man, who died intestate on or about March the 7th, 1909, at Bohio, Canal Zone, leaving no heirs, possessed of the following personal property: one small purse containing \$1.60 Panamanian currency.

Aristida Fukala, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: 80 cents Panamanian currency and one French copper coin.

Mekell Zapatos, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: one English pound, 60 francs French and \$2.30 Panamanian currency.

Demetro Apostol, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: \$5.60 Panamanian currency and one bank book showing deposit of \$25 United States currency.

Pursuant to the petitions praying that said property be escheated filed herein by Tom M. Coake, Collector of Revenues, in accordance with Sections 779, 780 and 781 of the Code of Civil Procedure of the Canal Zone, at which time and place persons claiming the said estates may appear and be heard before the court,

NELSON R. JOHNSON,
Clerk of Circuit Court, Third Judicial Circuit.

United States of America, } In the Second Judicial
Canal Zone. } Circuit, Empire.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 190 hectares of the lands known as "Palenquilla and Frijol Grande," situated in the Canal Zone near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 5, 1908, made an award to the "unknown claimants" of \$1,900; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY,
Clerk of the Circuit Court, Second Judicial Circuit,
Empire, C. Z., April 15, 1909.

United States of America, } In the Second Judicial
Canal Zone. } Circuit, Empire.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 74 hectares of the lands known as "Santa Cruz," situated in the Canal Zone, and being a part of the lands of the upper Chagres Valley, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$740; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY,
Clerk of the Circuit Court, Second Judicial Circuit,
Empire, C. Z., April 15, 1909.

United States of America, } In the Second Judicial
Canal Zone. } Circuit, Empire.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 162.5 hectares of the land known as "Barro Colorado and Palenquilla," situated in the Canal Zone, near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$1,625; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY,
Clerk of the Circuit Court, Second Judicial Circuit,
Empire, C. Z., April 15, 1909.

United States of America, } In the Second Judicial
Canal Zone. } Circuit, Empire.

To any and all persons whom it may concern:

Notice is hereby given to any person or persons having or claiming any interest of title or ownership in the tract of 72.5 hectares of the lands known as "Barro Colorado and Frijol Grande," situated in the Canal Zone, near the village of Frijoles, for which tract of land the Joint Commission by its findings filed August 8, 1908, made an award to the "unknown claimants" of \$725; that a petition for the expropriation of the said tract in accordance with the findings of the said Joint Commission has been herein filed by the United States of America, and any person claiming right of title or interest in or to the amount of the said award is directed to forthwith file in this court notice in writing of said claim.

E. M. GOOLSBY,
Clerk of the Circuit Court, Second Judicial Circuit,
Empire, C. Z., April 15, 1909.

COMMISSION ACTION.

Medical Fees—Telegraph and Telephone Lines.

At a meeting of the Isthmian Canal Commission at Culebra on April 24, the following action was taken:

Resolved, That paragraph 2, section A of the regulations governing the treatment of persons by the physicians and in the hospitals of the Department of Sanitation, as amended by the Commission at its 14th meeting, be further amended to read as follows:

A charge of \$1 shall be made for each visit by a physician of the Health Department to an employe at his home or quarters, provided that if he is unable to go to the dispensary no charge shall be made for the first visit to such employe. Employes living with their families in Commission quarters, who, in the opinion of the visiting physician, cannot safely or conveniently report at the dispensary for treatment, shall, if they so desire, be treated at their homes without charge, except when in the opinion of the District Physician convalescence will be unduly prolonged, thereby causing an increased expenditure by the Commission in payment of sick or injury leave.

The Chairman presented the report submitted by the Committee appointed to consider all questions connected with the ownership, operation and maintenance of the telegraph and telephone lines belonging to the Isthmian Canal Commission and the Panama Railroad Company. In accordance with the recommendation made by the Committee, the following agreement between the Isthmian Canal Commission and the Panama Railroad Company was approved:

On and after May 1, 1909, the Panama Railroad Company will construct, maintain and operate all telegraph and telephone lines and equipment that may be needed in the work of the said company and of the Isthmian Canal Commission; that said company will furnish to the Isthmian Canal Commission all such telegraph and telephone service and facilities as the Commission may require, and as may be requested by officers of the Commission with the approval of the Chairman and Chief Engineer.

In consideration of this agreement on the part of the Panama Railroad Company, the Commission agrees to pay to said company, monthly, an amount equal to seven and a half dollars for each telephone instrument used during the preceding month or fraction thereof, and the Commission further agrees that the Panama Railroad Company shall on and after May 1, 1909, have the use without charge, of the Commission's part of the telegraph and telephone plant and equipment then owned by the Commission, and shall not be liable for deterioration or necessary changes or destruction thereof; and that on the termination of this agreement the railroad company shall pay to the Commission the value at that time, then to be agreed on, of the Commission's interest on May 1, 1909, in the plant and equipment which is turned over to the company on said date.

The Commission also agrees to pay to the railroad company the sum of \$2 000 per month in full payment for all services rendered by the company in maintaining extra operators, signalmen, and other employes made necessary by the operation of I. C. C. trains over the railroad company's tracks. The Commission will pay telegraph operators in its own offices as heretofore.

This agreement shall continue in effect till revoked by either party on sixty days' notice, and it is understood that the rate per telephone per month, herein agreed to be paid by the Commission, and the amount of \$2,400, shall be increased or diminished at the beginning of any month during the continuance of this agreement when the Chairman of the Isthmian Canal Commission shall determine such change is proper.

Steamship arrivals and departures at the port of Ancon in the week ending April 30, 1909, were as follows: Arrivals: April 24, U. S. S. *Buffalo*, from San Francisco, and *Acapulco*, from San Francisco; April 26, *Arica*, from Guayaquil; April 29, *Palena*, from South ports, and *Quito* from intermediate ports. Departures: April 24, *San Jose*, for San Francisco; April 25, *Chile*, for South ports, and *Chiriqui*, for intermediate ports; April 26, U. S. S. *South Dakota*, for Central America; April 28, U. S. S. *Buffalo*, for North ports; April 30, *Barraqueta*, for Central America.

LOST.—Either at Empire or Gatun, on April 27, a carcass containing several important personal papers, including Masonic papers, with name of owner among them. The person finding this carcass is requested to mail it to Mr. Charles Nygaard, U. S. S. *Buffalo*, care of the Postmaster, San Francisco, Cal.

April Rainfall for Three Years.

Stations.	1907.	1908.	1909.	Ay'ge since sta. est. exclud- ing 1909.	No. of rainy days.
<i>Atlantic Division</i>					
Nombre de Dios.....			12.58	.....	21
Porto Bello.....			12.56	.....	24
Cristobal.....	1.06	1.27	3.56	4.23	18
Brazos Brook.....	1.07	1.33	6.23	1.20	18
Gatun.....	1.41	1.47	4.03	3.22	17
Gatunillo.....			3.63	7.18	.....
Trinidad.....			3.40	6.96	.....
Bohio.....	.59	2.16	7.23	5.70	19
<i>Central Division</i>					
Tabernilla.....			2.37	6.30	.....
San Pablo.....			3.39	5.50	.....
Gamboa.....	.44	2.65	5.55	3.54	11
Bas Obispo.....	.23	1.81	5.90	2.44	12
Empire.....	.09	1.36	3.33	3.58	11
Camacho.....	.24	1.90	2.64	1.07	12
Culebra.....	.04	1.67	2.56	3.76	10
Rio Grande.....	.17	2.00	2.63	2.58	10
<i>Pacific Division</i>					
Pedro Miguel.....		1.17	2.32	.....	9
Balboa (La Boca).....	T	.76	2.83	4.09	16
Ancon.....	T	1.37	2.92	2.30	8
<i>Upper Chagres</i>					
El Vigia.....			2.32	.....	12
Alhajuella.....	.23	4.61	3.54	3.36	13

Rainfall, April 1 to 30, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	.60	3.56
Brazos Brook.....	1.08	6.23
Gatun.....	1.03	4.03
Bohio.....	1.96	7.23
<i>Central Division—</i>		
Tabernilla.....	1.69	6.30
San Pablo.....	2.13	5.50
Bas Obispo.....	1.44	5.90
Gamboa.....	2.02	5.55
Empire.....	.94	3.33
Camacho.....	.87	2.64
Culebra.....	.72	2.56
<i>Pacific Division—</i>		
Rio Grande.....	.65	2.63
Pedro Miguel.....	.60	2.32
Balboa (La Boca).....	1.00	2.83
Ancon.....	1.30	2.92
<i>Atlantic Coast—</i>		
Porto Bello.....		3.81
Nombre de Dios.....		5.61
<i>Upper Chagres.</i>		
El Vigia.....		.70
Alhajuella.....		1.17

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, May 1, 1909:

	STATIONS.					
	Vigia.	Alhajuella.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. D.)
Height of low water above sea-level, ft.	125	92	46	1	0	0
Maximum height above mean sea-level, feet:						
Sunday, Apr. 25.....	125.4	92.6	47.9	2.2	1.0	1.0
Monday, Apr. 26.....	125.9	93.0	48.4	2.1	0.9	0.8
Tuesday, Apr. 27.....	125.8	94.2	50.1	2.9	0.9	0.8
Wednesday, Apr. 28.....	126.2	93.5	50.1	3.9	1.1	1.0
Thursday, Apr. 29.....	133.0	97.8	54.4	3.0	1.0	0.9
Friday, Apr. 30.....	129.2	96.5	56.0	8.2	2.5	2.0
Saturday, May 1.....	129.8	96.0	53.5	7.3	2.1	1.8

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 11, 1909 (75th meridian time):

DATE.	High.	Low.	High.	Low.	High.
	A. M.	A. M.	P. M.	P. M.	P. M.
May 5.....	3.47	9.53	3.52	10.13	.....
May 6.....	4.18	10.27	4.24	10.48	.....
May 7.....	4.49	11.01	4.58	11.23	.....
May 8.....	5.25	11.39	5.35	.....	.....
			A. M.		
May 9.....		12.01	6.04	12.23	6.16
May 10.....		12.44	6.48	1.05	7.01
May 11.....		1.32	7.37	1.57	7.52

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Colon.....	P. R. R. Monday.....	May 3
Panama.....	P. R. R. Saturday.....	May 8
Prinz Joachim.....	H. A. Saturday.....	May 8
Advance.....	P. R. R. Friday.....	May 14
Oruba.....	R. M. Saturday.....	May 15
Prinz Aug. Wilhelm.....	H. A. Saturday.....	May 22
Tagus.....	R. M. Saturday.....	May 29
Prinz Joachim.....	H. A. Saturday.....	June 5
Magdalena.....	R. M. Saturday.....	June 12
Prinz Aug. Wilhelm.....	H. A. Saturday.....	June 19
Orinoco.....	R. M. Saturday.....	June 26
Prinz Joachim.....	H. A. Saturday.....	July 3
Atrato.....	R. M. Saturday.....	July 10

Persons desiring to meet friends or relatives upon arrival of Panama Railroad steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Advance.....	P. R. R. Sunday.....	May 2
Oruba.....	R. M. Tuesday.....	May 4
Allianca.....	P. R. R. Saturday.....	May 8
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	May 11
Colon.....	P. R. R. Friday.....	May 14
Tagus.....	R. M. Tuesday.....	May 18
Panama.....	P. R. R. Thursday.....	May 20
Prinz Joachim.....	H. A. Tuesday.....	May 25
Advance.....	P. R. R. Wednesday.....	May 26
Magdalena.....	R. M. Tuesday.....	June 1
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	June 8
Orinoco.....	R. M. Tuesday.....	June 15
Prinz Joachim.....	H. A. Tuesday.....	June 22
Atrato.....	R. M. Tuesday.....	June 29
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	July 6
Oruba.....	R. M. Tuesday.....	July 13
Prinz Joachim.....	H. A. Tuesday.....	July 20

NEW ORLEANS TO COLON.

Parismina.....	U. F. C. Saturday.....	May '8
Cartago.....	U. F. C. Saturday.....	May 15
Abangarez.....	U. F. C. Saturday.....	May 22

COLON TO NEW ORLEANS.

Abangarez.....	U. F. C. Tuesday.....	May 11
Parismina.....	U. F. C. Tuesday.....	May 18
Cartago.....	U. F. C. Tuesday.....	May 25
Abangarez.....	U. F. C. Tuesday.....	June 1

COLON TO BARBADOS, CALLING AT TRINIDAD.

Orinoco.....	R. M. Tuesday.....	May 11
Oruba.....	R. M. Tuesday.....	May 25
Tagus.....	R. M. Tuesday.....	June 8

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

Sailings of the French line (Cie. Generale Transatlantique) for Venezuela ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

Port of Cristobal.

The following steamers arrived at the port of Cristobal during the week ending May 1:

Magdalena, April 25, from New York, with 109,831 pounds steel bars for stock.

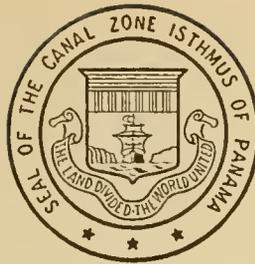
Hornstead, April 26, from Brunswick, Ga., with 35,522 cross and switch ties for issue to all divisions.

Advance, April 27, from New York, with 1,000 barrels cement, Gatun spillway; 2,000 cases lubricating oil, 73,451 pounds iron bars, for stock; 206,489 pounds coke, Gorgona foundry; 243 packages material for electric railway and handling plant, Gatun; 13 rock drills for Pacific Division; 11,738 pounds cast steel gears for dredge *Chagres*; 22,372 pounds castings for steam shovels and cars, for Mechanical Division. This steamer also carried an assorted cargo of general stock, the total aggregating 550 tons.

Sarnia, April 28, from New York, with 130,616 pounds cableway material, Gatun handling plant.

Cartago, April 29, from New Orleans, with 183,161 pounds rice straw for corrals; 8 reels wire cable for Lidgerwood unloaders; 25 cases locomotive head lights for Mechanical Division; 22 cases filing cabinets for stock; 400 boxes fire brick for stock.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, MAY 12, 1909.

No. 37.

The Canal Record

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The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

April Excavation.

The grand total of Canal excavation during the month of April was 3,454,649 cubic yards, which is 607,983 less than the total for March, 1909, the month in which the highest record since American occupation was made. Of the 3,454,649 cubic yards, 3,343,709 were chargeable to actual Canal construction and 110,940 to "Plant." The amount removed from the Canal prism was 2,985,134 cubic yards. There were taken out by steam shovels 2,137,861 cubic yards, and by dredges 1,316,788. The daily average excavation was 138,185 cubic yards. There were 25 working days during the month, against 27 in March. The mean rainfall for the month in the territory in which excavation was in progress was 4.36 inches as compared with 1.1 inches the previous month.

In the Atlantic Division the total excavation was 672,701 cubic yards. Of this amount 151,711 was removed by steam shovels and 520,990 by dredges. There were 294,498 cubic yards of material placed in Gatun Dam and 7,478 cubic yards of concrete were laid on the floor of the spillway during the month.

The total excavation in the Central Division was 1,782,766 cubic yards, 271,322 less than were removed in March. Of this total 1,217,442 cubic yards were taken from the Culebra Cut, 490,922 from the Canal prism, elsewhere than in the Cut, and 74,402 from the Obispo Diversion, which is outside the Canal prism.

In the Pacific Division the total excavation was 999,182 cubic yards, 203,384 of which were removed by steam shovels and 795,798 by dredges. There were 18,304 cubic yards placed in the dam at the Pedro Miguel locks and 16,101 cubic yards in the dam at Miraflores.

The detailed statement of excavation in the three divisions follows:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation. cu. yds.	"Plant" Excavation. cu. yds.	Total excavation cu. yds.
Dry excavation— Locks, Dam and Spillway.....	70,009	7,334	77,343
Mindi.....	74,368	.....	74,368
Total.....	144,377	7,334	151,711
Wet excavation— Atlantic entrance Locks, Dam and Spillway.....	470,635	.....	470,635
.....	17,938	32,417	50,355
Total.....	488,573	32,417	520,990
Total wet and dry excavation.....	632,950	39,751	672,701

CENTRAL DIVISION.

All dry excavation— Chagres section.....	490,922	.....	490,922
Obispo Diversion.....	74,402	.....	74,402
Culebra Cut.....	1,217,442	.....	1,217,442
Total.....	1,782,766	.....	1,782,766

PACIFIC DIVISION.

Dry excavation— Locks, Dams and Spillway.....	145,571	46,767	191,938
Diversion.....	10,846	600	11,446
Total.....	156,417	46,967	203,384
Wet excavation— Pacific entrance.....	731,767	.....	731,767
Miraflores Locks.....	35,401	24,222	59,623
Diversion.....	4,408	.....	4,408
Total.....	771,576	24,222	795,798
Total wet and dry excavation.....	927,993	71,189	999,182

TOTAL CANAL EXCAVATION.

Dry excavation.....	2,083,560	54,301	2,137,861
Wet excavation.....	1,260,149	56,639	1,316,788
Total.....	3,343,709	110,940	3,454,649

Mean rainfall along Canal (eleven stations) 4.36 inches.

By "Work" Excavation is meant excavation actually made for one of the constituent parts of the Canal, such as Prism, Diversions, or Locks, etc.; that is, it represents material taken from the area to be occupied by the Canal, and constitutes excavation useful for the completed Canal.

By "Plant" Excavation is meant excavation outside of any of the constituent parts of the Canal, such as Prism, Diversions, or Locks, etc. It includes material necessary to be excavated for construction purposes only and is chargeable against the particular plant item for which it is performed, such as Prism, Diversions, Locks, etc.

Towing Machines.

A towing machine has been installed on the tug *Porto Bello*, while the tugs *M. E. Scully*, *Mariner*, *Gatun*, and *Bohio*, and seven of the fourteen rock barges in use by the Atlantic Division will be similarly equipped as soon as possible. The towing machine will do away with the present capstan and manila hawser arrangement, and will add both to speed and economy. During heavy weather on Limon Bay, and particularly in hauling material from *Porto Bello* and *Nombre de Dios*, considerable difficulty has been experienced in keeping the strain on the hawser short of the breaking point. Frequently the hawser parts, causing loss both in time and

material. The special feature of the new towing machine, which is built on the order of a large steam winch, is the automatic give-and-take arrangement, whereby the cable pays out when the tow puts too heavy a strain upon it, and takes the slack up when the tension relaxes. With this machine a 1-inch wire cable is used, whereas under the old method, a 3-inch manila rope was necessary.

Operations at Atlantic Entrance.

Three dredges are now working in the channel at the Atlantic entrance to the Canal. Dredge No. 6 is excavating in rock about 300 yards from shore, and at some distance back of her dredge No. 1 is digging 14 feet into the mud bottom. The suction dredge Ancon is working close behind No. 1 deepening the channel nearly to the desired depth, which is 41 feet below mean sea-level. The work of the dredges is as nearly continuous as it is possible to make it, that is, only three hours are lost out of the twenty-four, due to changing the shifts, and cleaning the machinery. All the spoil taken out by these dredges is dumped on the site of the new breakwater.

Between the Mindi Hills and the present shore line the rock below the top covering of earth is being broken up, and when this has been completed the dredges can continue their operations up to where the steam shovels are cutting through the hills. Eleven drills are on this work. The method employed is to sink a hole 45 to 50 feet below the surface, case it with iron pipe, and then put in the charge. Only 60 per cent dynamite is used as it insures better results. The laborers are all West Indians, employed on a monthly basis, which has been found more profitable in this class of work than the hourly plan. At the present rate of progress the drilling operations at this point will be finished in a month or six weeks.

Utilizing Old Cross Ties.

In the work of keeping the tracks of the Panama railroad and of the Isthmian Canal Commission in repair, many hundreds of cross ties no longer suited for use have been thrown aside. These are being collected and will be either condemned and sold, or used as fuel by the Commission. It has been the custom heretofore for persons living along the line of the railroad to use them either for fuel, or as supports for houses. The police have been instructed to watch all piles of ties carefully, and arrest any person taking them illegally.

Sand Dredge for Nombre de Dios.

An old French suction dredge, recovered from the Canal near Chagrecito, is now undergoing repairs at Cristobal dry dock preparatory to being put in service at Nombre de Dios. The boilers and general machinery were found to be in unusually good condi-

NOTES OF PROGRESS.

(Continued.)

tion. The only important change made in the machinery was the substitution of a larger winch in order to increase the working efficiency. The dredge will be in commission within two or three weeks, and will work in the sand beds at Nombre de Dios, relieving the *Chagres* now stationed there.

Dredging in April.

The combined output of the dredges of the Atlantic and Pacific Divisions for April amounted to 1,461,989 cubic yards, as compared with 1,734,463 cubic yards for March, a decrease of 272,474 cubic yards. Of the amount for April, 666,191 cubic yards were taken out by the Atlantic Division, and 795,798 cubic yards by the Pacific Division. Operations in the Atlantic Division fell off 143,884 cubic yards, and in the Pacific Division 128,590 cubic yards, as compared with the preceding month, which was a record-breaker. Of the total April output, 1,255,741 cubic yards applied to Canal excavation, and 206,248 cubic yards to auxiliary works.

In the harbor and channel section of the Atlantic Division, the output for April was 505,452 cubic yards, as against 508,655 cubic yards for March. Work at dock 14 was continued, and during the month 2,400 cubic yards of earth were removed by the dredge *Mindi*. The dredging at this point was necessitated because of the accumulation of silt in the channel since it was last cleared out, and will greatly facilitate the unloading of coal vessels. In the approach channel to the handling plant at Gatun Locks, 10,243 cubic yards were taken out by the *Mindi*, after which the dredge was put to work in the French canal, removing 22,174 cubic yards from the shoals between Gatun and Cristobal. This work is being done to facilitate the passage of the sand and stone barges coming up the Canal with material for the concrete work at the spillway.

The ladder on dredge No. 6 was lowered to the lowest point permitted by her construction, and it was found that, in blasted rock, she left a depth behind her of a little more than 30 feet. This depth was increased at one place during the month to over 35 feet.

Dredge No. 85 excavated 17,938 cubic yards at the Gatun Locks, and dredge No. 83 pumped 142,801 cubic yards into Gatun Dam. The seaway and general weather conditions were more favorable during the month, and the dredge *Ancon* was able to work her way farther inshore. The detailed statement of dredging operations in the Atlantic Division follows:

DREDGE.	Type.	CUBIC YARDS.		
		In Prism	Auxiliary Works	Total.
Ancon	Suction..	348,230	.....	348,230
No. 1	Ladder..	50,883	.....	50,883
No. 6	Ladder..	41,522	.....	41,522
Mindi	Dipper..	34,817	.....	34,817
No. 83	Suction..	142,801	.....	142,801
No. 85	Suction..	17,938	.....	17,938
Total		488,573	177,418	666,191

The dredges in the Pacific Division were at work during the month at the Pacific entrance, with the exception of the ladder dredge *Badger*, and the suction dredge *Sandpiper*. The former completed the channel for the new sand dock at Balboa, which

is now more than 60 per cent finished. The *Sandpiper* continued excavating in the lower lock chamber at Miraflores. The suction dredge *Culebra* was laid up for one day during the month on account of repairs to her pump. A summary of dredging operations in the Pacific Division for April follows:

DREDGE.	Type.	CUBIC YARDS.		
		In Prism	Auxiliary Works	Total.
Gopher.....	Ladder..	156,070	.....	156,070
Badger.....	Ladder..	89,825	24,222	114,047
Mole.....	Ladder..	98,436	.....	98,436
Cardenas..	Dipper..	126,557	.....	126,557
Orange Peel.	O. P.....	.....	4,408	4,408
Culebra.....	Suction..	260,879	.....	260,879
Sandpiper..	Suction..	35,401	.....	35,401
Total.....		767,163	28,630	795,798

Death of Secretary Arango.

Mr. Jose Augustin Arango, Secretary of Foreign Affairs, and First Vice-President of the Republic of Panama, died about 11 a. m., Monday, May 10. He was born on the Isthmus, February 24, 1843, and has figured largely in its public life. He was a deputy in the Colombian Congress at the time the Canal treaty was under consideration, resigning before the vote was taken, foreseeing its defeat. He was a member of the original junta of separation in Panama, and the framer of its Declaration of Independence. He was Minister at Washington, when President Obaldia returned from that post early last year, and when the latter was elected president, accepted a cabinet portfolio. In respect to his memory flags were ordered at half mast on public buildings in Panama. The funeral took place Tuesday May 11.

Special Trains.

The Chairman of the Isthmian Canal Commission announces the following regulation in regard to special trains:

Hereafter requests for permission to run Commission equipment over the main line of the Panama railroad must be submitted in writing to the office of the Chairman at least three days prior to the date on which the train is desired. This is necessary in order to allow sufficient time for forwarding the request to the Panama railroad, and receiving reply as to whether or not it is practicable to grant the permission for the date specified.

The requests should state whether permission has been secured for the use of Commission equipment; whether a qualified crew will man the train; the points between which the train is to run; time of leaving and arrival at terminals, and intermediate points at which train will stop, in order that the dispatcher of the Panama railroad may arrange a schedule accordingly.

Riot at Colon.

A small riot occurred in Colon on Monday evening, May 10, in which two men were killed and several injured. Hubert Mira, a Jamaican, on Bolivar street, Colon, at about 6.20 p. m., broke away from Panamanian police officers who had arrested him, and ran across the Canal Zone boundary, to a vacant lot near the Commissary, followed by a large crowd of West Indians. A Panamanian plain clothes policeman drew a revolver and began firing which was answered by a shower of stones and other missiles from the West Indians. The affair lasted only a few minutes as the Zone police were promptly on the scene and stopped the disorder. The Governor of

Colon and the Lieutenant of Zone Police at Cristobal immediately took steps to safeguard the two cities, and no further trouble occurred.

The two men killed were: Charles M. Abbott, American, electrical foreman of the Colon district, instantly killed by being struck by a stone. He was passing the place at the time and was in no way connected with the affray. John Williams, an American negro, was shot and instantly killed, while on the second story veranda of a house some distance away. Two West Indians were wounded, one by a bullet, and the other by being struck with a stone. They were both taken to Colon Hospital.

Pioneer Club's Second Annual Banquet.

Five years ago, on May 4, M. Renaudin, representing the New Panama Canal Company, formally turned over the French canal property to the United States, Lieut. Mark Brooke representing the latter Government in the brief ceremony of transfer. This marked the commencement of active operations on the part of the Americans in canal affairs. The event was celebrated last year, and again this year, by a banquet at Hotel Tivoli given by the pioneers of 1904, who are still in the employ of the Commission. Last year the attendance was limited to the men who came to the Isthmus during the months of May, June, and July, 1904, but as the number of these still with the Commission has considerably diminished during the past year, it was decided to extend the invitation to all who came prior to January 1, 1905. It is estimated that about 100 men who arrived on the Isthmus in 1904, are still in the Commission's employ, and about half this number accepted Tuesday night's invitation. Col. Gorgas presided, and as the banquet advanced called upon the guests, one by one, to contribute to the occasion, which they did by relating anecdotes and reminiscences, nearly all bearing on the early days of American occupancy. At the dinner a year ago, the matter of forming an association among the early comers was discussed, but beyond appointing a committee, no further action has since been taken. The subject came up again on May 4, 1909, but definite action was again deferred. The guests present were:

E. J. Banta, Geo. D. Brooke, H. R. Carter, Tom M. Cooke, Frank Cotton, John A. Coyne, Silas Davidson, L. E. DuBois, P. de Obarrio, Walter Emery, W. C. Gorgas, H. A. Gudger, Herman A. Gudger, W. H. Hall, A. B. Herrick, W. G. Lord, Patrick Kenaley, Ernest LaGarde, Jr., John LaRock, Harry Leonard, J. A. LePrince, T. C. Lyster, D. E. McDonald, E. C. McFarland, Mason E. Mitchell, Frank E. Moore, John J. Moran, A. B. Nichols, Lloyd Noland, E. F. Padgett, C. L. Parker, Claude C. Pierce, W. L. Power, H. D. Reed, J. J. Reidy, M. C. Rerdell, Hartley Rowe, Geo. H. Ruggles, J. M. Sinclair, C. L. Stockelberg, M. W. Tenny, Thos. J. Walsh, W. M. Wood, D. E. Wright, and Paul Wuttke.

A festival and chicken supper will be given at Santa Rita's Church, Gatun, Sunday evening, May 16, beginning at 5.30 o'clock.

Joaquin Segrera was hanged at Culebra penitentiary, Friday, May 7, for the murder of Enrique Vega on December 13, 1907. He was a Colombian, and arrived on the Isthmus January 1, 1906.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

Arrangements for the annual meeting of the Canal Zone Federation of Women's Clubs at Cristobal, May 15, have been completed. Delegates and alternates will take the morning train leaving Panama at 6.35. Chairmen of committees are requested to call their meetings at the clubhouse at 9.30. The business meeting, with nominations, will take place at 10.30 a. m., and the election of officers, followed by a program, at 2 p. m.

The business meeting of the Cristobal Woman's Club was held April 28, this being the final session before the annual meeting. Reports of committees were read, and other business connected with the close of the year transacted. On Saturday morning, May 1, the annual meeting was held. The officers elected were: Mrs. H. J. Slifer, president; Mrs. Frederick Mears, first vice-president; Mrs. Thomas E. Brown, Jr., second vice-president; Mrs. Otis Riddle, recording secretary; Mrs. Albert Herman, corresponding secretary; Mrs. Victor Fassett, treasurer. Mrs. Lorin C. Collins, president of the club since its organization, declined renomination. The president's annual address reviewed the work of the club during the two years of its existence. The club was organized under a set of by-laws adapted from the Chicago Woman's Club. It is divided into four departments: Art and literature, home, philanthropy, and education. The art and literature department took up the study of Japan for the first year, and Shakespeare for the second. Some work has also been done along the line of music study, and a Cecilian chorus was organized last November. The work of the home department served practical ends in meeting the questions that confront the housekeeper and homemaker, and also in collecting recipes for a cook book. The departments of philanthropy and education have been active in various ways. The club has entertained notable guests and speakers from the States, among these being Mrs. Mabel Loomis Todd, Mrs. Katherine Flagg, of the Massachusetts State Federation, Mrs. Philip N. Moore, and Mrs. John Dickinson Sherman, president and second vice-president respectively, of the General Federation. The membership of the club is about sixty.

There was a large attendance at the reception given to Mrs. C. C. McCulloch by the Ancon Woman's Club on Wednesday, May 5. At the close of the short business meeting, which preceded the social function, the club presented the retiring president with a painting of the old San Francisco Monastery in Panama, by Madame LePrince. The new books presented to the library by club women in the States have arrived and were in place at the meeting. They consist of reference books, students' editions, and some volumes of current literature. A proposition to open the club rooms one evening in the week to gentlemen known to club members, was received with favor. The next meeting of the club will be May 19. Madame LePrince will talk on the "Art of the Isthmus," with an exhibit of pictures.

The Pedro Miguel clubs will hold a bazar in the club rooms on Saturday, May 15, to secure funds for a piano. A special train

will leave Corozal at 7.30 p. m., stopping at Miraflores, and at Paraiso at 7.45 p. m., returning after the bazar.

PERSONAL.

Maj. C. C. McCulloch, Jr., accompanied by Mrs. McCulloch and two children, sailed for the States on Tuesday, May 11, on the *Abangarez* of the United Fruit Company's Line. Major McCulloch has been relieved of his duties with the Isthmian Canal Commission and is under orders for the Philippines.

Maj. Charles F. Mason, Medical Corps, U. S. Army, accompanied by his family arrived on the Isthmus on the *Colon* on May 9. He will shortly assume the duty of General Inspector in the Department of Sanitation.

Mr. A. C. Parke, late of San Jose de Guatemala, has arrived on the Isthmus and will succeed Mr. J. V. C. Comfort as local agent for the Pacific Mail Steamship Company, the transfer to take effect on the 20th instant. Mr. Parke was formerly the Company's agent at the Guatemalan port.

Obituary.

The death of H. H. Higgins, an American, employed in the Department of Construction and Engineering at Pedro Miguel, occurred at Ancon Hospital, April 30. He was 57 years of age, unmarried and had been on the Isthmus two years.

Robert Miller, an American, employed in the Department of Construction and Engineering was accidentally killed on the morning of May 5, by falling from the upper veranda of House 51 at Empire. He was about 28 years of age, unmarried and had been on the Isthmus four years. His father resides at Watertown, Wis.

Decoration Day Exercises.

The Gen. Henry W. Lawton Garrison, No. 40, Regular Army and Navy Union of the United States of America, will observe Decoration Day by a commemorative service at Mount Hope cemetery. All secret organizations and schools in the Canal Zone are invited to attend in a body, and assist in decorating the graves of soldiers and sailors. All communications in regard to arrangements and formation of parade should be addressed to the commander, Mr. G. C. Bradford, Gorgona, C. Z.

Steam Shovel and Dredge Men.

Local No. 19, I. B. of S. S. and D. M. will hold a special meeting on Sunday, May 16, at 2 p. m. in the I. C. C. lodge hall, Empire. All members are requested to attend.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES, ANCON, C. Z., May 12, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- | | |
|--------------------------|-----------------------------|
| Barker, Cecil (2d class) | Phillips, Joseph (2d class) |
| Brown, Mrs. Arthur | Quinn, Ed |
| Clayton, William E. | Reed, Lyman M. |
| Curtis, A. S. | Ronark, F. M. |
| Evans, W. A., Jr. | Shipper, Arthur B. |
| Fields, Percy | Stumpf, George |
| Greer, Mrs. E. | Urch, Miss Lillian |
| Herbert, S. (pkg) | Verder, Samuel P. (2) |
| Hynes, M. J. | Walker, Mrs. E. C. |
| James, E. | Webber, Mike |
| Jernsum, A., Jr. | Weiss, A. E. |
| Jones, Frank | Weller, Capt. A.olph |
| Kenny, Mrs. Marie | Whitney, Chas. A. |
| Kimmel, Fred, Jos. | Whyde, H. E. |
| Lindberg, A. W. | Wickham, Fred W. |
| Neufer, Louis | Willfond, Chas. T. |
| Notton, F. G. | Woodman, Charles L. |

COMMISSION CLUBHOUSES

Activities of the Young Men's Christian Association.

A contract has been awarded for reading room publications for the coming year. Each clubhouse will receive regularly 100 publications, as follows: Popular monthlies, 34; technical publications, 18; popular weeklies, 14; daily newspapers, 13; religious periodicals, 10; miscellaneons, 11. The reading rooms in each clubhouse have recently been furnished with a complete equipment of magazine binders. When the periodicals have served their purpose in the reading rooms, many of the technical ones are sold for clipping and file purposes, and others are distributed in the hospitals and penitentiary.

The Arizona Vandeville Troupe will give entertainments in the clubhouses as follows: Empire, May 11; Culebra, May 14, and Gorgona, May 19. The program includes Unthan, the armle-s wonder; Missle Elbera, juggling and music; Will Percival, clog dancing; the Holbrooks variety music; Rice and Kent, an act "Bump the Bumpo"; the two Remomas, expert jugglers; the Shadow Fantomine, humorous act.

CULEBRA.

Moving picture entertainments have attracted a good sized audience the past two Monday nights. Piano music between films was furnished by Master Arthur Howard.

Through the courtesy of Captain Snowden of the U. S. S. *Mayflower*, the ship's band of 16 pieces entertained the people of Culebra by a moonlight concert last Friday night.

The track team is in training for the dual meet with Cristobal V. M. C. A., to be held at Cristobal on May 21. Seats for the entertainment by the Arizona Vandeville Troupe, Friday, May 14, will be reserved and will be for sale at 11 a. m., on Thursday the 13th. No advance in price over regular admission.

The Isthmian Instrumental Orchestra will give a concert in the Y. M. C. A. hall on Monday night, May 17. The Culebra public is invited and no admission will be charged.

EMPIRE.

Mr. Archie O. Ludwig of Newark, Ohio, arrived on the *Colon*, May 9, and has assumed his duties as assistant secretary of the Y. M. C. A. Mr. Ludwig will give special attention to the physical activities of the association.

Interest in indoor baseball has increased and regular practice is had on Friday night.

GORGONA.

The following events are scheduled for the balance of the month of May:

May 10, concert by the Isthmian Instrumental Club; May 15, indoor baseball game, Gorgona against Empire; May 19, entertainment by the Arizona Vandeville Troupe; May 22, dance under the auspices of the Rebekah Lodge, No. 1 I. O. O. F.; May 29, entertainment by the Edwin R. Weeks Company, from the States; May 30, memorial service; May 31, game room smoker.

CRISTOBAL.

On Sunday, May 2, a concert was given by the band from the U. S. S. *Mayflower*, and on the evening of May 5 this band united with the I. C. C. band in a joint concert.

The second regular chess tournament was begun Saturday evening, May 8, with sixteen players.

A silver medal is offered as a prize for the highest score in two consecutive games of ten pins during the month of May.

Saturday night concluded the series of three indoor baseball games between the Y. M. C. A. and a picked team from U. S. S. *Mayflower*. The score of this final game was 26 to 19 in favor of the *Mayflower* team. The first game had been won by the Y. M. C. A. and the second by the *Mayflower*. On Friday night, May 7, the Y. M. C. A. defeated the *Mayflower* basketball team by a score of 26 to 6.

Concert by I. C. C. Band.

EMPIRE, C. Z.,

Sunday, May 16, 1909, at 6 p. m.

PROGRAM.

- | | |
|---|------------|
| 1 March— <i>Sixth Massachusetts</i> | Missud |
| 2 Selection— <i>Ermine</i> | Jacobowski |
| 3 Waltz— <i>Hearts Murmurs</i> | Rolie |
| 4 Overture— <i>Pique Dame</i> | Suppe |
| 5 Idyl— <i>Evening Breeze</i> | Langey |
| 6 Medley Selection— <i>Hits of 1909</i> | Remick |
| 7 Intermezzo— <i>Kissys</i> | Harris |
| 8 Polka— <i>Go' de' Robin</i> | Bonsquet |
| 9 Selecti n— <i>The Prima Donna</i> | Heibert |
| 10 March— <i>Chateau Gontier</i> | Fischlin |

CHAS. E. JENNINGS, Musical Director.

A concert will be given at Gorgona, Sunday, May 30.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION. MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for From Canal Prism and Outside Canal Prism. Includes monthly data from January to December and a Totals row.

Total to May 1, 1909—1,000,597 cubic yards.

*No work done outside of Canal Prism

COLON—DREDGES.

Table with columns for Months (1907, 1908, 1909) and sub-columns for From Canal Prism and Outside Canal Prism. Includes monthly data from January to December and a Totals row.

Total to May 1, 1909—12,690.17's cubic yards.

In this total are included 399,820 cubic yards excavated in 1905, and 1,027,648 cubic yards in 1906. There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for From Canal Prism and Outside Canal Prism. Includes monthly data from January to December and a Totals row.

Total to May 1, 1909—4,447,763 cubic yards.

In this total are included 26,628 cubic yards excavated from the Canal prism (October to December, 1906). In addition there were 397,693 cubic yards removed by dredges from Gatun locks in December, 1908, January, February, March and April, 1909.

CENTRAL DIVISION.

CULEBRA SECTION—STEAM SHOVELS.

Table with columns for Months (1904, 1905, 1906, 1907, 1908, 1909) and sub-columns for From Canal Prism and Outside Canal Prism. Includes monthly data from January to December and a Totals row.

Total to May 1, 1909—32,098,244 cubic yards.

CHAGRES SECTION—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and sub-columns for From Canal Prism and Outside Canal Prism. Includes monthly data from January to December and a Totals row.

Total to May 1, 1909—5,835,955 cubic yards.

*No work done outside Canal prism.

CANAL EXCAVATION TO DATE.

By French Companies..... C/c, 1/2's.

By Americans— Steam shovels..... 81,548,000

Dredges..... 45,245,607

Total..... 126,793,607

May 4 to December 31, 1904..... 243,472

January 1 to December 31, 1905..... 1,799,227

January 1 to December 31, 1906..... 4,943,497

January 1 to December 31, 1907..... 15,748,290

January 1 to December 31, 1908..... 37,070,887

January 1 to April 30, 1909..... 13,597,976

EXCAVATION IN TERRITORY OF PRESENT DIVISIONS

May 4, 1904, to April 30, 1909.

Amount excavated yet to be excavated.

Cubic yards—Total..... 4,113,846 (24,502,650

Alfaro..... 5,448,365 (13,574,661

Dry excavation..... 13,126,296 (20,319,101

Dredges..... 30,941,722 (45,850,573

Culcha Cut..... 7,010,477 (9,991,721

All other points..... 1,843,043 (2,087,537

Dry excavation..... 14,734,946 (21,109,265

Dredges..... 101,541,746 (101,541,746

Total..... 73,124,849

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Table with columns for Months (1908, 1909) and sub-columns for From Canal Prism and Outside Canal Prism. Includes monthly data from January to December and a Totals row.

Total to May 1, 1909—592,270 cubic yards.

MIRAFLORES LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Table with columns for Months (1908, 1909) and sub-columns for From Canal Prism and Outside Canal Prism. Includes monthly data from January to December and a Totals row.

Total to May 1, 1909—1,033,070 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at La Boca locks in January, 1907; 139,298 cubic yards at Camarillo Hill March to December, 1908, and 135,569 cubic yards by dredges at Miraflores locks in January, February, March and April, 1909.

BALBOA—DREDGES

Table with columns for Months (1905, 1906, 1907, 1908, 1909) and sub-columns for From Canal Prism and Outside Canal Prism. Includes monthly data from January to December and a Totals row.

Total to May 1, 1909—14,619,077 cubic yards.

There were also 172 cubic yards removed by steam shovels outside of the prism during October, 1908.

FIVE YEARS OF CANAL WORK.

Progress Made Under American Control, Since May 4, 1904.

I.

Construction and Engineering—Cost of Canal Construction.

The United States Government formally took possession of all canal properties on the Isthmus of Panama, which it had purchased from the French Canal Company, on May 4, 1904. At that time the only work in progress on the Canal was in Culebra Cut where about 600 West Indian laborers were engaged, and a few side excavators and dump trains were in service. The work was continued with this force and equipment, but active canal construction did not begin until 1906.

It was perceived by the American Commission at the outset that the work divided itself naturally into two stages: First, that of preparation; and second, that of actual construction. The first covered a period of about two and a half years. All energies were devoted during that time to making the Isthmus healthy by thorough sanitation; to accumulating and organizing a working force and providing for it houses and a food supply; to assembling a plant with which to do the work of construction; to enlarging the existing railway system so as to make it adequate, and to establishing a system of civil government for the Zone.

There have been three commissions in charge of Canal work. The first was in office from March 3, 1904, until April 3, 1905; the second was in office from April 3, 1905, till April 1, 1907, and the third, dating from April 1, 1907, is in office at the present time. There have been three Chief Engineers: John F. Wallace, who served from June 1, 1904, to June 28, 1905; John F. Stevens, July 1, 1905, to April 1, 1907, and Lieut.-Col. George W. Goethals, Corps of Engineers U. S. A., whose services began on April 1, 1907.

The question as to the type of canal to be constructed was decided in June, 1906, when an act was passed by Congress and approved by the President on June 29 of that year, decreeing the construction of a lock canal 85 feet above sea-level, with approaches at sea-level.

The plan of this Canal, with several changes which have since been ordered by the President and adopted by the Commission, provides:

A channel, 500 feet wide at sea level, will lead from deep water in Limon Bay to Gatun, a distance of 6.76 miles. At Gatun a dam 1½ miles long and 115 feet high will impound the waters of the Chagres River in a lake, the normal level of which will be 85 feet above mean sea-level. A flight of three twin locks, each 1,000 feet long, 110 feet wide, and allowing for 41½ feet of water over the sills, will raise vessels from sea-level to the lake, or lower them from the lake to the sea-level channel. From Gatun navigation will be through the lake in a channel from 1,000 feet to 500 feet wide for a distance of 23.59 miles, to Bas Obispo, where Culebra Cut begins. The channel through the Continental Divide, from Bas Obispo to Pedro Miguel, a distance of 8.11 miles, will be 300 feet wide, and the surface of the water will be at the lake level. At Pedro Miguel vessels will be lowered from

the 85-foot level to a small lake at 55 feet above sea-level, in twin locks of one flight. A channel 500 feet wide and 0.97 miles long will lead to Miraflores locks, where the descent to sea-level will be made in twin locks of two flights. The locks at Pedro Miguel and Miraflores will be of the same dimensions as those at Gatun. From Miraflores to deep water in Panama Bay, a distance of 8.31 miles, the channel will be 500 feet wide, and 45 feet deep at mean tide.

The total excavation from May 4 to December 31, 1904, was only 243,472 cubic yards; in the year 1905 it was only 1,799,227 cubic yards, and during 1906 it was only 4,948,497 cubic yards. There had been, therefore, excavated previous to January 1, 1907, only 7,000,000 cubic yards. Of the grand total of excavation to date, over 73,000,000 cubic yards, all except 7,000,000 cubic yards has been accomplished since January 1, 1907—two years and five months.

A total of 73,124,849 cubic yards had been taken out up to May 1, 1909, and it is estimated that there yet remain to be excavated 101,541,746 cubic yards. In the month of March, 1909, more material was excavated than during the first two years of work under American occupation. The rate at which the remainder will be done should be judged by the average for the year 1908, rather than by the average for the five years. Conditions as to equipment, labor, and experience will remain practically the same, until the completion of the Canal, as they were in 1908, but it will be more difficult to excavate in the lower levels of Culebra Cut, and for the dredges to take out the rock near the bottom of the Atlantic and Pacific entrances. Details of the excavation by steam shovels and dredges, done and to be done, will be found in the "Record of Excavation Since American Occupation," published elsewhere in this issue of THE CANAL RECORD.

Culebra Cut and Lake Region.

All the construction work on the lake level is in the territory of the Central Division. It divides itself naturally into two parts—the Lake Region, and Culebra Cut. In what is referred to as the Lake Region, extending from Gatun to the beginning of Culebra Cut at Bas Obispo, a distance of 23 miles along the line of the Canal, the work consists of making a channel from 500 feet to 1,000 feet wide. The Canal follows in general the course of the Chagres River through this region and the work is chiefly in making small cuts through the peninsulas formed by the winding of the river, and cutting down small hills that rise above the 40-foot elevation in the course of the channel. Work was begun in August, 1907, and until December, 1908, was confined to steam shovel excavation at San Pablo, Caimito, and between Gorgona and Matachin. Since December, 1908, three shovels have been working between San Pablo and Tabernilla, and 69,722 cubic yards of hand excavation have been made near Bohio. The total amount of material taken from the prism in the Lake Region up to May 1, 1909, was 5,906,754 cubic yards and there remained to be removed 5,333,518 cubic yards. Of the amount yet to be excavated, about 4,500,000 cubic yards will prob-

ably be dredged. In addition to the excavation the work in the Lake Region includes clearing trees and vegetation from the channel, and the clearing of an anchorage basin immediately south of Gatun Dam. In the last three months about 500 acres have been cleared.

At a point 31 miles from deep water in Limon Bay along the line of the Canal, the channel leaves the course of the Chagres River and runs through the hills of the Continental Divide. A cut nine miles long, 300 feet wide at bottom, with the bottom at 40 feet above sea-level, is being made through these hills. Work was begun on this project by the French in 1881. The new French company was at work there on May 4, 1904, and since that date the excavation has not ceased. The material excavated each year from May 4, 1904, has been as follows:

	Cubic Yards.
1904 from May 4	243,472
1905	1,799,227
1906	4,948,497
1907	9,177,130
1908	13,912,453
1909 to May 1	5,147,944
Total	32,098,244

Work in Culebra Cut was continued from May 4, 1904, with the equipment taken over from the French. Steam shovels had been used by the French, but they had been abandoned, and the machine most depended upon was the side excavator. The first modern steam shovel arrived in November, 1904, and it was followed by others. In June, 1905, the last of the excavators was taken from the work. Improved equipment and a thorough system of hauling spoil from the Cut and handling it on the dumps are largely responsible for the unexpected progress made on this part of the work. In January, 1907, the efficiency of the new system first became marked. From that time there was a general increase in the monthly excavation until the million-yard point was reached in December, 1907. With the exception of May, 1908, there has been no month since 1907 when the excavation from Culebra Cut has not been at least one million cubic yards. The highest record was made in March of this year when over a million and a half cubic yards were excavated, a greater amount than was taken out of the Cut in the first twenty-two months of American occupation. The average monthly excavation in 1908, was 1,159,371 cubic yards. The monthly excavation was not affected appreciably by the heavy rains of eight months of the year, mainly because a drainage system had been perfected, and partly because experience made it possible to dispose of the spoil almost as rapidly as in dry weather.

A diagram on the next page shows the amount of work done in the Lake Region and Culebra Cut, the territory of the Central Division up to May 1, 1909, and the amount yet to be done.

Locks and Dams.

The plan of Canal as decreed in June, 1906, and outlined above, included dams and locks near the Atlantic and Pacific entrances. On the Atlantic side the dam is at Gatun, nearly 8 miles from deep water in Limon Bay, and the locks are located in a hill, against which the east end of the dam abuts. Work on the dam was begun in 1907. Rock toes or walls between which the material for the dam will be pumped have been completed

over half the width of the valley. On December 24, 1908, a dredge began pumping clayey material into the dam. Over 20,000,000 cubic yards will be required to complete the fill. The dam will be 1½ miles long, 115 feet high, and 1,200 feet wide at bottom between the toes. A spillway to control the amount of water in the lake is in process of construction near the center of the dam. Most of the excavation in the spillway is completed and concrete is being laid.

Building the locks at Gatun involves an excavation of 5,139,304 cubic yards, and the laying of 2,095,000 cubic yards of concrete.

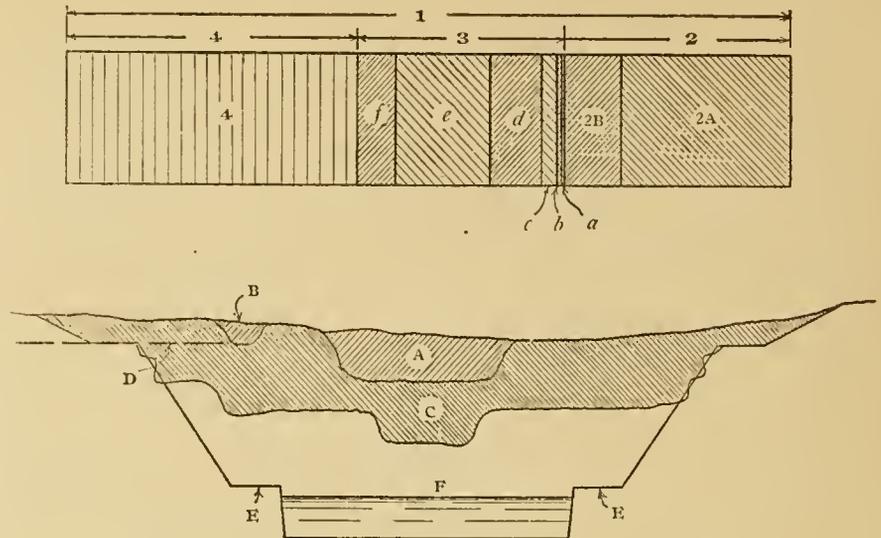
There will be three twin locks, each 1,000 feet long, 110 feet wide, and with 41½ feet of water over the sills. Excavation for the locks was begun in October, 1906. In the chamber of the upper or south locks it is almost completed, while it is in progress in the middle and lower or north chambers. Of the total to be excavated 3,435,932 cubic yards had been taken out up to May 1, 1909.

Sand from pits at Nombre de Dios, on the Caribbean Sea, about 20 miles east of Colon, and rock quarried and crushed at Porto Bello, near Nombre de Dios, are being delivered at Gatun, where the plant for handling materials, mixing, and laying concrete is nearing completion. The work of laying concrete will probably begin early in August.

The original plan for the locks and dams on the Pacific side was to have one lock located at Pedro Miguel, about 11 miles from deep water in Panama Bay, and two near B. Boca (La Boca), about six miles from deep water in the bay. The location of the two southern locks was changed in December, 1907, to Miraflores, 8.31 miles from deep water, and the work is in progress at that point and at Pedro Miguel. The water held back at Gatun, on the northern or Atlantic side, will fill Gatun Lake and Culebra Cut, and will be kept from wasting down the Pacific slope by the dams and locks at Pedro Miguel, where Culebra Cut ends. At this point ships south bound will be dropped in twin locks of one flight from the 85-foot level of Gatun Lake and Culebra Cut to a small lake 55 feet above mean sea-level, and at Miraflores they will complete the descent to sea-level in twin locks of two flights.

At Pedro Miguel the lock chamber is being made in a narrow valley and dams extend from the north approach of the locks to the nearby hills. The east dam will be a concrete core wall about 550 feet long, four feet wide on top and ten feet at base, founded on rock, with only a small amount of earth fill. This dam will contain 3,600 cubic yards of concrete, and no work has yet been done on it. The west dam will be an earth fill of selected, packed material, with a short concrete core wall connecting it to the lock wall at one end and to the rock in the hill at the other. It requires a fill of about 947,000 cubic yards, and on May 1 contained 142,000 cubic yards. Excavation for the lock chamber was begun in June, 1908. It involves the removal of about 1,288,000 cubic yards, and a back fill of about 868,000 cubic yards will be made with the material excavated from the lock chambers. On May 1 there had been excavated about 588,000 cubic yards. About 1,100,000 cubic yards of concrete will be placed in the locks. It is expected that the laying of concrete will be begun at Pedro Miguel in August, the exact date depending upon the completion of the

YARDAGE IN CENTRAL DIVISION AND CROSS SECTION OF CULEBRA CUT



GRAPHICAL STATEMENT OF YARDAGE.

1. Total of material to be excavated, 129,346,490 cubic yards.	a. 1904..... 243,472 cubic yards.
2. Excavated by the French - 40,361,000 cubic yards.	b. 1905..... 914,254 cubic yards.
2A. By old French Company (1881-1889), 40,361,000 cubic yards.	c. 1906..... 2,673,948 cubic yards.
2B. By new French Company (1895-1904) 10,000,000 cubic yards.	d. 1907..... 9,162,341 cubic yards.
3. Excavated by Americans (May 4, 1904-April 30, 1909), 36,794,067 cubic yards.	e. 1908..... 17,128,043 cubic yards.
	f. 1909 (4 months)..... 6,672,009 cubic yards.
	4. Remaining to be excavated, 52,191,423 cubic yards.

TYPICAL CROSS SECTION OF CULEBRA CUT.

- A. Excavated by French.
- B. French diversion excavation.
- C. Excavated by Americans
- D. Rock line.
- E. 45-foot berm at elevation 95 feet along mean sea-level.
- F. Surface of water at elevation 85 feet above mean sea-level.

power plant at Miraflores and the erection of the cranes which will handle the materials and concrete.

At Miraflores two dams are to be constructed, one extending from the northeast end of the locks to an adjacent hill; the other, now under construction, being a fill which will close the mouth of the Cocli River, extends up the west side of the locks and holds the water in the small lake which will be formed between Pedro Miguel and Miraflores with surface at 55 feet above mean sea-level.

The east dam will be of concrete, with regulating gates, and will act as a spillway for surplus water in the lake. The west dam is an earth fill of selected, packed material, similar to that at Pedro Miguel. At its south end, it will be connected to rock in Cocli Hill by a short concrete core wall, and at its north end, to the north end of the lock walls, by a similar concrete core wall. This dam has already been thrown across the Cocli River and has begun to form the Miraflores lake. The elevation of the lake on May 1 was about 18.5 feet above mean sea-level, a rise of about ten feet. When it has risen to elevation 35 it will flow, for the present, through a diversion to the Rio Grande, a little distance above the north end of the Miraflores locks.

The construction of these dams will involve the excavation of over 220,000 cubic yards and a fill of over 1,000,000 cubic yards in the west dam, and the placing of 63,500 cubic yards of concrete in the east dam. The fill is made with material excavated from the lock chambers. A back fill of over 2,000,000 cubic yards for the locks is also being made of material excavated from the lock chambers. The estimated amount of

excavation from the lock chambers and approaches is 4,200,000 cubic yards, of which about one-third is rock. The work at Miraflores was begun in January, 1908, and 1,371,000 cubic yards of material have been excavated, and 266,000 cubic yards placed in the west dam. Work on the east dam has not yet begun, and the laying of concrete in the locks will not be started until the Pedro Miguel Locks have been completed.

Between the Pedro Miguel and the Miraflores Locks, the channel is to be 500 feet wide, and will involve about 1,000,000 cubic yards of excavation, none of which has yet been made.

Dredging.

Most of the dredging is in the entrances to the Canal at sea-level on the Atlantic and Pacific sides. At the Atlantic entrance the channel is to be 500 feet wide and 41 feet deep. It begins at deep water in Limon Bay and extends to the Gatun Locks, a distance of 6.76 miles. In the bay a sea-going 20-inch suction dredge is doing most of the work. The remainder of the dredging comprises a section from the shore line to Mindi Hills, through which a steam shovel cut is being made, and a section from Mindi Hills to Gatun Locks. In the first section the material consists of rock and earth, and it is shattered by dynamite before the ladder and dipper dredges are set to work on it. The material in the second section consists largely of earth, which will be taken out by 20-inch pipe-line suction dredges. It is estimated that the total amount of material to be dredged between deep water in Limon Bay and Gatun Locks is about 22,000,000 cubic yards. Of this amount, 12,690,178 cubic yards have been excavated, and the average for the past year has been 556,594 cubic yards a month. One or more of the dredges of

the Atlantic Division are frequently diverted from their work in the channel to auxiliary work, and the average for the year is an indication of their capacity only when it is understood that the dredges are not constantly at work.

The dredging equipment of the Atlantic Division consists of one 20-inch sea-going suction dredge, three 20-inch pipe-line suction dredges, two modern dipper dredges, two ladder dredges left by the French and rebuilt, and a machine shop. Another ladder dredge left by the French will be put in service during the summer. One of the pipe-line suction dredges is excavating in the chamber for the lower locks at Gatun, and one is pumping material into the dam.

At the Pacific entrance the channel to be dredged is 500 feet wide and extends from deep water in Panama Bay to Miraflores locks, a distance of 8.31 miles. For three miles of this distance it follows the channel dug by the French, and the work consists of deepening and widening this channel. Up to the present time the material handled has been earth and small rock, but a layer of rock must be taken off the bottom before the required depth of 45 feet below mean sea-level is reached. It is estimated that over 30,000,000 cubic yards of excavation must be done before the channel is completed, and of this amount there have been taken out 12,400,000 cubic yards.

The dredging equipment of the Pacific Division consists of one sea-going 20-inch suction dredge, two sea-going ladder dredges (Scotch type) left by the French and rebuilt, one ladder dredge (Belgian type) left by the French and rebuilt, one modern dipper dredge, and one 20-inch pipe-line suction dredge. The last named dredge is excavating in the Miraflores lock entrance. An old French ladder dredge now at the shop at Balboa will be in commission in a few days. A machine shop is also part of the dredging equipment.

Cost of Canal Construction.

The total classified expenditures from appropriations for Canal construction up to February 1, 1909, amounted to \$93,915,657.76. These expenditures were made under the following heads:

Department of Civil Administration	\$2,618,732.63
Department of Sanitation	8,051,962.64
Department of Construction and Engineering	60,122,448.05
Buildings for Department of Construction and Engineering, including quarters	8,787,502.94
Buildings for Department of Civil Administration	347,873.97
Buildings for Department of Sanitation	1,254,192.84
Buildings for military protection	64,000.00
Construction of electric light plants	248,136.74
Purchase of steamers Panama and Colon	1,300,000.00
Double tracking Panama railroad	1,095,274.90
Relocation of Panama railroad	2,107,265.18
Docks and wharves, leased to Panama Railroad Company	577,931.84
Municipal improvements for benefit of cities of Panama and Colon, to be repaid to United States	2,272,673.75
Municipal improvements for benefit of Canal Zone settlements, paid from Congressional appropriations	4,007,497.33
Land purchased and appropriated	272,865.43
Buildings, tools and machinery, Cristobal shops, leased to Panama Railroad Company	174,000.00
Locomotives, cars, and equipment, loaned to and used by the Panama railroad	610,000.00
Total	\$93,915,657.76

Expenditures for construction and engineering were made under the heads of "Work," "Plant," and "General Administration." "Work" includes all direct charges, and all indirect charges not included under "General Administration." "Plant"

represents the total plant purchased to February 1, 1909. "General Administration" includes the expense of the office of the Chief Engineer, the Disbursing Officer, the Examiner of Accounts, the Secretary of the Commission, the Chief Quartermaster's Department, the Meteorological and River Hydraulics service, and the Y. M. C. A. work in the Commission clubhouses; as also the cost of general surveys, and of transportation of employees of the Commission by the Panama Railroad Company, and expenses of telephone and telegraph service. The expenditures under these three heads were:

	May 1, 1904, to Feb 1, 1909.
Work	\$34,832,909.55
Plant	19,472,814.64
General Administration	5,816,723.86
Total	\$60,122,448.05

The total expenditures and unit costs of construction and engineering work for the period May 4, 1904, to February 1, 1909, were as follows:

	Expenditures.	Cubic yards	Unit cost
Dry excavation:			
Work	\$30,750,376.02	38,927,664	0.79
Plant	12,439,811.99		0.32
Gen'l Administration	4,993,295.71		0.13
Total	\$48,183,483.72	38,927,664	1.24
Wet excavation:			
Work	2,895,126.90	23,824,260	0.12
Plant	5,161,226.58		0.21
Gen'l Administration	502,166.24		0.02
Total	\$8,461,479.72	23,824,260	0.35
Total wet and dry:			
Work	33,645,502.92	62,751,924	0.53
Plant	17,501,038.57		0.28
Gen'l Administration	5,495,421.95		0.09
Total	\$56,644,963.44	62,751,924	0.90
Construction other than excavation:			
Work	1,987,406.63		
Plant	1,968,776.07		
Gen'l Administration	321,301.91		
Total	\$3,477,484.61		
Grand total	\$60,122,448.05		

Railroads.

The railroad system built up on the Isthmus consists of the Panama railroad and the railroads of the Isthmian Canal Commission. In 1904 the Panama railroad was a single track line 47.65 miles long, from Colon to Panama, with 26.07 miles of siding. The equipment was old and much of it was not worth repairing. It included 24 road and 11 switching locomotives, 24 passenger cars, 908 freight cars, and about 50 cars for miscellaneous service. A machine shop capable of keeping the equipment in repair was located at Colon. New and heavy rails have been laid the whole length of the road; 50.11 miles of main track and 35.5 miles of double track are now operated, and the total trackage, including sidings, is about 160 miles. Over the 86.5 miles of main track 574 trains are operated daily. New equipment has been purchased, and there are now in service:

Locomotives:		Coaches and Cars:	
Switching	10	New first class	9
4-wheel Baldwin	5	Old first class	7
8-wheel Baldwin	6	New second class	10
6-wheel Hinckley	2	Old second class	12
8-wheel Hinckley	1	New combination	
6-wheel Rogers	10	mail and baggage	4
8-wheel Cooke	12	Old baggage	4
8-wheel Schenck	24	Hospital	2
10-wheel American Locomotive	1	Special	3
Mogul oil burning	12	Ply coach	1
		Freight cars	883
		Miscellaneous	280
Total	82	Total	1,215

The work of building a new railroad to take the place of the present line, which

must be abandoned before the Canal is completed, is more than half finished.

The railroad equipment turned over to the United States by the New Panama Canal Company included 176.2 miles of track, 212 Belgian locomotives, 34 American locomotives, 14 Decauville locomotives, and a quantity of Decauville track. Practically all of the track has been discarded as unsuited to the heavy traffic, and although some of the rolling stock is kept in service, the bulk of the work is done with new equipment. A statement under the head of "Equipment" gives the amount of rolling stock in use on May 1, 1909.

Excavation Equipment.

The results obtained in the past five years would have been impossible without modern excavation equipment. A comparison of the equipment in use at the time of American occupation and at the present time is appended. It includes only the equipment used in dry excavation and does not include the dredges, which are mentioned under the head of "Dredging," or the auxiliary equipment at the Porto Bello quarries, and at Gatun, Pedro Miguel, and Miraflores.

	1904.	1909. May 1.
Locomotives:		
French	10	129
American		164
Cranes:		
French	2	6
American		30
Made on the Isthmus		1
Excavators:		
French	3	
Steam shovels:		
45-ton Bucyrus		10
70-ton Bucyrus	1	35
95-ton Bucyrus	1	32
Model-0 Marion		1
Model-60 Marion		7
Model-91 Marion		15
Spreaders:		
Jordan		5
Mann-McCann		19
Unloaders:		
25-ton pull		4
60-ton pull		26
Pile drivers:		
Made on the Isthmus		15
American		2
Track shifters:		
Made on the Isthmus		10
Plows, unloading:		
Right hand		27
Left hand		13
Center		6
Cars:		
6-meter dump, French	248	656
50-ton steel flats		500
40-ton wooden flats		1,778
40-ton coal		15
12-yard steel dump		800
25-yard steel dump		300
4-yard steel dump		35
King-Lawson dump		1
Ingoldsby dump		12
Goodwin dump		12
Work (old French equipment)	60	6
Motor		4
Motor velocipede		1

The maintenance of this equipment is part of the duty of the Division of Motive Power and Machinery, and for this purpose two large mechanical shops have been built up, one at Gorgona and one at Empire, each employing over one thousand men. In addition to these large shops, field repair shops are maintained by each of the three construction divisions.

Steamship arrivals and departures at the port of Ancon in the week ending May 7, 1909, were as follows: Arrivals--May 2, *Limari*, from South ports; May 3, *Ella*, from North ports, lumber and machinery for the I. C. C.; May 4, *Tuboga*, from Petreuil; May 3, *Cambrian and Flora* from North, British Navy; May 3, *San Juan* from San Francisco; May 5, *Ecuador*, from Guayaquil. Departures--May 2, *Arica*, to Guayaquil; May 3, *Acapulco*, to San Francisco; May 4, *Palena*, to South ports; May 6, *Tuboga*, to intermediate ports.



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Address all Communications

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Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for the month of April is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed description of the progress of Canal work in all departments and divisions.

Ancon Quarry Operations.

Work is in progress on the new Ancon quarry, which is to furnish crushed rock for the Pacific Division in the construction of the Pedro Miguel and Miraflores Locks. The site is on the west side of Ancon Hill, 400 yards north of the old Quarantine Detention Station (Folie Dingler), and about 75 feet above the loading track. The necessary hand excavation is now being made to accommodate the machinery and auxiliary equipment. Five rock crushers, one principal and four secondary, will be housed in and further protected from possible slides down the abrupt side of the hill, by a heavy concrete retaining wall, 25 feet high and 20 feet wide at the base.

The main crusher is one of the heaviest types manufactured, and has a maximum capacity of 3,000 cubic yards daily, and a normal working capacity of 2,500 cubic yards daily, equivalent to 250 car loads. It is capable of taking care of rock ordinarily handled by steam shovels, and will break it into pieces of a maximum size, five inches in diameter. The material as it comes from this machine will pass through four secondary crushers, which will crush the rock to usable size. It will then fall into a belt conveyor and be carried into a series of 12 bins built over the loading track at the foot of the hill. From this point it will be transported to the Canal works.

Two steam shovels are at work on the hillside excavating three facings, or levels, upon which will be constructed a system of tracks

and switch backs reaching all parts of the quarry. The main track will pass above the crusher plant, enabling trains to dump into bins directly underneath. The crushers will be operated by electric power furnished by the Miraflores Locks power plant. It is estimated that 2,000,000 cubic yards of crushed rock will be required by the Pacific Division, equivalent to 200,000 car loads.

New Reservoir Completed.

The new concrete reservoir located on a terrace of Ancon Hill, adjacent to the 50,000-gallon high pressure water tank, was completed on May 14. It is designed as a water supply for Ancon, and can be used as an emergency supply for Panama and Balboa. It has an elevation of about 296 feet above sea-level. Work was begun in October, 1908, and in clearing the site 10,000 cubic yards of earth were removed. The reservoir is of reinforced concrete, and involved the use of 1,200 cubic yards of material. It is 125 feet long, 102 feet wide, and 13 feet deep, and is divided into two compartments of equal size each having a capacity of 500,000 gallons. One compartment is to serve as reserve while the other is undergoing repairs or is being cleaned out. The floor is seven inches thick and rests upon a solid rock foundation. The outside walls are 12 inches wide at the base, and 8 inches at the top, and the division wall 24 inches wide at the base and 12 inches at the top. The floor has a slight slant to facilitate draining. A gate house, also of concrete, 25 feet long, 13 feet wide, and 11 feet high at the eaves, juts out from the eastern wall.

Water is pumped into the reservoir through an 8-inch pipe, which also serves as the effluent. This pipe branches at the gate house, one branch going to each compartment. The clean-out pipes are 6 inches in diameter and so arranged that the reservoir is self draining.

Work Advancing at Gatun.

Steady progress is being made in all divisions of the work at Gatun. It is expected that excavation in the chamber of the upper or north locks will be completed by July 1, 1909, and that the ground will be ready for the concrete workers soon afterwards. In the middle chamber, the shovels still have ten feet to go, and in the chamber of the lower or south locks, there are approximately 1,000,000 cubic yards of material yet to be removed.

At the power plant, the concrete work is practically finished; three turbines have been set up, and installation of the boiler equipment has been begun. The unloading cableway has been completed and is being tried out. The cement shed is well under way. The building is 490 feet long, and 110 feet wide, inside measurement, and will have a capacity of 100,000 barrels. The

eave on the west, or water side projects, 35 feet affording shelter for the barges while discharging their loads. Ten cranes are to be installed to facilitate the rapid handling of material. Work at the mixing plant is also well advanced, the eight cube mixers having been put in place.

Extension of Telephone Service.

Telephone communication has been established with the Quarantine Station on Culebra Island by means of an old cable laid several years ago to Naos Island, by the Central and South American Cable Company. An agreement entered into between the Panama Railroad Company and the cable company on March 31, 1908, provides for the free use of this cable by the railroad company, but stipulates that the latter shall bear the maintenance expense. It is further agreed that in case the old cable fails to give satisfactory service, the cable company will provide additional facilities. When the cable ship *Relief* was here recently, the shore end of the cable at Naos Island was transferred to Culebra Island, and a few days ago the wire connection was made and the telephone installed in the Quarantine Station. The line is now working satisfactorily.

The Ancon police station is now connected with the station in Las Sabanas, through an arrangement made with the local telephone company at Panama.

April Record of Track Shifters.

The six track shifting machines in the Central Division moved a total of 656,946 feet, or 124.42 miles of track during April. In the Tabernilla District track shifter No. 5 moved 217,800 feet, or 41.25 miles, and No. 6 moved 133,613 feet, or 25.31 miles, a total of 351,413 feet, or 66.55 miles for the district. In the Bas Obispo District track shifter No. 7 moved 117,742 feet, or 22.30 miles, and No. 1 moved 54,095 feet or 10.25 miles, a total of 171,837 feet, or 32.55 miles for the district. In the Pedro Miguel District track shifter No. 8 moved 51,868 feet, or 9.82 miles, and No. 2 moved 81,828 feet, or 15.50 miles, a total of 133,696 feet, or 25.32 miles for the district.

Lidgerwood Unloaders in April.

The eleven Lidgerwood unloaders in the Central Division, during the month of April, unloaded 2,979 trains, aggregating 52,167 cars. Of this number 1,455 trains, composed of 24,735 cars, were unloaded by the five unloaders at Tabernilla; 621 trains, composed of 11,178 cars, were unloaded by three unloaders at the Miraflores dumps, and 903 trains, composed of 16,254 cars, were unloaded by three unloaders at Balboa. As all the cars were of 20-yard capacity, the material unloaded represented about 1,043,340 cubic yards.

EMIGRATION OF LABORERS.

Decree of President Obaldia of the Republic of Panama Regulating It.

DECREE NUMBER 25, OF 1909. (12TH MAY).

By which the contracting of laborers for other countries within the territory of the Republic of Panama is regulated.

The President of the Republic considering:

1. That the Government is reliably informed that some persons constituting themselves employment agents, or labor contractors, especially in the cities of Panama and Colon, are inducing the laborers in the employ of the Isthmian Canal Commission to accept work in foreign countries, holding out to them for that purpose more or less flattering promises;

2. That such practice has the result that large numbers of laborers, listening to the promises of those who hire or contract them, emigrate from this country, thereby violating their contracts and obligations with the Isthmian Canal Commission constructing the Canal;

3. That the interests and aspirations of the Republic of Panama and the United States are closely allied with the works of excavation and construction of the Canal, a reason why the Governments of the Republic and the Zone in their character of immediate agents of their countries should mutually afford to each other such energetic and efficacious protection as will tend to preserve the uniformity and discipline of the Canal construction work at the theater of operations;

4. That the Government of the Republic of Panama considers it of vital importance for the future that the better element of laborers coming to the Isthmus, instead of leaving the country during the course of the Canal work, or at its conclusion—on account of lack of work—be stimulated to take up—if such be their wish—their residence in the Isthmian territory—a thing which may be considered as a substantial basis for the immigration of a desirable class and of little expense to the National treasury; and

5. That the Executive deems it urgent that immediate measures be adopted to stop the practice which motivates this decree in order to protect the interests of the two countries pledged to construct the Isthmian Canal;

DECREES.

Art. 1. The contracting of laborers within the territory of the Republic and without previously obtained authorization from the Government, is hereby prohibited.

Art. 2. The authorization or permit referred to in the preceding article will be granted by the Government, provided the applicant states precisely the number of men he wishes to engage; that the men or laborers contracted be not in the employ of the Government of the Canal Zone or indebted to or under contract with the Canal Commission or any other enterprises located in this country; and that the applicant furnish a bond of not less than \$500 (gold) and in proportion to the number of laborers he engages, for his faithful compliance with each and all of the provisions of this decree. This bond will be released as soon as the Government declares that the aforesaid conditions have been complied with, or it shall be paid into the National Treasury in the character of a fine imposed upon

the offender if a violation is declared to have been committed by the agent of the Executive, without prejudice to other punishment or fines being imposed upon the offender, in accordance with the laws of the Republic, for his violation of other laws or regulations now in force.

The Government reserves to itself the right to, at its option, refuse any application for license to contract laborers as spoken of by Article 1.

Art. 3. The Governors of the respective provinces are required to give strict compliance to the provisions of this Decree and to punish all violations thereof correspondingly.

Be it communicated, published and brought before the National Assembly in its coming sessions.

Given at Panama, May 12, 1909.

J. D. DE OBALDIA.

The Secretary of Fomento,

J. E. LEFEVRE.

EXECUTIVE ORDER.

Amendment to Order of March 13, 1907.

By authority of the President of the United States:

It is ordered that the Executive Order of March 13, 1907, effective April 15, dividing the Canal Zone into four administrative districts, be amended so that the last sentence of the 4th paragraph will read: "Fines and fees shall be paid into the treasury of the Canal Zone."

J. M. DICKINSON, *Secretary of War.*

Culebra, Canal Zone, May 14, 1909.

Visit of the Secretary of War.

Secretary Dickinson, with Mrs. Dickinson and the party accompanying him, sailed for the States on the *Mayflower* on Saturday, May 15. During the period of eighteen days that the Secretary was on the Isthmus he visited all sections of the Canal work and made a thorough study, both of the work itself and of the several departments of Canal and Zone administration. It is his intention to visit the Canal at least once a year so long as he remains in office.

Police Report for April.

The April report of the Chief of the Division of Police and Prisons shows that 457 arrests, representing 44 nationalities, were made in the Canal Zone. This is a decrease of 104 from March, and is a smaller number than in any previous month for over a year. Of this number, 417 were men and 40 were women, the offenses with which they were charged aggregating 52. The arrests are apportioned as follows: Ancon, 22; Las Sabanas, 2; Balboa, 18; Corozal, 1; Miraflores, 14; Pedro Miguel, 6; Paraiso, 16; Culebra, 26; Empire, 69; Las Cascadas, 25; Bas Obispo, 6; Gorgona, 54; San Pablo, 5; Tabernilla, 15; Bohio, 22; Gatun, 68; Cristobal, 82, and Porto Bello, 6. The effective police force on April 30 was 160, and the payroll for the month, \$20,073.57.

There were 120 criminal cases tried in the Circuit Courts, 30 of which were dismissed, 64 continued, and 25 in which convictions were secured. Of the 25 convicted, 9 were sentenced to the penitentiary, including one for life; 1 received jail sentence and fine, 6 received jail sentence only, and 5 were fined. Four forfeited bail. Zone prisoners on March 31, numbered 120; received during

month, 9; discharged, 11; total, April 30, 118. Prison payrolls for the month amounted to \$1,547.50; cost of prisoners' subsistence, \$833.25, a total expense of \$2,380.75. The value of work performed by prisoners on Zone roads was \$1,731.50. Seventy-seven civil cases were tried during the month. The sum of \$199.29 was collected from executions.

There were four deaths by violence requiring action by the Coroner, one of these being due to a railroad accident, and one to drowning. Ten deportations were made during the month.

April Money Order Business.

During the month of April, 1909, the sixteen post-offices in the Canal Zone where a money order business is done, sold 15,403 money orders, aggregating \$438,580.99. This is a decrease in the number of orders from March of 681, but a decrease in value of only \$6,113.17. Of the April business, \$324,921.20 represented orders drawn payable in the United States and elsewhere; and \$113,659.79 in orders payable in the Canal Zone. The fees collected amounted to \$1,840.13. The orders paid and repaid amounted to \$153,405.38, including \$1,041 representing invalidated money orders, paid by the treasurer.

In the number of orders drawn, Cristobal was first, with 2,901; Empire second, with 1,727, and Ancon third, with 1,604. In the total value of orders, Cristobal was first, with \$80,139.82; Gorgona second, with \$46,796.28; Empire third, with \$44,580.14, and Ancon fourth, with \$35,651.50. Of the amount payable in the United States, Cristobal was first, with \$56,661.92; Empire second, with \$36,977.81, and Gorgona third, with \$32,505.52. In orders payable in the Canal Zone, Gorgona was first, with \$14,290.76; Cristobal second, with \$13,477.90, and Pedro Miguel third, with \$11,162.57. Of the amount paid and repaid, Cristobal was first, with \$20,069.41; Empire second, with \$17,433.04, and Gorgona third, with \$15,838.54.

The average of all orders issued was \$28.47, being 82 cents higher than for March. The highest average was at Corozal where 356 orders were issued, amounting to \$14,154.56, an average of \$39.76; the lowest at Matachin, where 292 orders were sold, aggregating \$6,430.90, an average of \$22.02.

Circular No. 122.

THE CANAL RECORD:

Will you please publish Chairman's Circular No. 122, as there has been a question raised as to just what that is, and there is no copy of it at hand. AN EMPLOYEE.

Gorgona, C. Z., May 5, 1909.

CULEBRA, C. Z., May 17, 1909.

CIRCULAR No. 122.

The transfer of commissary and hotel books issued by the Isthmian Canal Commission for the benefit of of its employes, or the sale or the disposal of same is strictly prohibited. Any violation of this order should be reported to the Chairman, and will be considered cause for the employe's discharge.

GEO. W. GOETHALS, *Chairman.*

Two Years for Larceny.

William Best, a Barbadian, living at Empire, was arrested by the Zone police on April 17, on complaint of Nathaniel Dunkley, a negro baker, charged with the larceny of \$10 United States currency from Dunkley's house. Defendant pleaded not guilty, but later changed his plea to guilty, and was sentenced to serve two years in the penitentiary at hard labor.

SOCIAL LIFE OF THE ZONE.

Meeting of Canal Zone Federation of Women's Clubs.

The meeting of the Canal Zone Federation of Women's Clubs was held at Cristobal on Saturday, May 15. The morning session was called to order by the president, Mrs. Lorin C. Collins, in the small assembly room of the Commission clubhouse, at 10.30. The meeting was devoted to the reports of club presidents, the standing and special committees, and other routine business.

Special features of the clubs are: Ancon, the development of the club library, philanthropic, and other department work; Pedro Miguel, library work and social meetings; Empire, study and department work. The Gorgona Club is trying to inaugurate the observance of Arbor Day in the public school, and also to promote social life in the community. The Gatun Club has increased its membership 50 per cent since the January convention. The class in manual training, a study course, and the establishment of a kindergarten have been given special attention during the past few months. Cristobal has completed its second study year, and continued its department work.

The botanical committee has received over one hundred specimens of leaves, ferns, grasses, and flowers from the members of the local committees. In response to the request of the forestry and waterways committees of the General Federation, a similar committee has been formed in the Zone Federation with Miss Marie G. LePrince as chairman. The work of this committee will be to investigate and report on the natural waterways of the Isthmus, and to keep up with the progress of Canal work. Instances have occurred when, by the intervention of club women, palms and coconut trees have been saved from injury by the natives and laborers, and it will be the duty of this committee to take general oversight of this and to recommend the saving of decorative and valuable trees where possible, within the limits of the Canal Zone.

The report of the philanthropy committee was supplemented with a recommendation to continue, as its special work, the care and interest in the patients in the leper colony at Palo Seco. A vote of thanks was tendered to Dr. H. R. Carter for his cooperation and assistance in the work of the committee during the past year.

The following resolution was presented by the Empire Woman's Club:

Resolved, That it is the sense of this club that we use our influence to secure seats at the depots for white women while waiting for the trains. To this end, we ask the cooperation of the Federation of Women's Clubs.

The resolution was endorsed by the Federation.

The Gatun Club presented the following:

WHEREAS, There are so many children in the Canal Zone too young to attend the primary schools, and yet need some profitable occupation; and

WHEREAS, In most of the Zone towns there are no playgrounds for such; be it

Resolved, By the Canal Zone Federation of Women's Clubs in session assembled May 15, 1909, to respectfully suggest to the Civil Administration of the Canal Zone the importance of conducting public kindergartens.

This resolution was adopted and referred to a committee consisting of the chairman of the educational departments of the various clubs, Mrs. J. L. Storla being appointed Federation chairman.

At noon the meeting adjourned for lunch

at the Commission hotel at Cristobal by special arrangement of the entertaining club.

The annual meeting took place at 2 o'clock in the clubhouse concert hall, which was decorated with flags, palms and cut flowers. The officers elected were: Mrs. Thomas E. Brown, Jr., president; Mrs. W. C. Gorgas, first vice-president; Mrs. William L. Sibert, second vice-president; Mrs. E. Lewis Baker, third vice-president; Mrs. Hiram J. Slifer, fourth vice-president; Miss J. Macklin Beattie, recording secretary; Mrs. Frederick Mears, corresponding secretary; Mrs. E. S. Calvit, treasurer; Mrs. Abbie B. Hillerman, General Federation secretary; Mrs. H. Gardner, auditor. The retiring president, Mrs. Lorin C. Collins, was elected second honorary president of the organization. Mrs. Geo. W. Goethals is first honorary president. At the close of the annual meeting the newly elected officers were presented.

A short musical program was given consisting of piano selections by Mrs. Frank Ulrich, a group of Danish songs by Mrs. Diaz, and two selections by the Cecilian chorus. During the informal reception refreshments were served.

Through the courtesy of the Panama railroad officials, transportation to Cristobal and return was given to the club women who attended the convention, a special car being placed at their disposal.

Red Cross District Organizations.

Of the fourteen districts into which the Canal Zone Branch of the American National Red Cross Society is divided, seven have perfected their local organizations, the official roster being as follows:

Ancon—Dr. John L. Phillips, chairman; H. D. Reed, treasurer; Mrs. Henry B. Bryan, Mrs. T. C. Lyster, Robert Coe, executive committee. Corozal—Alfred P. James, chairman; A. P. Crary, secretary. Pedro Miguel—Ernest Bitely, chairman; Mrs. H. E. Weber, secretary; Mrs. G. W. Wales, Dr. F. R. Curney, D. F. Kerneally, executive committee. Paraiso—Harry Dundas, chairman; Miss J. Macklin Beattie, secretary; Mrs. Wm. Lowe, R. C. Smith, A. C. Hobbler, executive committee. Culebra—Mrs. C. A. DevoI, chairman; Mrs. A. Bruce Minear, secretary; Mrs. J. F. Strong, Edward Schildhauer, D. W. MacCormick, C. L. Stockelberg, A. B. Tucker, executive committee. Gatun—Maj. Wm. L. Sibert, chairman, R. M. Gamble, secretary. Cristobal—Dr. M. E. Connor, chairman; M. J. Stickel, secretary; Mrs. Louis Broome, treasurer; Mrs. C. Nixon, Mrs. Lorin C. Collins, executive committee. In the remaining districts the acting chairmen are: Empire—W. M. Wood; Las Cascadas—Mrs. Frank I. McAllister; Bas Obispo—X. D. Holt; Camp Elliott—Mrs. B. F. Fuller; Gorgona—Mrs. Frank M. Morrison; San Pablo—V. L. Kearney; Tabernilla—C. D. Thaxton.

Entertainments for the benefit of the Red Cross fund have been given at Ancon, Corozal, Paraiso, Culebra, and Las Cascadas.

Humane Society Affairs.

In the absence of Mr. Charles F. Fondey, general secretary of the Canal Zone Humane Society, Archdeacon Bryan will have charge. Mr. E. B. Fearon, manager of the International Bank, Panama, is treasurer, and dues and other remittances may be made to him.

In conjunction with the Panama Society, the Canal Zone organization proposes to place a watering trough at Santa Ana plaza.

PERSONAL.

Lieut.-Col. H. F. Hodges, Assistant Chief Engineer, and Lieut.-Col. D. D. Gaillard, Division Engineer of the Central Division, and Mrs. Gaillard, sailed from Cristobal on the *Colon* on May 14, for their annual leave of absence in the States. Among the other passengers on the *Colon* were: W. W. Warwick and wife, of Empire; Tom M. Cooke, and Dr. S. T. Darling, of Ancon.

Among the passengers on the *Panama* which arrived at Cristobal on May 14 were: Maj. W. L. Simpson, Purchasing Agent at New York; E. J. Williams, Disbursing Officer; E. P. Beck, Treasurer of the Canal Zone, and Mrs. Beck, and Geo. T. Weitzel, Secretary of the American Legation at Panama.

Obituary.

Daniel Kealy, American, employed in the Quartermaster's Department at Porto Bello, was accidentally drowned in the bay at that place May 7, 1909. The body had not been recovered up to May 17. Kealy was married, and had been on the Isthmus since July 28, 1906.

Missing Man.

Information is desired in regard to Ellis J. Rogers, of West Naticoke, Pa., who was last heard of in September, 1908. Any one having knowledge concerning him is requested to communicate with the American Minister at Panama.

Order of Isthmian Conductors.

The next regular meeting of the Order of Isthmian Conductors will be held in Las Cascadas on the fourth Sunday in May, at 2.15 p. m., having been changed from the third Sunday in the forenoon, to the fourth Sunday in the afternoon.

April Revenues.

The following collections were made by the Revenue Collector during April: Distillation licenses, \$302.23; taxes, licenses, etc. (Tax Collectors), \$10,189.76; fines, costs, fees, etc. (Judges), \$1,846.35; total, \$12,338.34.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., May 19, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Aarons, Harry	MacInnes, Miss Catherine
Amlaw, Bert	Major, John F.
Anstin, C. B.	McDonald, Mrs. E.
Barati, Joseph	Muir, Capt. Uriah
Barton, Edw.	Nelson, John O.
Blackman, Edson	Oberle, John C.
Blandhurst, John	Obair, Mr.
Bradberry, Samuel	Read, John
Cain, C.	Reilly, Herbert J.
Cluuton, Geo. P.	Rosenstein, J. A.
Cuff, W. J.	Sapushnick, Leo
Cyrus, Jas.	Schuman, Miss Sarah (2)
Daniels, Miss Jessie	Schwartz, Henry
Daniels, W. L.	Steiner, Geo. W.
Falkner, W. H.	Stroobridge, Hattie
Gerund, Max	Taylor, W.
Griffith, J. C.	Thomas, Miss Naomi
Hall, Dave	Thompson, J. W.
Hamilton, Frank	Tubert, Mrs. William
Hocut, Herbert	Walker, E. C.
Hoffman, Dr. E.	Weiss, John
Kunze, O. H.	Weyler, Mrs. Adolph
Loring, J. G.	White Bros.
	Woodards, Charles.

Lost—On May 11, 1909, either on train leaving Colon at 4.30 p. m., or in changing cars at Mundi Junction, a silver eyeglass case, marked "R. P. McC.", containing gold eyeglasses. Reward if returned to R. P. McCormick, care of Capt. Hoffman, Gatun, C. Z.

FIVE YEARS OF CANAL WORK.

Progress Made Under American Control, Since May 4, 1904.

II.

Health and Sanitation.

It was recognized at the outset that the Panama Canal could not be built by Americans unless the Canal Zone was first made healthy in order that Americans could live here with reasonable safety. So long as health conditions were bad it would be impossible to recruit a stable labor force, not only on account of actual conditions, but also because the Isthmus of Panama had been given a world-wide reputation for unhealthfulness during the construction of the Panama railroad and the work of the French on the canal.

The first Isthmian Canal Commission to take charge of the work of constructing the Canal was appointed by the President on February 29, 1904, and confirmed by the Senate on March 3. The Commission arrived on the Isthmus on April 5 on a visit of inspection, accompanied by Col. W. C. Gorgas, Medical Corps, U. S. A., John W. Ross, Medical Director, U. S. N., Capt. C. E. Gillette, Corps of Engineers, U. S. A., and Maj. Louis A. LaGarde, Medical Corps, U. S. A., as experts on sanitation. After a thorough examination of conditions on the Isthmus these experts returned to Washington and reported a plan for the sanitation of the Canal Zone and the cities of Panama and Colon, and on May 8, 1904, Col. Gorgas, as Chief Sanitary Officer, was authorized to proceed with the work. He returned to the Isthmus, arriving on June 28. Between May 19, 1904, and June 30, 1904, Dr. L. W. Spratling, U. S. N., was acting health officer. As the representative of the Commission on the Isthmus, Gen. George W. Davis, Governor of the Canal Zone, issued an order on June 30, 1904, announcing the organization of the Sanitary Department, with Colonel Gorgas as its head.

Under the authority conferred on the President by an Act of Congress, April 28, 1904, the Isthmian Canal Commission, on September 2, 1904, created the Executive Branch of the Canal Zone Government, including in it the Department of Public Health. By Executive Order issued on April 1, 1905, when the second Commission was appointed, three departments were provided for. The second of these was presided over by the Governor of the Canal Zone and its duties included civil government and sanitation. The Chief Sanitary Officer reported direct to the Governor. On November 17, 1906, the Department of Sanitation was separated from the Government of the Canal Zone and made an independent department with Colonel Gorgas at its head. Colonel Gorgas became a member of the Isthmian Canal Commission on February 28, 1907. In December, 1904, Dr. John W. Ross, U. S. N., resigned on account of ill health, and Dr. H. R. Carter was appointed Director of Hospitals. Maj. Louis A. LaGarde, U. S. A., resigned in July, 1905, and was succeeded by Maj. John L. Phillips, U. S. A., as Superintendent of Ancon Hospital. Dr. J. C. Perry, U. S. P. H. and M. H. S., succeeded Dr. Carter as Chief Quarantine Officer, when Dr. Carter became Director of Hospitals.

The public health work has included three branches peculiar to the tropics—eradicating yellow fever, controlling malaria, and, by means of rigid quarantine, keeping the Isth-

mus free from bubonic, yellow fever, cholera, and smallpox. Yellow fever and malaria are carried from one person to another by mosquitoes, and the conditions in the cities of Panama and Colon, and in the Canal Zone villages were favorable to the breeding of mosquitoes. Stagnant water stood in streets and yards, water for home use was peddled from house to house and was kept in barrels and other open containers, underbrush was allowed to grow unchecked, and there was no general understanding among the inhabitants that the breeding of mosquitoes was a menace to health.

No deaths from yellow fever had occurred among the employes of the French Company since 1897, although a few cases had been treated on the Isthmus in the year preceding the arrival of the Americans. A large part of the population of Panama was immune, and it was among the new arrivals that the disease first showed itself. In July, 1904, Charles Cunningham, a white employe of the Police Department, was taken ill with it and died. No other cases were reported for about a month. On November 21, a case developed in Santo Tomas Hospital in the city of Panama, and in December, 1904, seven cases developed in that city.

In the month of January, 1905, the disease broke out in Colon, and in the two cities 19 cases were recorded that month. In February, 14 cases developed; March, 11; April, 8; May, 33. The maximum was reached in June, when 62 cases were reported, and from that month there was a steady decrease, the number of cases that developed in July being 42; August, 27; September, 7, and October, 3. The last case in the city of Panama developed on November 11, and the last in Colon, on December 11, 1905. In all there were 246 cases in 1904 and 1905, and 84 deaths. Of this number 134 of the cases and 34 of the deaths were among Commission employes.

The disease had been confined to the cities of Panama and Colon. It was fought by preventing the introduction of more cases from the fever ports of nearby countries, keeping patients in screened rooms where mosquitoes could not gain access to them, and by an energetic campaign for the extermination of mosquitoes. The work was carried on at first without the cooperation of the people, but within a year they had been taught to assist in the destruction of the mosquito.

The first work against malaria was undertaken in Empire, Culebra, and Ancon in July, 1904, and by September it had been extended to Gorgona, Paraiso, and Balboa. The situation with regard to malaria in July, 1904, is accurately illustrated by the conditions at Ancon Hospital, and in the various villages. Anopheles and stegomyia mosquitoes were found in large numbers in the buildings and wards. Mosquito breeding took place within a few yards of the wards and none of the buildings were screened. The decorative plants and shrubs in the grounds were surrounded with clay vessels containing water and vegetation in which mosquitoes were breeding, and all ditches in the grounds were producing mosquito life. There is no doubt that many cases of malaria and yellow fever had been contracted in the hospital itself previous to this time. Examinations of blood taken from the inhabitants

of one town in the Canal Zone showed that 80 per cent of the people were infected with the malaria organism, and that Ancon was not an isolated instance was proved by the large percentage of cases from all the villages. In Colon one-sixth of the entire population was suffering from malarial attacks during each week, this deduction being based on the number of cases treated in the hospitals.

The permanent work for the prevention of malaria will be practically accomplished within a year, although certain measures such as grass and brush cutting, oiling pools, and similar routine work must necessarily be continued indefinitely. The effectiveness of the work is shown by the following data giving the number of employes treated for malaria in the hospitals and the rate per thousand of employes:

YEAR.	Number.	Rate per thousand
1904.....	*422	125
1905.....	8,496	514
1906.....	21,938	821
1907.....	16,709	424
1908.....	12,372	282

*Front and including July, 1904.

Only two cases of bubonic plague have developed on the Isthmus since American occupation. On June 15, 1905, a negro longshoreman, at Balboa (formerly La Boca), was taken ill, and a microscopic examination showed that he was suffering with bubonic. He died eight days later. The village was cleaned and disinfected, and a crusade against rats, the common carriers of bubonic, was begun. On July 9, a "rat brigade" was set at work in Panama, and a systematic effort to exterminate the rats around the docks and throughout the city was made. Rat traps were issued free to all persons who wished them. Later a bounty was placed on each rat delivered to the health department, and this bounty is still in effect.

In January, 1904, Dr. C. C. Pierce, of the Public Health and Marine Hospital Service, took up the work on the Isthmus of despatching ships bound to San Francisco and also of making a sanitary survey of the Canal region. In May, by an arrangement between the State Department in Washington and the Government of Panama, he took charge of the quarantine work for the port of Panama, and since that time the quarantine on the Isthmus has been under American control. In spite of the fact that ports on both the Atlantic and Pacific sides of the Isthmus, north and south, have been infected with bubonic, smallpox, cholera, and yellow fever, the quarantine has been successfully maintained. In both of the stations, Panama and Colon, screened rooms are set aside for yellow fever suspects, and every precaution is taken to guard them from the bite of mosquitoes.

The effectiveness of the public health work during the five years of American occupation may be judged from the following statement of the sick rate based on the number of employes and the number admitted to hospitals, and the death rate based on the total number of employes and the number of deaths:

YEAR.	Number admitted	Rate per 1,000	Death rate per 1,000
1904.....	.....	.....	13.26
1905.....	11,936	723	25.86
1906.....	31,153	1,166	41.73
1907.....	28,927	735	28.74
1908.....	23,126	527	13.01

CANAL WORK FOR APRIL.

Monthly Report of the Chairman to the Secretary of War.

CULEBRA, C. Z., May 12, 1909.

The Honorable the Secretary of War, Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of April, 1909:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central, and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry.....	Cubic yards.....	144,377	1,782,766	156,417	2,083,560
Work excavation, wet.....	Cubic yards.....	488,573	.....	771,576	1,260,149
Total work excavation.....	Cubic yards.....	632,950	1,782,766	927,993	3,343,709
Plant excavation, dry.....	Cubic yards.....	7,334	.....	46,967	54,301
Plant excavation, wet.....	Cubic yards.....	32,417	.....	24,222	56,639
Total plant excavation.....	Cubic yards.....	39,751	.....	71,189	110,940
Total Canal excavation.....	Cubic yards.....	672,701	1,782,766	999,182	3,454,649
Explosives used.....	Tons (2240 lbs).....	53.06	243.05	27.00	323.11
Rock drilling.....	Feet.....	46,137	326,331	45,516	417,984
Track removed.....	Miles.....	.....	13.52	.....	13.52
New track laid.....	Miles.....	2.49	18.89	3.74	25.12
Material placed in dams.....	Cubic yards.....	294,488	.....	34,405	328,893
Rock crushed.....	Cubic yards.....	7,488	8,520	7,074	23,082
Cement used.....	Barrels.....	9,106	.....	922	10,028
Concrete placed.....	Cubic yards.....	7,923	.....	1,117	9,040
New roads built.....	Miles.....	1.68	1.70	1.75	5.13
Water mains laid.....	Feet.....	14,340	2,296	1,788	18,424
Sewers laid.....	Feet.....	800	927	1,475	3,202
Open drains and ditches dug.....	Feet.....	1,000	7,665	148	8,813
Daily average number of laborers.....	.....	4,232	8,793	3,450	16,475
Rainfall, average.....	Inches.....	3.85	4.65	2.57	4.36
Wash drilling.....	Feet.....	.....	.....	675	675

Atlantic Division.
GATUN LOCKS.

Excavation—Excavation in the Canal prism was continued during the month with two steam shovels, one locomotive crane and suction dredge No. 85, the latter excavating 17,938 cubic yards from the lower lock pit. The shovel excavation outside of the Canal prism consisted in excavating for the construction of the east tracks of the lock cableways to the south, and in excavating for a track leading north from the lock excavation and connecting with the new low line to Mindi. The channeling for the east curtain wall was 95 per cent completed during the month.

Material Handling Plant—Cement shed: Nine cantilever tresses and nine portal trusses were assembled and erected. This completes 85 per cent of all timber framing, and 75 per cent of the roofing was completed.

Barrel Burning Plant—The excavation for the fire pit for this plant was completed, 250 cubic yards of material being removed. The concrete foundations for the brick wall were completed, and 50 per cent of the brick laid.

Automatic Electric Road—The contractors for this road commenced the work of installing the track on April 20. At the end of the month 80 per cent of the track material had been distributed along the line of the roadbed.

Industrial Electric Road—During the month, the excavation and fill for the roadbed of this road was continued, 550 cubic yards of earth and loose rock being removed. At the end of the month the grading for 500 feet of single track roadbed north of the mixer building, and 1,500 feet of 4-track roadbed south of the building was completed. Ballast for 1,400 feet of 3-track roadbed was placed. The contractors for

this road during the month set up 14 flat cars.

Mixer Building—The main driving machinery was set up and automatic water tanks installed. During the month 350 linear feet of 24-inch concrete gutter and certain modifications in superhopper doors were completed. The construction of the 4-track approach trestle was completed, and 90 per cent of the roof over this trestle erected. The entire work on the mixer building and its approach trestle was 90 per cent completed.

Cableway Towers—The main cables on the duplex unloading cableway were strung. One of these cables was practically ready

for operation. The main concrete counterweights on one duplex unloading tower and the single head tower were placed. The erection of the head towers of the lock cableways was continued, and three towers at the end of the month were ready for riveting. During the month 75 per cent of the main operating machinery in two of the lock head towers was placed. The forms for the counter weights on the tail towers of the lock cableways were 75 per cent completed.

Oil Tanks—The excavation on the foundations for two 250,000-gallon oil tanks was completed, 450 cubic yards of earth being removed; 60 cubic yards of concrete were placed in the foundations.

Power House—All conduit work in the building was completed during the month. The pavement at the switchboard end of the engine room was completed. The pedestal for the standards for oil switches was completed and 70 per cent of the oil switches placed. The setting up of the turbines and generators was 60 per cent completed. The erection of two exciters was completed. The accumulator base and two accumulator pumps were set. The erection of the traveling crane was 95 per cent completed. The excavation for an open drainage ditch leading from the outlet of the discharge culvert of the power plant was commenced, and 1,000 cubic yards of earth were removed. An open drainage ditch leading from the mixer building for handling the run-off in that portion of the west side of the lock fill south of the mixer building was completed, and 700 cubic yards of material were removed.

Drafting Room—The design of miscellaneous details in connection with the mixer building, cement shed, approach trestle and barrel burning plant was continued. A de-

sign for forms for the cylindrical valve recesses in the lock wall was completed and requisition submitted. Studies for the "telltale" and drainage system under the floor of the upper locks were commenced.

GATUN DAM AND SPILLWAY.

Construction during the month increased the total fill by 294,486 cubic yards, making the amount at the end of the month 1,945,648 cubic yards.

Stripping—Work was continued along the foot of the east slope of Spillway hill and near the old Panama railroad station. A section of 2.6 acres was prepared for the deposition of hydraulic fill. At the close of the month total stripping amounted to 191.2 acres.

Clearing—The area to be cleared in advance of the dredges pumping into the dam was extended by 35.4 acres, of which 12.6 acres were grubbed, making the total clearing for this purpose, at the end of the month 72.7 acres.

Hydraulic Fill—Dredge No. 83 worked the entire month pumping into the dam, depositing in the old Chagres channel 142,801 cubic yards of material; the total hydraulic fill at the end of the month was 399,727 cubic yards. Dredge No. 82 was being repaired at the drydock, and dredge No. 85 worked one week, dredging 17,938 cubic yards from the lock site, being laid up the balance of the month for repairs.

Enrockments—Material received from Bas Obispo, the locks, Mindi and the spillway, amounting to 150,979 cubic yards, was dumped on the north toe, east of the spillway to elevation plus 24, and on the south toe, east of the spillway, to full height, and west of the spillway to elevation plus 24. Total enrockments up to the end of the month, 1,545,921 cubic yards.

Trestles—The trestle crossing the old Chagres at head of west diversion, which was damaged in the flood of last February, was repaired, and this trestle was extended westward along the south toe, making a total of 520 linear feet constructed. The total length of trestles constructed at the end of the month was 13,657 linear feet.

Excavation—Excavation included cleaning up the floor by crane and clam shell bucket and work at head of spillway to prepare the south side of the hill for the concrete covering. Part of the material was used to construct a levee across the head of the cut, which it is contemplated to raise to elevation plus 18, in order that the concrete work in the spillway may proceed without interruption during the coming rainy season. The amount excavated was 13,411 yards.

Concrete—Work was continued on the floor below the spillway dam, 7,478 cubic yards of concrete being placed. To the end of the month 9,925 cubic yards were placed.

PORTO BELLO.

The work of erection of certain plant and equipment was satisfactorily continued. Carpenter work and operations at the quarry were proceeded with, and at the end of the month 20,515 cubic yards of crushed rock had been produced, the crusher producing 12,495 cubic yards during April.

NOMBRE DE DIOS.

The work of deepening the harbor and opening the channel to the sand zone was actively pushed. During the month, 2,679 cubic yards of sand were dredged, of which

323 cubic yards were shipped to Porto Bello and 2,356 cubic yards to Gatun.

HARBOR AND CHANNEL SECTION.

Dry Excavation Below Sea Level—Mindi:

During the month, 20,630 cubic yards of earth and 53,738 cubic yards of rock were excavated by two 70-ton Bucyrus steam shovels and one Model-91 Marion, an average of 24,789 cubic yards per month of 25 working days.

Dredging—Ocean to Mindi: Three dredges removed from the prism 435,416 cubic yards of earth and 35,219 cubic yards of rock. In addition, the *Mindi* removed 2,400 cubic yards of earth at Dock 14, 22,417 cubic yards of earth from the French canal, and 6,243 cubic yards of earth and 4,000 cubic yards of rock from the approach channel to Gatun docks. On April 30, 40 feet of water could be carried from 0 to Mile 2 plus 4,950 feet; 30 feet to Mile 3 plus 1,100 feet; 20 feet to Mile 4 plus 1,850 feet, and 15 feet to Mile 4 plus 4,900 feet, the end of the cut.

Municipal Engineering.

The usual work of this subdivision was satisfactorily performed during the month, and included work on the Mount Hope-Gatun road, waterworks at Gatun and Mount Hope, and various maintenance work.

Building Construction.

The construction of a new commissary was commenced, and the new 4-room school-house was completed. Other building construction work was satisfactorily continued.

Central Division.

During the month of April the total amount of material excavated in the Central Division was 1,793,454 cubic yards, of which 726,453 cubic yards were classified as earth and 1,072,001 cubic yards as rock. Of this quantity, 1,777,856 cubic yards were removed by steam shovels and 20,598 cubic yards by hand.

The quantity of material removed from the Canal prism was 1,706,754 cubic yards, while 74,402 cubic yards were removed from the Obispo Diversion. In addition, 8,973 cubic yards excavated from the prism were dumped above elevation plus 40 at Point No. 2; 6,715 cubic yards above elevation plus 40 at Point No. 1, and 1,610 cubic yards were removed at the new incline track at Point No. 3.

The daily average number of steam shovels at work during the month was 55.40, as compared with 56.93 for the month of March. For comparison with the work done during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Total amount of material excavated by steam shovels	Classification of material.		Av. No. of steam shovels working during month	W. kg. days in month	Av. amount excavated per shovel per 8-hour day.
		Rock	Earth			
1908:	cu. yds.	cu. yds.	cu. yds.			
Apr.	1,579,547	854,602	724,945	53.04	25	1,191
1909:						
Apr.	1,777,856	709,353	1,068,503	55.40	25	1,284

Rainfall at Empire: 1908, 1.36 ins.; 1909, 3.33 ins.

The above table shows that the average output per shovel day was over 7½ per cent greater in April, 1909, than in the corresponding month of the previous year.

During the month, 215,762 cubic yards of material excavated from the prism were transported to the relocation of the Panama

railroad at Cainito, Santa Cruz, and Corozal, and dumped as filling in the embankment for the new roadbed, the total for this purpose to the end of the month being 988,846 cubic yards. During the month, 33,942 cubic yards of rock from Bas Obispo were transported to Gatun and dumped in the toe of the dam, the total for this purpose at the end of the month being 342,491 cubic yards.

At the anchorage basin at Gatun trees were cut on 20 acres; timber cut and piled on 65 acres; timber cut, piled, burned and roots grubbed on 168 acres; in addition, 72 acres were grubbed and burnt over the completed area of the Alberts contract. In the channel clearing work at La Boca Trinidad, timber was cut on 100 acres, and timber was cut, piled and burned on 57 acres. In the contract work with Charles Alberts at Gatun, timber was cut on 149 acres, and timber was cut, piled and burned on 172 acres. In the Tabernilla district, 133 acres were cleared.

The daily average number of laborers at work was 8,793.

Pacific Division.

DISTRICT NO. 1.—LOCKS AND DAMS.

The total excavation during the month amounted to 238,785 cubic yards in this subdivision.

At Pedro Miguel, in addition to the regular operations, the driving of piling in the west storage trestle was completed, and the driving of piling in the approach to the east storage trestle was begun.

At Miraflores, excavation for the diversion of the Cocoli River was completed, as was the excavation for the cement storage shed. The excavation for the west dam core was practically completed, and the Cocoli River was successfully dammed. A steam shovel was installed in the point of the hill opposite Corozal, in the Rio Grande diversion. Work on the power house was continued.

At Ancon quarry, the preliminary work of clearing and grading site for crusher plant and installation of tracks was continued.

DISTRICT NO. 2.

Dredging—Six dredges were in operation during the month, excavating material as shown in the following table:

Dredge	Type.	Cubic yards.		Remarks.
		In pr'm	Auxil'y	
Culebra	Suction	260,879	.....	Scow measurement
Gopher	Ladder	156,070	.....	Place measurement
Mole ...	Ladder	98,436	.....	Place measurement
Badger	Ladder	89,825	24,222	Place measurement
Dipper.	Dipper.	126,557	.....	Place measurement
O. P.	O. P.	.....	4,408	Place measurement
Total.	.....	731,767	28,630	

The necessary maintenance of floating equipment was taken care of, and a large amount of other mechanical work was performed at the shops.

During the month, 172,000 square feet of surface were grubbed and cleared on the Canal line between Corozal and the sea. The greater part of the clearing force, however, was engaged in clearing, grubbing and blasting in advance of the orange-peel dredge on the Rio Grande Diversion. In this latter work approximately 141,250 square feet were grubbed and cleared. About 46,000 square feet were grubbed and cleared in preparation for the extension of the shipways basin at La Boca [Palboa].

DISTRICT NO. 3.—MUNICIPAL AND BUILDING WORK.

A large number of jobs of building and municipal work were completed. The fil-

tration plant, Ancon steam plant, and Rio Grande crusher were successfully operated. Work was continued on the Ancon reservoir, Ancon corral, Ancon-Panama road and the Corozal-Pedro Miguel road. Certain maintenance work on the waterworks and sewers was performed, and ditches and drains necessary for sanitary work were constructed and maintained. Construction and maintenance work on buildings was satisfactorily performed.

Mechanical Division.

The manufacturing and repair work of this division was satisfactorily performed during the month.

Relocation of Panama Railroad.

Work on the Corozal line was continued. During the month, 5,610 cubic yards of material were excavated, making the total amount of excavation at the close of the month 22,604 cubic yards, 30,505 cubic yards of material were placed in embankment, making a total thus placed at the close of the month of 52,143 cubic yards. During the month, on the relocation work proper, 132,235 cubic yards of material were excavated and 305,133 cubic yards placed in embankment. At the close of the month, the total quantity of excavation accomplished was 1,119,449 cubic yards, and the total quantity placed in embankment was 4,165,153 cubic yards. The necessary work of constructing trestles for filling and the construction of bridges and culverts was continued.

The Miraflores tunnel proper was completed. The building of a drainage system at the slide over the tunnel and the laying of permanent track were commenced. During the month, 7,745 linear feet of permanent track was laid, making the total at the close of the month 91,636 linear feet. The force of laborers during the month averaged 1,990 men.

Quartermaster's Department.

During the month there were 251 additions to the gold force, and 203 separations, making a net increase of 48.

Agents have been at work recruiting European laborers on the Isthmus for service on railroad construction work in Brazil. During the month over 500 laborers were engaged and forwarded, 438 of this number having sailed on a specially chartered ship leaving Colon on April 23. It is anticipated that an attempt will be made to continue these operations, and such preventive steps as are practicable have been taken. Information from European laborers now on the Isthmus who have returned from the work, and from consular agents, is to the effect that conditions in Brazil, where this construction is in progress, are very unfavorable to laborers, and it is considered to be the duty of the Commission, as well as in line with its interests, to prevent such emigration if possible.

The printing plant of the Commission has been removed from the old Administration Building in Panama, which was an unsatisfactory location, to the new building constructed for it at Mount Hope. The printing plant of the Panama Railroad Company has been consolidated with it, and the whole placed under the direction of the Depot Quartermaster. The new building is well adapted to the purpose for which it was constructed. The consolidation of the two plants will result in economy, and the location of the combined plant on the Atlantic instead

of the Pacific side will also secure a saving, as it will render unnecessary the shipment of all material handled by the plant entirely across the Isthmus before distribution is made to consumers.

Heretofore, it has been the duty of the Quartermaster's Department to make repairs to buildings, provided the estimated cost did not exceed \$200. Effective April 10, all repairs, irrespective of the cost, and including plumbing and screening, were placed in charge of the Quartermaster's Department. The great volume of work in connection with buildings in the Canal Zone in the future will consist of repairs, as practically all buildings that will be required until the completion of the Canal, including quarters for employes, have now been constructed, and their maintenance only is to be considered.

Subsistence Department.

The operation of the Hotel Tivoli during the month showed a profit of \$1,721.22. There was a loss of \$1,365.13 on the line hotels, and a profit was made on the operation of the kitchens and mess halls. The net operations of the Subsistence Department for the month showed a profit.

Department of Civil Administration. COURTS.

The Supreme Court held two sessions in April, and one criminal case was disposed of. In the Circuit Courts 27 civil and 42 criminal cases were disposed of, and in the District Courts 94 civil and 456 criminal cases were disposed of.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

The total revenues of the Canal Zone in April aggregated \$21,030.29. The general revenues amounted to \$13,014.95.

The postal revenues were \$6,169 on account of stamp sales, \$6.21 on account of newspaper postage, and \$1,840.13 on account of money order fees. Money order sales during the month amounted to \$438,580.99, of which \$324,921.20 was payable in the United States and foreign countries, and \$113,559.79 in the Canal Zone. Sixty-seven dispatches of mail were made to foreign ports by the Cristobal exchange office.

Twenty vessels entered at and 23 cleared from the port of Ancon, and 18 vessels entered at and 21 cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The number of arrests during April was 457 as compared with 561 in March. The total effective strength of the police force on April 30 was 160 officers and men, and the total force of the division at the end of the month aggregated 243 officers and men. There were 109 prisoners in confinement at the close of the month. Nine convicts began penitentiary sentences during the month, 11 were discharged at the expiration of their sentences, and on April 30, 118 convicts were confined in the penitentiary.

DIVISION OF PUBLIC WORKS.

The usual business of this Division was conducted during the month. The amount of water consumed in Panama during April was 27,417,000 gallons, and in Colon the amount consumed during the month was 20,108,025 gallons.

DIVISION OF FIRE PROTECTION.

Sixteen alarms of fire were responded to by the Canal Zone Fire Department during the month; 12 in the Canal Zone, 2 in Colon and 2 in the city of Panama. The value of

Commission and Panama railroad property involved was \$5,125, and the estimated damage was \$1,110. Damage to the extent of \$1,000 was caused by a fire at Matachin on April 3.

DIVISION OF SCHOOLS.

The total enrollment in the white schools during the month was 656, and the average daily attendance 540. In the colored schools the total enrollment was 1,313, and the average daily attendance was 764.

Department of Sanitation.

The health conditions on the Isthmus continue to be very satisfactory. The death rate among employes was at the rate of 8.57 per thousand, and the death rate for the total population was the lowest reported since American occupation.

During the month, there was not a single death from typhoid fever on the Isthmus, which is unusual with such a large population. The malarial rate was excellent and showed a marked improvement over March. No case of smallpox, plague or yellow fever originated on the Isthmus during the month. The last case of yellow fever developed in May, 1906, and the last case of plague in August, 1905. Respectfully,

GEORGE W. GOETHALS, *Chairman.*

P. R. R. Steam Shovels.

The steam shovels at work on relocation of the Panama railroad are handicapped, so far as making high records is concerned, because they are doing pioneer work, and also because the equipment for hauling away the spoil has not been sufficient to work the shovels at their full capacity. A statement of the work performed by the steam shovels during the past six months follows:

PERIOD.	Total output, Cubic yards.	Average No. steam shovels.	No. of working days.	Output per shovel.	
				Per day, Cubic yards.	Per month, Cubic yards.
November, 1908.....	37,625	2.92	24	537	12,885
December, 1908.....	43,187	2.77	26	600	15,591
January, 1909.....	57,756	3.45	25	665	16,625
February, 1909.....	65,128	4.35	23	681	14,972
March, 1909.....	66,381	3.41	27	722	19,467
April, 1909.....	75,571	4.96	25	609	15,236

Sentenced for Prize Fighting.

"Sandy" Odom, an American negro, and Arthur Best, a Barbadian, were arrested at Empire, April 13, for prize fighting. Odom was subsequently arraigned on three counts, charged with fighting at two other points in the Zone. Defendants pleaded not guilty, but at their trial on April 27, a verdict was found against them, and on May 4 Odom was sentenced to pay a fine of \$1,500 and to serve 18 months at hard labor. Best was fined \$1,000, and received a sentence of one year, execution being suspended for 12 months, pending good behavior.

Proposals for Buildings.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p. m., Saturday, May 22, 1909, when they will be publicly opened, for the erection by contract of one type-18 house, at Cristobal, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$200, conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to

accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals. C. NIXON, Purchasing Agent on the Isthmus.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p. m., Saturday, May 29, 1909, when they will be publicly opened, for the erection by contract of 1 Type 21 House, Corozal, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$50 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$150, conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals. C. NIXON, Purchasing Agent on the Isthmus.

Rainfall, May 1 to 15, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day		Total for period
	one day	for period	
<i>Atlantic Division—</i>			
Cristobal.....	1.40	3.82	
Brazos Brook.....	.99	4.08	
Gatun.....	2.30	5.93	
Bohio.....	1.50	5.42	
<i>Central Division—</i>			
Tabernilla.....	1.71	5.21	
San Pablo.....	1.58	4.19	
Bas Obispo.....	2.04	6.18	
Gamboa.....	3.88	9.66	
Empire.....	.91	3.49	
Camacho.....	1.23	5.02	
Culebra.....	.91	3.69	
<i>Pacific Division—</i>			
Rio Grande.....	.86	3.73	
Pedro Miguel.....	.82	2.43	
Balboa.....	1.55	4.15	
Ancon.....	1.22	3.25	
<i>Atlantic Coast—</i>			
Porto Bello (to 5 p. m. May 14)....	2.64	6.24	
Nombre de Dios (to 5 p. m. May 8) ..	2.46	5.14	
<i>Upper Chagres—</i>			
El Vigia.....	1.62	3.93	
Alhajuela.....	1.20	3.75	

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, May 15, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W.D.).
Height of low water ab. m. n. sea-level, ft.	125	92	46	1	0	0
Maximum height ab. mean sea-level, feet:						
Sunday, May 9.....	129.3	96.1	53.4	7.0	2.8	2.0
Monday, May 10.....	126.4	93.4	49.4	4.6	2.0	1.6
Tuesday, May 11.....	126.8	93.5	49.3	3.6	1.2	1.0
Wednesday, May 12.....	126.8	93.6	49.6	3.9	1.1	0.9
Thursday, May 13.....	126.4	93.3	50.2	6.0	1.2	1.1
Friday, May 14.....	126.3	93.0	49.7	6.0	1.8	1.5
Saturday, May 15.....	126.3	93.3	49.4	4.2	1.4	1.2

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending May 25, 1909 (75th meridian time):

DATE.	High.		Low.		High.	Low.	High.
	A. M.	P. M.	A. M.	P. M.			
May 19.....	3.17	9.27	3.32	9.52	.....	.....	.....
May 20.....	4.03	10.13	4.17	10.38	.....	.....	.....
May 21.....	4.47	10.59	5.01	11.23	.....	.....	.....
May 22.....	5.32	11.45	5.46	.....	.....	.....	.....
May 23.....	.....	.....	A. M.	.....	.....	.....	.....
May 24.....	.....	.....	12.08	6.18	12.32	6.32	.....
May 25.....	.....	.....	12.56	7.05	1.22	7.19	.....
May 26.....	.....	.....	1.46	7.57	1.55	8.11	.....

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Launch Service to Tabora.

The steamer *Sanidad* leaves the dredge landing at La Boca at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at La Boca about 4.30 p. m. in time to make connections for the 5.30 train at Panama.

OFFICIAL CIRCULAR.

Percentage for Surcharges.

CULEBRA, C. Z., May 1, 1909.

CIRCULAR No. 169A.

Effective this date, the surcharge on labor charges for material manufactured by the Mechanical Division, and for shop work done for other departments and divisions of the Commission and for the Panama railroad, will be decreased from 30 per cent to 20 per cent. This applies only to work done by the Mechanical Division and is made possible by the reduction in overhead expenses effected in that division.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Transfers from I. C. C. to P. R. R.

CULEBRA, C. Z., May 7, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

I am in receipt of the following letter from the General Manager of the Panama Railroad Company: "In some instances recently we have only received transfer slips in duplicate from I. C. C. Departments when employes are transferred from the Isthmian Canal Commission to the Panama railroad, whereas it is necessary that we receive them in triplicate, except in transfer of locomotive engineers we would like to receive the transfer slips in quadruplicate. Will you kindly see that this is done."

In preparing transfer slips, covering transfers of employes of the Commission to the service of the Panama Railroad Company, please be governed by Mr. Slifer's letter.

C. A. McILVAINE,
Acting Assistant to the Chairman.

Acting Assistant Chief Engineer.

CULEBRA, C. Z., May 13, 1909.

CIRCULAR No. 250.

Effective May 14, 1909, Mr. H. H. Rousseau, Assistant to the Chief Engineer, will in addition to his present duties, perform the duties of Assistant Chief Engineer during the absence of Lieut.-Col. H. F. Hodges, on leave.

GEO. W. GOETHALS, Chairman.

Acting Division Engineer—Central Division.

CULEBRA, C. Z., May 13, 1909.

CIRCULAR No. 249.

Effective May 14, 1909, Mr. L. K. Rourke will act as Division Engineer of the Central Division during the absence of Lieut.-Col. D. D. Gaillard, on leave.

GEO. W. GOETHALS, Chairman.

Acting Examiner of Accounts.

CULEBRA, C. Z., May 13, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Effective May 14, 1909, Mr. T. L. Clear will act as Examiner of Accounts during the absence of Mr. W. W. Warwick, on leave.

GEO. W. GOETHALS, Chairman.

Acting Assistant to the Chairman.

CULEBRA, C. Z., May 13, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Effective May 14, 1909, Mr. William H. May, Secretary to the Chairman, will in addition to his present duties, perform the duties of Assistant to the Chairman during the absence of Mr. C. A. McIlvaine.

Mr. Benj. L. Jacobson will act as Chief Clerk.

GEO. W. GOETHALS, Chairman.

Acting Collector of Revenues.

ANCON, C. Z., May 11, 1909.

CIRCULAR No. 86.

Mr. Herman A. Gudger is designated Acting Collector of Revenues during the absence on leave of Mr. Tom M. Cook.

JO C. S. BLACKBURN,
Head of Department of Civil Administration.

Requisitions for Stationery and Supplies.

CULEBRA, C. Z., May 4, 1909.

TO ALL CONCERNED:

The printing plant of the Commission has been moved to Mount Hope and the printing plant of the Panama railroad has been consolidated with it.

The combined plant is under the direction of Capt. C. Nixon, Depot Quartermaster, to whom all requisitions for stationery and supplies should be sent, and all correspondence relating thereto addressed.

C. A. DEVOL, Chief Quartermaster.

Tariff for Special Trains.

The Panama Railroad Company has issued the following tariff covering movement of special trains when authorized by the Chairman of the Isthmian

Canal Commission or the General Manager of the Panama railroad:

WEEK DAYS.

Special train, consisting of engine, baggage or buffer car and one coach, seating not to exceed 60 passengers:

For eight hours or fraction thereof..... \$42.00
For each additional hour, not to exceed
four, per hour or fraction thereof..... 5.00

SUNDAYS OR HOLIDAYS.

Special train, consisting of engine, baggage or buffer car and one coach, seating not to exceed 60 passengers:

For eight hours or fraction thereof..... \$60.00
For each additional hour, not to exceed
four, per hour or fraction thereof..... 7.50

Trains making round trip with midnight intervening and those consuming more than twelve hours will be charged as two trains. An additional charge of \$10 a coach will be made for all coaches over the original coach. Tickets will not be required on these trains, and none will be collected.

WHEN NOT REGULARLY AUTHORIZED.

Respective of the number of coaches handled:

For every eight hours or fraction thereof... \$100.00
For each additional hour, not to exceed
four, per hour or fraction thereof..... 12.50

Passes or tickets will be required on these trains for transportation. Trains making a round trip with midnight intervening, and those consuming more than twelve hours, will be charged as two trains.

PRIVATE CARS.

Private cars or extra cars on regular trains will be charged at the rate of \$10 per car, and each passenger will be required to have either pass or ticket for transportation. No private or extra cars will be attached to regular trains unless at least fifteen passages are provided.

SWITCHING—PANAMA AND BALBOA.

Special movement of cars between Panama and Balboa will be charged \$5 per car for switching.

Effective May 1, 1909.

H. J. SLIFER, General Manager, Colon, R. P.
C. C. VAN RIPER, Passenger Agent,
24 State Street, New York.

Approved:

GEO. W. GOETHALS, President, Culebra, C. Z.
E. A. DRAKE, Vice-President,
24 State Street, New York.

LEGAL NOTICE.

United States of America, } In the Circuit Court,
Canal Zone. } Third Judicial Circuit.

To all whom it may concern:

Notice is hereby given that on Thursday the first day of July, 1909, in the court house in Cristobal, Canal Zone, at 10 o'clock a. m., there will be an auction into the estates of:

Kendal Thomas, who died intestate on or about March the 3d, 1907, at Mount Hope, Canal Zone, leaving no heirs, possessed of the following personal property: personal belongings of little value; Isthmian Canal Commission pay certificates for \$156.67, and \$207.52, United States currency.

Robert Grattis, who died intestate on or about March the 16th, 1906, at Cristobal, Canal Zone, leaving no heirs, possessed of the following personal property: personal belonging of little value and 20 cents United States currency.

Unknown man, who died intestate on or about March the 7th, 1909, at Bohio, Canal Zone, leaving no heirs, possessed of the following personal property: one small purse containing \$1.60 Panamanian currency.

Aristida Fukala, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: 80 cents Panamanian currency and one French copper coin.

Mekeil Zapatos, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: one English pound, 60 francs French and \$2.30 Panamanian currency.

Demetro Apostol, who died intestate on or about May the 16th, 1907, at Gatun, Canal Zone, leaving no heirs, possessed of the following personal property: \$8.60 Panamanian currency, and one bank book showing deposit of \$25 United States currency.

Pursuant to the petitions praying that said property be escheated filed herein by Tom M. Cooke, Collector of Revenues, in accordance with Sections 779, 780 and 781 of the Code of Civil Procedure of the Canal Zone, at which time and place persons claiming the said estates may appear and be heard before the court.

NELSON R. JOHNSON,
Clerk of Circuit Court, Third Judicial Circuit.

Commissary Hours.

The hours during which commissaries are open are as follows:

Cristobal, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.
Culebra, 8 a. m. to 12.30 p. m.; 2.30 p. m. to 7 p. m.
All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, and the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Advance	P. R. R. Friday	May 14
Oruba	R.-M. Saturday	May 15
Allianca	P. R. R. Thursday	May 20
Prinz Aug. Wilhelm	H.-A. Saturday	May 22
Colon	P. R. R. Wednesday	May 26
Tagus	R.-M. Saturday	May 29
Panama	P. R. R. Wednesday	June 2
Prinz Joachim	H.-A. Saturday	June 5
Advance	P. R. R. Monday	June 7
Magdalena	R.-M. Saturday	June 12
Allianca	P. R. R. Saturday	June 12
Colon	P. R. R. Friday	June 18
Prinz Aug. Wilhelm	H.-A. Saturday	June 19
Panama	P. R. R. Thursday	June 24
Orinoco	R.-M. Saturday	June 26
Advance	P. R. R. Wednesday	June 30
Prinz Joachim	H.-A. Saturday	July 3
Allianca	P. R. R. Tuesday	July 6
Atrato	R.-M. Saturday	July 10
Colon	P. R. R. Monday	July 12
Panama	P. R. R. Monday	July 19

Persons desiring to meet friends or relatives upon arrival of Panama Railroad steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Panama	P. R. R. Thursday	May 20
Prinz Joachim	H.-A. Tuesday	May 25
Advance	P. R. R. Wednesday	May 26
Magdalena	R.-M. Tuesday	June 1
Allianca	P. R. R. Tuesday	June 1
Colon	P. R. R. Monday	June 7
Prinz Aug. Wilhelm	H.-A. Tuesday	June 8
Panama	P. R. R. Monday	June 14
Orinoco	R.-M. Tuesday	June 15
Advance	P. R. R. Saturday	June 19
Prinz Joachim	H.-A. Tuesday	June 22
Allianca	P. R. R. Thursday	June 24
Atrato	R.-M. Tuesday	June 29
Colon	P. R. R. Wednesday	June 30
Prinz Aug. Wilhelm	H.-A. Tuesday	July 6
Panama	P. R. R. Tuesday	July 6
Advance	P. R. R. Monday	July 12
Oruba	R.-M. Tuesday	July 13
Allianca	P. R. R. Saturday	July 17
Prinz Joachim	H.-A. Tuesday	July 20
Colon	P. R. R. Friday	July 23
Panama	P. R. R. Friday	July 30

NEW ORLEANS TO COLON.

Cartago	U. F. C. Saturday	May 15
Abangarez	U. F. C. Saturday	May 22

COLON TO NEW ORLEANS.

Parismina	U. F. C. Tuesday	May 18
Cartago	U. F. C. Tuesday	May 25
Abangarez	U. F. C. Tuesday	June 1

COLON TO BARBADOS, CALLING AT TRINIDAD.

Oruba	R.-M. Tuesday	May 25
Tagus	R.-M. Tuesday	June 8

Sailings of the French line (Cie. Générale Transatlantique) for Venezuela ports, Martinique and Guadeloupe on the 3d and 20th of each month.

Supplies for Canal Work.

The following steamers arrived at the port of Cristobal during the week ended May 15, with supplies for the Isthmian Canal Commission.

Colon, May 9, from New York, with 2,500 bbls. cement for Gatun spillway; 776 bales hay for corral use; 68 cases electric fuses for all divisions; 1,100 cases lubricating oil for stock, and a quantity of other material aggregating 6,280 pieces, weighing 950 tons.

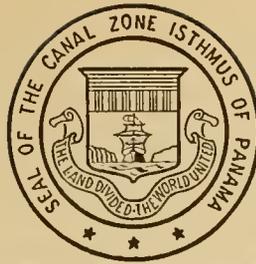
Sibiria, May 11, from New York, with 86 pkgs. cableway material for Gatun handling plant.

Talisman, May 12, from Mobile, with 7,662 creosoted cross ties for Gatun handling plant.

Parismina, May 13, from New Orleans, with 500 cases kerosine oil for stock; 6 horses for fire department; 65 pkgs. hoppers and screens for Gatun handling plant.

Hugin, May 14, from Philadelphia, with 2 boiler plants for Gatun and Miraflores.

Panama, May 14, from New York, with 2,500 bbls. cement for Gatun spillway; 1,500 bbls. cement for stock; 357 bales hay for corral use; 3,000 brake shoes, Empire and Gorgona shops; 5,000 lbs. lubricating grease; 50,000 lbs. cotton waste for stock; and a quantity of other material aggregating 6,566 pkgs., weighing 1,400 tons.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD

Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

New Water Supply for Gatun.

Plans have been prepared and approved for a new water supply for Gatun. The reservoir will be located about one-half mile east of the native settlement, and about a mile and one-half from the new Panama railroad station. The basin is a natural one, and only a small amount of excavation will be necessary to prepare it. The lake area will be 94.65 acres, and the area of the watershed 676 acres. Most of the land comprising the watershed lies in the tract known as the San Jose de Bellavista, and is owned by the Panama Railroad Company. It will be cleared of habitations and guarded from contamination in the same manner as other Zone drainage areas.

The reservoir, which will be 73 feet above mean sea-level, will be fed by a perennial creek called the Quebrada los Guacas. The maximum flow of this stream on a single day in the rainy season was 20,000,000 gallons. On April 15, 1909, at the close of the dry period, a minimum flow of 233,280 gallons was recorded. The capacity of the basin will be 611,952,000 gallons, making it the second largest reservoir in the Zone, and this may be increased by elevating the dam. The maximum daily quantity of water which will be required at Gatun during the next five years for all purposes has been estimated at 2,000,000 gallons, and the reservoir will store enough water to last 200 days.

The waters of the lake will be impounded by the Agua Clara dam, which will have an elevation of 58 feet. The downstream face will be constructed of spoil from the Canal, and the upstream face of selected material taken from the reservoir site. The spillway will have a width of 100 feet, and will be 68 feet high at its crest. The floor and sides will be concreted, the latter to elevation 73. It is calculated that with two feet of water

over the sill, the spillway will safely pass a rainfall over the entire watershed corresponding to three inches per hour.

The plans also call for a filtration plant, a sedimentation basin, into which water from the lake will flow before passing through the filter, and a pumping station. A 16-inch main will lead to the sedimentation basin, and a 12-inch main from the pumping plant to the present tank at Gatun where it will be distributed. A spur track is being constructed from a siding on the relocated line of the Panama railroad, to the trestle at the site of the dam, which will be used in transporting material and supplies. This road crosses the Mount Hope-Gatun public highway, and will be operated to the reservoir by means of a switchback.

The Gatun reservoir will be the fifth in the Canal Zone, fed by streams. The list is as follows:

NAME.	Location.	Capacity.	Drainage area.	Lake area.
		Gallons.			Acres
Brazos Brook	Near Mt. Hope	641,000,000	640	120
Gatun	Near Gatun	611,952,000	676	95
Rio Grande	Rio Grande	496,670,000	2,015	65
Camacho	Camacho	295,867,000	592	38
Carabali	Near Gorgona.	80,000,000	1,552	20.5

Overtime and Longevity.

The Sundry Civil Bill, approved March 4, 1909, contains the following paragraph:

"No part of the foregoing appropriation for the Isthmian Canal shall be applied to the payment of allowances for longevity service or lay-over days other than such as may have accumulated under existing orders of the Commission prior to July 1, 1909."

Under this Act, after June 30, 1909, no lay-over days can be allowed for overtime by steam shovel crews, or construction train crews, and no additional longevity increases can be authorized. But the Act in nowise changes the provisions of the eight hour law under which hourly gold employes receive time and a half pay for work in excess of eight hours in any one working day, or for Sundays and holidays.

Canal Medals.

A list of the employes of the Isthmian Canal Commission and the Panama Railroad Company, who earned the Canal Medal prior to December 31, 1908, was sent to the States on May 20. The medals have been minted, and the engraving of the names, numbers, and years during which service was rendered, will begin immediately.

An additional list is being prepared at Culebra of employes entitled to the Medal who have left the service of the Commission, which will show the present address of those employes wherever the address is known. Medals for names on this list will be distributed from the Washington office. The Medals

of employes who are still in the service will be distributed on the Isthmus.

The first 100 names of employes entitled to Canal Medals, together with the order in which the Medals will be numbered, is printed elsewhere in this issue of THE CANAL RECORD. There are 2,264 names on the list, and any person desiring to know the number of his Medal can obtain the information by sending an addressed postal card to the office of THE CANAL RECORD, Ancon, C. Z., and stating the date of his arrival on the Isthmus.

Survey of the Chagres River Basin.

The survey of the watershed of the Chagres River which was begun last November is advancing steadily. Four parties are at work, and during the month of April the survey of the Esperanza River was finished by party No. 1. This river is a tributary of the Chagres and enters it about thirty-eight miles above Gamboa. The extreme point located on the divide at the head of the Esperanza is about fifty miles easterly from Gamboa. On April 23, party No. 1 began the survey up the main branch of the Chagres, starting at the mouth of the Esperanza.

Party No. 2 has completed the survey of the upper Indio River, which flows into the Chagres about twenty-five miles above Gamboa, and has established a point on the dividing ridge at an elevation of about 2,000 feet above sea-level. In running the last six miles of the line the party traveled light, taking no camp equipment except blankets and a few cooking utensils, and sleeping at the end of their day's run. On April 10, about two miles of line was run connecting the Indio River survey with points on the Chagres River line.

Party No. 3 was at work during the month on the Pequeni River, which enters the Chagres about twenty miles above Gamboa, and established points on the northeasterly divide, between the Chagres and the San Blas country. Their farthest point is about fifty miles northeast of Gamboa. This party will cross the divide and run to Nombre de Dios, about ten miles distant, and tie their line to an established point at that place. When the line to Nombre de Dios has been finished, party No. 3 will start at the mouth of the Piedras River, about thirty-five miles above Gamboa, and run a line to the divide between that river and the Mamoni River, a tributary of the Bayano River, which flows into the Pacific Ocean about twenty-five miles east of Panama.

The points located by parties Nos. 1 and 3 will be tied in by triangulation by parties working from the mountains in the Bayano basin, using Chepo as a base, and locating their points from the islands of Taboga and Chapillo in Panama Bay.

Party No. 4 has been working up the Boqueron River, a tributary of the Pequeni

NOTES OF PROGRESS.

(Continued.)

River, about twenty-five miles above Gamboa, and has located points on the north-easterly divide about forty-two miles above Gamboa, and about eight miles southeasterly from Porto Bello. This party will run to Porto Bello and tie their line to an established point at that place, thus closing the circuit.

A description of the natural features encountered in the course of the survey shows that the Chagres River above the mouth of the Esperanza contains an exceptional number of high rapids, at one point rising 75 feet in a distance of 600 feet. The Indio River region is heavily wooded, but there is apparently no valuable timber. The rivers of the Boqueron region (toward Porto Bello) are very swift, rising rapidly toward the head waters, in one case rising nearly 3,000 feet in four miles. The greater part of this rise is taken up by sheer falls. On the Candaloso River there are two falls within a few feet of each other with a total height of over 500 feet. The work of the survey was seriously hindered during April by heavy rains which caused high water in the rivers and greatly delayed the transporting of supplies.

Commission Gardens.

The past dry season has been unusually trying on the Commission truck gardens at Corozal, Pedro Miguel, and Empire, owing to unfavorable climatic conditions, and as a result the vegetable yield fell off about 40 per cent. The frequent rainfalls kept the ground too wet, while lack of sunshine delayed the ripening of vegetables, and the moisture settling on the foliage and fruits caused considerable decay. February and March were the most favorable months, but weather conditions during the greater part of April were particularly severe. Attacks by insects and fungus diseases contributed in a measure to the adverse showing, although depredations by ants are steadily diminishing, due to the unceasing warfare against them during the past two years. Among the vegetables, tomatoes and beans suffered the most from excessive moisture. Of the three gardens, Corozal and Empire made the best showing.

The total yield of fruits and vegetables during April was as follows:

Tomatoes, 3,101 pounds.	Beans, 1,855 pounds.
Egg plant, 138 pounds.	Okra, 307 pounds.
Cucumbers, 881 pounds.	Beets, 55 pounds.
Radishes, 5,100 bunches.	Pepper, sweet, 11 pounds.
Green onions, 378 bunches.	Collards, 25 pounds.
Parsley, 275 bunches.	Papayas, 33.
Lettuce, 660 heads.	

The value of produce for April was \$741.28, as compared with \$688.79 for March. The cucumber crop for March was ruined by an insect closely resembling the squash bug. A fine variety of white corn, imported last year from the island of Guam, matured during March at the Corozal garden, and the seed was saved for planting. It is superior to the native varieties, and through continued seed selection may be further improved. Experiments have shown that the collard, a vegetable grown extensively in the Southern States, is well adapted to local conditions, and its cultivation will be increased. The demand for vegetables during April was in excess of the supply with the

single exception of radishes, the price of which was temporarily reduced without affecting the call for them.

New landscape work was undertaken during April at Gatun and Culebra. At Ancon nursery there were about 25,000 ornamental plants in various stages of development. The advisability of moving the Ancon garden to Empire is being considered on account of the superior conditions there, both as to soil and location.

Tides Give Trouble.

The principal obstacle encountered in clearing the ground in the channel section of the Pacific Division, preparatory to blasting for subaqueous excavation, is the daily submerging of a large part of the area by the tides. On certain days when the tides are higher than usual, the ground is almost completely covered, in some places to a considerable depth. Quite often the men are compelled to work up to their waists in water, and occasionally one will fall in a hole and be obliged to swim out. The men dislike to work under these conditions, and it is with difficulty that an adequate force is maintained. Blasting operations in this section have been somewhat retarded by lack of casing for the drill holes, but a supply of casing was received last week, and the work can be prosecuted. The brush clearing gang is working a mile or so south of the Miraflores lock site.

Assistant Examiner of Accounts.

Mr. T. L. Clear, formerly chief clerk in the office of the Examiner of Accounts, has been appointed Assistant Examiner of Accounts, effective May 14, 1909. In addition to his new work, he will perform the duties of chief clerk, and continue to act as Deputy Auditor of the Canal Zone.

EXECUTIVE ORDER.

Office of Director of Hospitals Abolished.

By authority of the President, it is ordered: That so much of Act No. 8, enacted by the Isthmian Canal Commission, September 2, 1904, as provides that certain duties be performed by the Director of Hospitals, is hereby amended. The office of Director of Hospitals will be abolished on September 12, 1909, and the duties referred to will be performed on and after that date by any official of the Department of Sanitation of the Isthmian Canal Commission who may be designated.

J. M. DICKINSON,
Secretary of War.

WAR DEPARTMENT, Washington, D. C.,
(Culebra, C. Z.), May 14, 1909.

Sand from Taboguilla Island.

A barge load of sand was brought from the island of Taboguilla, in Panama Bay, on May 17, and placed in cars at Balboa for shipment to Miraflores, where it will be used in the concrete for the new power house. This sand, in common with all that found on the beaches near Panama, contains a large proportion of shells. No effort will probably be made to bring sand from the beds at Chamé until the completion of the new sand dock in course of construction near the shipways at Balboa. The piling for this dock, which will be 800 feet long, is nearly in place.

Reading Matter for Convicts.

Old magazines and other reading matter are desired for distribution among the one hundred and twenty convicts in the Zone penitentiary. Any person who wishes to contribute reading matter of any kind is requested to notify either Rev. Moss Loveridge, the Deputy Warden, or Sergeant Seager at the Canal Zone penitentiary, Culebra, who will make arrangements for its collection.

LABOR FORCE FOR APRIL.

The report of the Chief Quartermaster for the month of April shows that the number of Isthmian Canal Commission employes actually at work on April 28, was 26,835, of whom 4,355 were "gold" employes, and the remainder were on the "silver" or labor roll. The Panama railroad force was 6,078, and the Panama railroad commissary force numbered 786. Thus the total number of persons at work on the Canal and railroad on the 28th day of April was 33,699. During the month 251 people were added to the "gold" roll and there were 203 separations, the net increase in the force being 48. Seven hundred and fifty laborers from Barbados were imported during the month, 500 of which were assigned to the Panama Rail-

road Company for work on the relocated line, and 250 to the three construction divisions of Canal work.

The number of family quarters occupied by "gold" employes was 1,505, and the occupants numbered 4,506; bachelor quarters by "gold" employes, 2,095, and the occupants numbered 3,422. The family quarters occupied by West Indians numbered 941, and the occupants 3,237; bachelor quarters, 245; number of occupants, 5,081. The family quarters occupied by European laborers numbered 279, and the occupants 887; bachelor quarters, 141; number of occupants 4,657.

A statement of the force actually at work on April 28, 1909, follows:

DEPARTMENT.	Gold Men.	Monthly.	SILVER MEN.						Total Gold and Silver Men.	
			Artisans.		European Laborers.		West Ind'n Laborers.			
			32 cents and over.	26 cents.	40 cents.	32 cents.	26 cents.	20 cents.		Total Silver.
Construction and Engineering.....	3,240	2,204	3,378	477	3,855	481	5,363	2,589	18,347	21,587
Department of Civil Administration.....	323	174	2		3	23			202	525
Department of Sanitation.....	371	587	85	1			16	149	838	1,209
Quartermaster's Department.....	222	1,058	304		242	6	361	491	2,462	2,684
Subsistence Department.....	63	615	2	1					618	681
Disbursements.....	25	7							7	32
Examiner of Accounts.....	111	6							6	117
Totals.....	4,355	4,651	3,771	479	4,100	510	5,740	3,229	22,480	26,835

Panama railroad force, 6,078; Panama railroad commissary force, 786.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Ancon Woman's Club held its meeting in the club rooms on May 19, the acting president in the chair. There was a good attendance. The library question has been decided, and the room will be open every evening to gentlemen known to club members. A member of the club will be in attendance during certain hours. The general club room will be used for social purposes, card playing, reading, or conversation, the tea room for study, and the art room will be fitted up as a writing room. The new rule will not be in force until after the annual meeting. The last program for the year was presented by the art department, "Unwritten Notes" being the subject of an address by Madam LePrince. There was an exhibit of Isthmian pictures. The annual meeting of the club will be held on June 2, and the installation of officers on June 16, which closes the club year. The next season will open in October.

An election of officers by the Empire Women's Club was held on April 15, with the following result: Mrs. Abbie B. Millerman, president; Mrs. Grace Mills, vice-president; Mrs. J. E. Westberg, treasurer. The office of secretary will be left open for the present. The last program meeting will be held on May 28, when the study for the year will close with a symposium of the Canal Zone. There will also be a social meeting on that date, together with a general reception to the ladies of Empire.

A meeting of the Gorgona Woman's Club was held on Thursday, May 20, the president in the chair. The informal action taken at a previous meeting, regarding the temporary discontinuance of the departments, was ratified at this meeting. The Club proposes to work on social lines at present. Representatives on the Federation committees will be appointed, visiting and sick committees will be continued, and other committees will be formed as occasion requires. An entertainment is being arranged, and regular program meetings will be features. The Club will hold open meetings for the residents of Gorgona.

The Gorgona Daughters of Rebekah gave a flower dance on Saturday evening, May 22. The ball room was decorated with the colors of the order, red and green, and the stage was draped with flags and the emblem of the order. The ladies appeared in flower costumes, and there was a large attendance.

The Woman's Club, the Sunday school and the Red Cross of Pedro Miguel combined in a bazaar, which was given at the club room on Saturday evening, May 15. There were eleven booths. Fancy articles and other attractions were offered and several hundred dollars were raised.

Mrs. Pierce T. Murphy, of Colon, spoke before the Gatun Woman's Club on Friday, May 21, on the "Discarded Baby," dealing with settlement work in New York. The club will give an evening social on Friday, May 28, the proceeds of which will be used to build a tennis court. There will be music and refreshments. Election of officers was held in April, with the following result: Mrs. Charles Stoddard, president; Mrs. E. L. Bandy, vice-president; Mrs. E. S. Waide, secretary; Mrs. C. D. Corp, treasurer. The year closes with the meeting June 4.

The Isthmian Sunday School Association

held a convention at Gatun on Sunday, May 16, the president of the association in the chair. About 250 persons attended. The meeting consisted of a service of song, addresses, and a short business meeting. The association was organized in January, 1908, and is affiliated with the International Sunday School Association. Conventions are held quarterly at different points in the Zone. A special train left Panama at noon and returning left Gatun at 5 p. m.

An entertainment was given by the pupils of the Ancon public school in the school house on the evening of Friday, May 21. The program consisted of songs, drills, and recitations. There was a large audience present and about \$70 was realized, which will be used to purchase books for the school library.

PERSONAL.

Col. W. C. Gorgas, accompanied by Mrs. Gorgas, Miss Gorgas and Miss Devoil sailed on the *Panama* on May 20 for an eight weeks' leave of absence in the States. Among the other passengers on the *Panama* were: Maj. J. P. Jervy, Resident Engineer at Gatun, and family; Judge and Mrs. Thomas E. Brown, Jr., of Cristobal and A. B. Minear and wife of Culebra.

Dr. J. P. Perry, Chief Quarantine Officer, returned on Tuesday, May 18, from an inspection trip to ports on the north coast of South America and islands in the Antilles. He left the Isthmus on April 13, and during his travels visited Sabanilla in Colombia; Willemstadt, on the island of Curacao; La Guayra, Caracas, and Puerto Cabello in Venezuela, and the islands of Trinidad and Barbados.

Mr. Sylvester Deming, Treasurer of the Panama Railroad Steamship Company, returned to the States on the *Panama* on May 20, after a visit of six days on the Isthmus. Mr. Deming formerly spent some years on the Isthmus in the employ of the company.

P. S. McCormick, agent of the United Fruit Company at Colon, accompanied by Mrs. McCormick, sailed on the *Parissima*, May 18, for a visit of three weeks in Costa Rica.

Obituary.

Dr. Wm. M. Weightman, Passed Assistant Surgeon, United States Public Health and Marine Hospital Service, died at Guayaquil, Ecuador, on the 16th instant, of yellow fever. Dr. Weightman was formerly stationed at San Francisco. He was afterwards detailed for duty at Callao, Peru, and about a year ago was transferred to Guayaquil, where he inspected all vessels clearing for ports of the United States and Panama. His family were on the Isthmus a few weeks ago on their way to join him.

John H. Barbour, an American, employed in the office of the Chief Engineer, was found dead in bed at his quarters in Culebra, Sunday morning, May 9. He had just returned for duty after a three months' vacation. Mr. Barbour was chief clerk in the old division of building and construction, was about 42 years of age, unmarried, and came to the Isthmus four and one-half years ago. His home was in New York city.

A. Y. McFarland, an American, formerly employed in the Quartermaster's Department, died at Ancon Hospital, Sunday, May 9. He was 38 years of age, unmarried, and had been on the Isthmus 42 months.

COMMISSION CLUBHOUSES

Activities of the Young Men's Christian Association.

REPORT FOR APRIL, 1909.

Total membership	1,212
Number different tournaments: billiard, pool chess, etc.	8
Total number of tournament players	116
Total number of bowling games	4,792
Total number of pool and billiard games	12,068
Total income from soda fountain	\$2,152.94
Number different men using gymnasium	100
Total attendance of men using gymnasium	540
Number enrolled in chess and checker clubs	42
Number enrolled in glee clubs	10
Number enrolled in camera clubs	67
Number enrolled in bible clubs	53
Number enrolled in educational classes	30
Number of members of library	578
Total number of books withdrawn	1,322
Number of Sunday meetings	1
Attendance	125
Number of local entertainments	14
Attendance	2,620
Number of functions outside association management	9
Attendance	1,195
Number of afternoons for women	15
Attendance	100
Number evening functions to which women were invited	25
Attendance	1,025
Different men on committees	32
Number of men called on in hospitals	120
Number of letters written at public tables	3,440
Total attendance at building	46,359
Average attendance per day	1,545

BOYS' DEPARTMENT (AGES 10-16).

Number of members	57
Number of afternoons open to boys	50
Total attendance	578
Attendance at gymnasium exercises	234

The initial dates of the Edwin R. Weeks Co. are as follows: Empire, May 28; Gorgona, May 29; Cristobal, May 31; Culebra, June 1; Las Cascadas, June 2; Gatun, June 3; Camp Elliott, June 4. On Saturday night, June 5, the Company will give an entertainment in the National Theater for the people of Ancon and Panama. Tickets will be on sale on June 1 at the Hotel Tivoli and Hotel Central. The return engagements at the clubhouses will be as follows: Gorgona, June 9; Empire, June 10; Culebra, June 11; Cristobal, June 12.

EMPIRE.

Wednesday and Friday evenings will be devoted to gymnasium work under the direction of A. O. Ludwig, physical director. All members interested are requested to be present on these nights.

On Friday night, May 21, the Culebra Y. M. C. A. indoor baseball team defeated the Empire team at Empire by the score of 17 to 13.

GORGONA.

On Friday night, May 21, an indoor baseball game was played between House 99 and the Y. M. C. A. team. The score was 28 to 24 in favor of the Y. M. C. A.

Judge Wesley M. Owen of Ancon will deliver a memorial address at the clubhouse, on Sunday, May 30, at 8 o'clock. Special music will be furnished by members of the Edwin R. Weeks Co. All the people of Gorgona are cordially invited to attend.

CRISTOBAL.

A concert was given in the game room by the Isthmian Instrumental Club on Monday evening, May 24.

The Cristobal Y. M. C. A. baseball team will play the Culebra Y. M. C. A. team at Cristobal on May 31.

Concert by I. C. C. Band.

GORGONA, C. Z.,

Sunday, May 30, 1909, at 6 p. m.

PROGRAM.

- 1 March—*The Moose*.....Flath
 - 2 Selection—*The Three Twins*.....Hoschua
 - 3 { a Characteristic—*Kerry Mill's Barn*
 - b Indian Descriptive—*Trailing the Trail*.....Mills
 - 4 Cornet Solo—*Columbia Polka*.....Rollinson
 - Chas. E. Jennings.
 - 5 Medley Selection—*Hits of 1909*.....Remick
 - 6 Waltz—*Idle Hours*.....Wood
 - 7 Tone Poem—*In Lovers' Lane*.....Pryor
 - 8 Fantasia—*Tone Pictures of North and South*.....Bendix
 - 9 Idyl—*The Glow Worm*.....Lincke
 - 10 March—*Sousa Swing*.....Brown
- CHAS. E. JENNINGS, Musical Director.

A concert will be given at Hotel Tivoli, Ancon, Sunday, June 6.

FIVE YEARS OF CANAL WORK.

Progress Made Under American Control, Since May 4, 1904.

III.

Recruiting and Maintaining the Working Force.

From the beginning of American occupation the problem with regard to a working force was not so much to obtain men as to keep them on the work after they had been brought here. This difficulty was experienced as well with white Americans recruited for the skilled trades and administrative positions as with the common labor force. Modern sanitation, systems of housing and feeding employes, and a uniformly high scale of wages have made the force permanent.

The actual number of employes of the New Panama Canal Company on May 4, 1904, was 746, about 700 of whom were laborers at work in Culebra Cut, and others employed as caretakers of the plants and machinery distributed along the line of the Canal between Colon and Panama. Most of this force was retained, and as the work developed it was increased. On November 1, 1904, the total force was about 3,500, of whom 600 were Americans. In spite of the great amount of illness among both white and negro employes during the first years of American occupation, the force grew steadily in numbers. It was not a permanent force, however, as it was made up largely of men who stayed on the Isthmus only a few months. On November 1, 1905, the total force was about 17,000 men, of whom 2,705 were "gold," or skilled employes.

The exact number of men in the Canal force cannot be stated for any given time, as only two force records are available. One of these gives the number of employes actually at work at a given time, and the other gives the number of payments made each month.

A statement giving the number of employes reported in the past five years follows. The actual number in the employ of the Commission is somewhere between the numbers of the two reports. The term *gold* refers to employes in skilled trades, technical, and administrative positions, most of whom are Americans. Silver employes are common laborers and include a few negro artisans.

YEAR.	FORCE REPORT.		PAYMENTS MADE.	
	Gold.	Silver.	Gold.	Silver.
*1904.....	600	2,900	**	**
*1905.....	2,705	14,295	2,784	13,685
*1906.....	3,700	13,300	4,823	16,979
†1907.....	4,404	18,923	5,615	24,268
†1908.....	4,587	20,991	5,487	31,000
†1909.....	4,295	20,583	4,962	28,524

*Force on November 1. **Figures not available.
†Force on June 30. †Force on January 31.

Not included in the above figures are the employes of the Panama Railroad Company, who on December 31, 1908, numbered 5,342, and the employes of the Commissary who numbered 749, a total of 6,091.

By nationalities, the force at work on January 31, 1909, included 4,295 Americans; 4,913 Europeans, and 15,670 West Indian negroes. The skilled labor, technical and administrative forces, are recruited in the United States, and although the number of men who left the service each year up to 1908 was as great as the number actually at work, the supply has always been adequate.

The supply of common labor has not always been sufficient to meet the demand, and in the first three years was quite inadequate.

In 1905 labor agents were sent out to various foreign countries.

The following table shows the number of laborers recruited up to May 1, 1909, and the source of supply:

EUROPEAN LABORERS.						
Place of Origin.	1905.	1906.	1907.	1908.	1909.	Total.
Spain.....		1,204	5,291	1,750	.....	8,245
Italy.....		909	1,032	.....	.....	1,941
Greece.....			1,101	.....	.....	1,101
France.....		19	.....	.....	.....	19
Armenia.....		14	.....	.....	.....	14
*Cuba.....		515	.....	.....	.....	515
Total.....		2,661	7,424	1,750	.....	11,835

WEST INDIAN LABORERS.							
Barbados.....		7,050	3,242	2,592	1,291	14,175	
Guadeloupe.....			2,039	.....	.....	2,039
Martinique.....		565	2,224	.....	.....	2,789
Jamaica.....	100	.....	.....	.....	.....	100
Trinidad.....		1,079	.....	.....	.....	1,079
Curacao.....		23	.....	.....	.....	23
St. Kitts.....		1,346	.....	.....	.....	1,346
†Colombia.....	442	160	.....	.....	.....	602
‡Chiriqui.....			13	.....	.....	13
Not classified..		69	.....	.....	.....	69
Total.....		542	10,292	7,518	2,592	1,291	22,235
Grand total.		542	12,953	14,942	4,342	1,291	34,070

*Spanish laborers recruited in Cuba.

†Colombian negroes.

‡Panamanian negroes.

Recruiting in the West Indies and Spain induced independent immigration, and it is estimated that as many men have been added to the common labor force who came to the Isthmus of their own initiative as have been sent directly by the labor agents. At present the supply of common labor on the Isthmus is greater than the demand, although some recruiting has been necessary in 1909, because of the indisposition of the idle men to accept work at the established rate of 10 cents an hour for West Indian laborers.

Quarters for Employes.

Most of the 2,149 buildings found in the Canal Zone when the Americans took possession were in poor condition. It was found profitable to repair 1,536 of them, chiefly for use as laborers' quarters or storehouses. They served a useful purpose in the preparatory years of Canal work, until the modern quarters constructed by the Americans were available. Over 1,500 buildings have been constructed by the Isthmian Canal Commission, of which 750 are for miscellaneous use; 200 as laborers' quarters, and the remainder as "gold" quarters.

Quarters for "gold" employes are located at the following places:

PLACE.	BACHELOR QUARTERS.			FAMILY QUARTERS.	
	No. of houses.	No. of rooms.	No. of occupants.	No. of houses.	No. of quarters.
Ancon.....	10	154	153	84	136
Bas Obispo.....	6	69	95	32	43
Corozal.....	2	90	96	28	52
Culebra.....	13	259	230	132	212
Cristobal.....	33	403	734	72	186
East La Boca.....	3	72	109	9	24
Empire.....	21	268	483	112	230
Gatun.....	15	184	314	45	110
Gorgona.....	20	279	378	83	171
Balboa.....	2	72	61	18	25
Las Cascadas.....	7	92	116	43	95
Miraflores.....	3	13	27	2	2
Paraiso.....	8	95	46	48	59
Pedro Miguel.....	10	95	166	36	63
Porto Bello.....	4	37	93	7	19
Sau Pablo.....	9	53	96	13	13
Tahernilla.....	6	61	69	22	35
Total.....	172	2,296	3,266	786	1,475

There are several types of "gold" family quarters, the employes being assigned quarters in accordance with their salary rating. All the houses are frame buildings without cellars, and are constructed as cheaply as possible, with the idea that they will be abandoned in a few years. The "types" differ from one another in size and arrangement of rooms rather than in style of construction, for the style is general. All the houses have screened porches in front and rear, are painted inside and outside, are supplied with electric lights, water connections, and toilet rooms, and are furnished with necessary pieces of furniture. The "gold" family quarters in most general use are known as type-14. A type-14 house is a two-story building with quarters for two families on each floor, each quarters having a screened veranda in front, with three doors entering directly into as many rooms, two of which are 12 feet square, and the third 8 by 12 feet. Back of these three rooms is a kitchen 8 by 10 feet, another screened veranda, and a toilet and bath room. Out of the total of 1,475 family quarters, 580 are of this type, while the majority of the remaining quarters afford practically the same accommodations.

Bachelor quarters for gold employes are in barracks containing from four to twenty-four rooms. The rooms are large enough to accommodate two men. The furniture consists of a bed, a case of drawers for each man, table and chairs. The quarters are lighted with electricity, and have toilet and bath rooms on each floor.

The family quarters for laborers are in screened barracks of two types, one containing eight quarters, and the other five, each quarters having two rooms. The laborers' barracks are buildings fitted with stanche bunks in double rows of three tiers each. The ordinary barracks has 72 bunks.

A statement of the quarters occupied in April, 1909, follows:

The number of family quarters occupied by "gold" employes was 1,505, and the occupants numbered 4,506; bachelor quarters by "gold" employes, 2,095, and the occupants numbered 3,422. The family quarters occupied by West Indians numbered 941, and the occupants 3,237; bachelor quarters, 245; number of occupants, 5,081. The family quarters occupied by European laborers numbered 279, and the occupants 887; bachelor quarters, 141; number of occupants, 4,657.

In each of four large villages—Cristobal, Gorgona, Empire, and Culebra—the Isthmian Canal Commission has erected clubhouses for the entertainment of the "gold" employes. These clubhouses are conducted by secretaries trained in Y. M. C. A. work, and are similar to the railroad Y. M. C. A. houses in the United States. Four more will probably be erected during the coming fiscal year. In eight large villages along the line of the Canal the Commission has also erected buildings in which religious services and meetings of various organizations are held. The Commission hotels, in places where there is no regular clubhouse, have club rooms over the dining rooms. Thus there is not a village in the Canal Zone, having a considerable number of "gold" employes, in which provision has not been made for social diversion.

Food and Clothing.

The Panama Railroad Commissary was established many years before American occupation of the Zone, and was maintained until

1904 as a general store in Colon. Since then it has been expanded in order to keep pace with the increase in population, until it has become the main source of food and clothing supply for 40,000 people. The commissary has storehouses, a bakery, a laundry, a cold storage and ice plant, and a general store in Cristobal and Colon, besides stores in twelve other villages. Cold storage supplies and ice are delivered in the Zone villages each morning by special train. Only Isthmian Canal Commission and Panama railroad employes are allowed to make purchases at the commissaries, and to insure this, no cash sales are made to residents of the Isthmus, all purchases being made with coupons issued by the Commission and charged against the employes' salary account.

A statement of the business transacted in the fiscal year ending June 30, 1908, follows:

Stock on hand June 30, 1907..	\$433,730.75
Total stock received.....	3,564,720.25
	\$3,998,451.00

Total sales disposed of as follows:	
I. C. C. hotels and messes.....	\$1,375,256.52
Various departments P. R.	
R. Co.....	71,739.82
P. R. R. S. S. Line.....	5,410.51
I. C. C. hospitals and Sanitary Department (charged direct).....	226,185.00
Various I. C. C. departments.	87,034.71
Cash sales (principally to U. S. ships).....	7,854.78
Personal accounts.....	84,397.72
Coupon sales.....	1,864,487.22
Supplies used from stock account "Expense Accounts"	71,231.71
	3,793,597.99
Average per month.....	316,133.17
Stock on hand June 30, 1908.....	782,735.95

Food for employes living in bachelor quarters is supplied by the hotels and messes maintained for each class of employes—hotels for "gold" employes, messes for European laborers, and mess kitchens for negro laborers. The hotels and messes are practically self-supporting.

There are eighteen hotels at which meals are served at 30 cents each to employes, and at Hotel Tivoli in Ancon meals are served to employes at a reduced rate, and to transients at the rates charged by high class hotels in the United States. In the month of March, 1909 the receipts at the eighteen 30-cent hotels amounted to \$52,365.89, and 171,503 meals were served.

At the messes for European laborers the meals are served at the rate of forty cents a day for three meals. The food is placed on tables and the men sit down to it on benches. Twenty-one of these messes are maintained—one for each European labor camp. The meals served in March numbered 290,190, and the cost of maintaining the messes was \$36,084.05, a trifle less than the income.

In the mess kitchens for negroes food is cooked and is served in dishes to the men, to be eaten wherever they wish. The meals served to negro laborers in March at the twenty-four kitchens maintained for that purpose numbered 284,724, and cost \$25,196.17. The meals at the kitchens cost 30 cents a day for three meals.

New Record in Central Division.

All records for total output in the Empire District of the Central Division were broken on May 12, when 15 steam shovels excavated 25,454 cubic yards of rock and earth, an average of 1,697 cubic yards per shovel for an eight-hour day. The shovels were under steam 120 hours, and actually at work 97 hours and 55 minutes.

STEAM SHOVELS IN APRIL.

Record for Single Day's Excavation Broken on April 8.

Steam shovels in April removed 2,137,861 cubic yards of which 2,083,560 cubic yards were "work," and 54,301 "plant," excavation. In the Central Division the shovels excavated a total of 1,798,454 cubic yards, comprising 1,687,766 cubic yards from the Canal prism, 74,402 from the Obispo Division, 15,688 taken from the prism and then dumped back for levee purposes, and 20,598 excavated by hand. The following table gives a comparison with other high monthly records in this division:

DATE.	Prism.	Prism and Outside.
March, 1906.....	1,540,497	1,615,118
October, 1908.....	1,551,409	1,598,981
February, 1909.....	1,546,008	1,644,636
March, 1909.....	1,966,294	2,065,827
April, 1909.....	1,722,442	1,798,454

The high record for the month was made by shovel No. 223 (90-ton) at work in the Culebra District, which took out 51,184 cubic yards of earth in 26 working days, an average of 1,969 cubic yards per day. The best record for shovels in the 70-ton class was made by No. 122 in the Bas Obispo District, which removed 35,053 cubic yards of rock and earth in 25 working days, an average of 1,402 cubic yards per day.

The record for a single day's excavation was broken on April 8, when 57 shovels took out 78,559 cubic yards, an average of 1,378 cubic yards per shovel. The best day's record for one shovel during the month was on April 12, when No. 266 in the Culebra District excavated 3,340 cubic yards.

On April 6, the 18 shovels working in the Culebra District broke all previous records for districts, removing 28,350 cubic yards, an average of 1,575 cubic yards per shovel.

The best monthly and daily records of steam shovels in the three divisions for the month of April are as follows:

Best Records for the Month.

CENTRAL DIVISION.

TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
253.....	20,832	23,492	44,324	25
254.....	40,325	1,680	42,005	25
127.....	27,813	5,298	33,111	25

BAS OBISPO DISTRICT.

202.....		38,083	38,083	23
228.....	7,218	28,874	36,092	26
122.....	31,548	3,505	35,053	25

EMPIRE DISTRICT.

207.....		47,436	47,436	25
220.....	21,438	21,438	42,876	24
110.....	24,242	4,278	28,520	24

CULEBRA DISTRICT.

223.....	51,184		51,184	26
217.....	25,740	24,286	50,026	26
115.....	28,191	2,120	30,311	25

OBISPO DIVERSION.

226.....	7,169	28,872	36,041	24
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ATLANTIC DIVISION.

GATUN LOCKS.

112.....	3,267	17,622	20,899	19
134.....	6,484	11,622	18,106	16

MINDI.

251.....		35,557	35,557	25
101.....	12,950	9,357	22,307	21

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS.

222.....	29,340	29,340	
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MIRAFLORES LOCKS.

156.....	16,420	16,420	
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Best Records for One Day.

CENTRAL DIVISION.

Shovel No.	Location.	Date.	Character of material excavated.	Cubic yds. excavated.
253	Tabernilla.....	Apr. 27.	Rock.....	2,700
254	Tabernilla.....	Apr. 14.	Earth.....	1,840
226	Bas Obispo.....	Apr. 9.	Rock and earth	2,550
256	Bas Obispo.....	Apr. 2.	Soft rock.....	2,490
207	Empire.....	Apr. 7.	Rock.....	2,860
262	Empire.....	Apr. 14.	Rock.....	2,810
266	Culebra.....	Apr. 12.	Rock.....	3,340
217	Culebra.....	Apr. 6.	Rock and earth	3,180

ATLANTIC DIVISION.

112	Gatun Locks.....	Apr. 8.	Clay and rock..	1,935
134	Gatun Locks.....	Apr. 3.	Clay and rock..	1,830
251	Mindi.....	Apr. 17.	Rock.....	1,911
101	Mindi.....	Apr. 6.	Rock and earth	1,485

PACIFIC DIVISION.

222	P. Miguel Locks	Apr. 30.	Rock.....	2,190
156	Miraflores Locks	Apr. 1.	Rock.....	1,270

Panama Episcopal Mission Work.

The annual report of the Panama Mission of the Protestant Episcopal Church of America has been issued. It covers the year 1907-1908, and shows that in the Canal Zone, Colon, and Panama, there are seventeen congregations, six for white persons and eleven for West Indians. The clergy number six, one being a West Indian in deacon's orders. There are seventeen catechists and lay-readers, four women's guilds, and three chapters of the Brotherhood of St. Andrew.

During the year the Commission erected a hospital chapel at Ancon, which was opened for service on Christmas Day. The congregation at Empire erected a church at a cost of \$2,000, which was opened the last Sunday in November. A rectory at this station, also built by the congregation, was occupied by the rector in February. The American Church Building Fund has contributed toward this work. Other congregations meet in the Commission chapels, or other suitable rooms. The West Indian congregations are provided with tents or any available buildings for the purpose of holding worship. Statistics for the year are: Communicants, 785; Sunday school scholars, 392; congregations, 17; contributions, \$4,054.75; baptisms, 150; marriages, 157; confirmations, 126.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES, ANCON, C. Z., May 26, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Algeier, Martin	McCourtney, James W.
Blunt, Wm. T.	Miesh, John
Bogliolo, John	Sargant, Kenrick
Chapman, Arthur	Sawain, Salim
Clardy, A. B.	Stephenson, C. J.
Cleave, J. H.	Stockins, Mrs. T.
Clark, E. E.	Stone, Mrs. T. B.
Coster, Josef	Straw, George R.
Cundeff, I. B.	Sullivan, C. P.
Dockery, Mrs. Harry	Thompson, Newton
Dow, Mrs. J. W. Gladys	Farnum
Haynes, Harry A.	Volman, P. J.
Hunter, C. D.	Winant, W. F.
Knowlton, Mr. & Mrs. C. F.	Workman, J. A.
Major, J. W.	Zulek, Fred.

The following steamers have recently arrived at Bulboa: May 15, *Saturn*, U. S. Collier from North; May 16, *Guatemala*, from South, *Arica*, from Guayaquil, and *Denderah*, from North; May 17, *Mexico*, from South; May 19, *Chiriqui*, from intermediate ports; May 20, *Taboga*, from intermediate ports; May 21, *Manavi*, from intermediate ports.

SANITATION OF CITIES.

Work to be Prosecuted in Panama and Colon During Next Dry Season.

By direction of the Chairman and Chief Engineer, the Division Engineers of the Atlantic and the Pacific Divisions are preparing plans covering the details of sanitary improvements in the cities of Panama and Colon. These improvements will be made under an appropriation contained in the Sunday Civil Act of March 4, 1909, providing for "Expenses incident to continuing the extension, grading, and paving of streets, building sewers, and extending water mains in the cities of Panama and Colon, \$800,000."

The improvements will be made under Article VII of the Treaty of February 26, 1904, in which

The Republic of Panama agrees that the cities of Panama and Colon shall comply in perpetuity with the sanitary ordinances whether of a preventive or curative character prescribed by the United States, and in case the Government of Panama is unable or fails in its duty to enforce this compliance by the cities of Panama and Colon with the sanitary ordinances of the United States the Republic of Panama grants to the United States the right and authority to enforce the same.

In directing that the estimates for this sanitation work be prepared, the Chairman and Chief Engineer says:

Before any such work is authorized by me I will secure its approval from a sanitary standpoint by the Chief Sanitary Officer, and through the head of the Department of Civil Administration, the approval of the Panamanian Government for the work in question, and its assent to defray the cost thereof in accordance with the procedure outlined in Article No. VII of the Treaty. * * *

The original estimate forwarded to Congress was for \$1,200,000. This was cut down by Congress to \$800,000, but with due economy, I think the amount appropriated can be made to answer the present requirements, especially if construction work is done during the next dry season. * * * You will please plan any such work therefore, so that no undue increase in expenditure will result in the performance of any of this work prior to the beginning of the next dry season. * * *

For Panama, the plans and estimates should include the work between curb lines. In addition the approximate amount of fill required to bring the lots adjoining the improved streets up to grade, to comply with the requirements of the Sanitary Department should be stated. The fill outside of the curb lines will not be paid for out of the Congressional appropriation, and the approximate amount and cost of the necessary fill which will fall upon the property owners should be known in advance so that the matter can be presented to the Government of Panama at the time of the approval of the work is requested.

Likewise in Colon, in addition to the estimate of cost of improvements between curb lines, the approximate quantities and cost of fill required for lots should be estimated and submitted so that the matter can be taken up with the Panama railroad or other owners of property in Colon to be improved and arrangements made for the reimbursement of the cost of such fill.

The Chief Sanitary Officer has recommended that the work in Panama be attended to before that in Colon, because the district in which the improvements are to be made in Panama "are already closely occupied and would be very hard to sanitize in case of the introduction of plague." Continuing he recommends:

Of the districts mentioned I would recommend that they be attended to in the following order: First, Caledonia; second, Guachapali; third, Cocoa Grove; fourth, El Granillo; fifth, 16th Street district; sixth, Santa Cruz; seventh, San Miguel; eighth, Pueblo Nuevo; ninth, Trujillo; tenth, Maranon. These localities should be laid out in streets and lots. The streets should be graded, sewer and paved, and water put in, and the drainage of the whole district looked after. Property owners should be required to drain and fill their own lots where draining and filling are necessary. When the streets have been laid off, and the lots staked, the municipality should require

the property owners to get their houses on the lot lines. The Sanitary Department can require the owners to do the necessary filling and draining as a sanitary measure.

Eleventh, intercepting sewers, etc., west of Central Avenue.

Twelfth, the land between Cocoa Grove and El Granillo line to the east of Ancon Boulevard should be laid out into streets and lots, should be graded, and water and sewer put in.

In Colon I would recommend:

First, the paving and sewerage of D street and caring for the D street ditch.

Second, the filling of the ground between D street and Hudson alley.

Third, improvement on the beach road, and the remainder to be spent upon filling in between Hudson alley and G street ditch.

I think the work should be done as soon as it advantageously can, but if any great saving can be made by waiting until next dry season, I do not think there is any serious objection to putting it off until that time.

Church Notes.

The all-day missionary rally held by the ladies of the Methodist Church, Panama, Thursday, May 6, was attended by about forty persons, including representatives from almost every station on the Panama railroad. Mrs. W. W. Gray was elected chairman of the meeting, and Mrs. J. Leon Webster was chairman of the committee of arrangements. At the morning session addresses were made by Mrs. Abbie Hillerman, Dr. Dora Martin, Mrs. J. Stuntz of Cristobal, and Judge Wesley Owen. Lunch was served to the guests in the parsonage at 1 o'clock. At the afternoon meeting a district organization was effected and the following officers elected: Mrs. H. L. Stuntz of Colon, president; Mrs. J. L. Webster of Ancon, vice-president; Mrs. L. C. Vannah of Corozal, secretary; Mrs. A. R. Stroup of Paraiso, treasurer.

The local branch of the Women's Foreign Missionary Society was organized in November, 1908, and has about 25 members. Mrs. Gray is president and Mrs. Webster, secretary. The society meets the first Thursday in each month at the parsonage. Another organization has been established at Paraiso. The new district organization is intended to cover all the Methodist missionary work in the Canal Zone.

Sunday, May 9, was observed as Mother's Day in the Union Church, Cristobal, in connection with similar observance of the day in the churches in the States. The same evening the second service for the white congregation at Porto Bello was held, Rev. Carl Elliott of Cristobal, officiating.

Memorial Day Services.

Memorial Day will be observed at St. Luke's Church, Ancon, on Sunday, May 30, at 10 a. m. A special service of patriotic character will be held. Representatives of the Army and Navy Union will attend. Rev. William Cross of Cristobal will preach.

Convicted of Embezzlement.

William Pettit, an American, was convicted of embezzlement in the Circuit Court of the Third Judicial Circuit on May 10, and sentenced by Judge Gudger to two years in the Culebra penitentiary at hard labor. He was originally sentenced to three years, but the term was later reduced to two, with the information that an application for pardon would be considered at the expiration of a year, in the event of good behavior. Pettit arrived on the Isthmus August 31, 1905, and was employed as a clerk in the office of Dr. T. C. Lyster at Ancon Hospital, where the peculations occurred.

CANAL MEDALS.

Names of First One Hundred on the List.

No.	Name.	Service Began.	I. C. C. or P. R. R.
1904			
1.	*Brewer, W. T.	May 4.	P. R. R.
2.	*Gilbert, William	May 4.	P. R. R.
3.	*Uncles, Roderick W.	May 4.	I. C. C.
4.	*Clark, T. H.	May 4.	P. R. R.
5.	*Wardlaw, R. H.	May 4.	P. R. R.
6.	*Turner, James M.	May 4.	P. R. R.
7.	*Wilson, George F.	May 4.	P. R. R.
8.	†		
9.	*Baker, P. G.	May 4.	P. R. R.
10.	*Skipper, A.	May 4.	P. R. R.
11.	*Hunt, J. St. C.	May 4.	P. R. R.
12.	*Chester, W. C.	May 4.	P. R. R.
13.	*Reed, Harry D.	May 4.	I. C. C.
14.	*Malott, Samuel O.	May 4.	P. R. R.
15.	*Clisbee, A. L.	May 4.	P. R. R.
16.	*Koch, Harry E.	May 4.	P. R. R.
17.	*Pratt, M. C.	May 4.	P. R. R.
18.	*Connelly, M. B.	May 4.	P. R. R.
19.	*Anderson, Henry	May 4.	P. R. R.
20.	*Beale, F. F.	May 4.	P. R. R.
21.	*Kallish, B. A.	May 4.	P. R. R.
22.	*Doty, V. D.	May 4.	P. R. R.
23.	*Bergin, R. W.	May 4.	P. R. R.
24.	*Davies, Thomas J.	May 4.	P. R. R.
25.	*Jones, E. D.	May 4.	P. R. R.
26.	*Belt, Josiah	May 4.	P. R. R.
27.	*Deasy, D. J.	May 4.	P. R. R.
28.	*Warren, J. C.	May 4.	P. R. R.
29.	*Jussen, A. S.	May 4.	P. R. R.
30.	*Harper, Austin C.	May 4.	I. C. C.
31.	*Leeds, E. W.	May 4.	P. R. R.
32.	*Dean, J. W.	May 4.	P. R. R.
33.	*Northrop, C. W.	May 4.	P. R. R.
34.	*O'Brien, W. S.	May 9.	P. R. R.
35.	*Stevens, J. E.	May 11.	P. R. R.
36.	*Shanton, George R.	May 17.	I. C. C.
37.	*Stockelberg, Charles L.	May 17.	I. C. C.
38.	*Burson, William B.	May 24.	I. C. C.
39.	*Paterson, Edmund T.	May 24.	I. C. C.
40.	*Nichols, Aurin B.	May 31.	I. C. C.
41.	*Davis, Cleon L.	May 31.	I. C. C.
42.	*Boltz, Thomas F.	May 31.	I. C. C.
43.	*Ferguson, Howard.	May 31.	I. C. C.
44.	*Karnopp, E. B.	May 31.	P. R. R.
45.	*Griffith, William F. R.	May 31.	I. C. C.
46.	*Longan, Edward	June 1.	P. R. R.
47.	*Morrow, J. Walter	June 1.	I. C. C.
48.	*Zuberbiel, Herman	June 1.	I. C. C.
49.	*Tenny, Mark W.	June 2.	I. C. C.
50.	*Dose, Henry F.	June 7.	I. C. C.
51.	*Smith, Elmer C.	June 7.	I. C. C.
52.	*McGee, Thomas V.	June 8.	I. C. C.
53.	*Phelan, Edward	June 8.	I. C. C.
54.	*Mantel, Ralph B.	June 8.	I. C. C.
55.	*Geraty, Ralph B.	June 8.	I. C. C.
56.	*Wells, George M.	June 8.	I. C. C.
57.	*Hortensine, James W.	June 8.	I. C. C.
58.	*Carpenter, Charles L.	June 8.	I. C. C.
59.	*Wright, Daniel E.	June 8.	I. C. C.
60.	*Johnson, Natt M.	June 8.	I. C. C.
61.	*Hayes, John	June 8.	I. C. C.
62.	*Baldwin, Ralph F.	June 9.	I. C. C.
63.	*Miller, A. McLeod.	June 8.	I. C. C.
64.	*Clark, Howard R.	June 8.	I. C. C.
65.	*Luck, Charles A.	June 8.	I. C. C.
66.	*McGee, William E.	June 8.	I. C. C.
67.	*Coyne, John F.	June 21.	I. C. C.
68.	*Lyon, Frederic W.	June 23.	I. C. C.
69.	*Hill, George.	June 24.	P. R. R.
70.	*Pierce, Claude C.	June 27.	I. C. C.
71.	*Perry, James C.	June 27.	I. C. C.
72.	*Waldron, Frederick E.	June 28.	I. C. C.
73.	*Hibbard, M. Eugenie.	June 28.	I. C. C.
74.	*Carter, Henry R.	June 28.	I. C. C.
75.	*LePrince, Joseph A.	June 28.	I. C. C.
76.	*Smith, Elias C.	June 28.	I. C. C.
77.	*Gorgas, William C.	June 28.	I. C. C.
78.	*Lucas, Harvey A.	June 28.	I. C. C.
79.	*Hurd, Walter G.	June 28.	I. C. C.
80.	*Hall, William H.	June 28.	I. C. C.
81.	*Keenely, Patrick	June 28.	I. C. C.
82.	*Coyne, T. F.	June 29.	P. R. R.
83.	*Nunn, Numa	July 1.	P. R. R.
84.	*Schwan, Leonard.	July 1.	I. C. C.
85.	*Davies, William H.	July 5.	I. C. C.
86.	*Davidson, Silas.	July 5.	I. C. C.
87.	*Wood, William M.	July 5.	I. C. C.
88.	*Haskins, William C.	July 5.	I. C. C.
89.	*Wheeler, Ernest H.	July 5.	I. C. C.
90.	*de Obarrio, Pedro.	July 9.	I. C. C.
91.	*Richardson, Gibbon O.	July 9.	I. C. C.
92.	*Lorentz, Upton	July 11.	I. C. C.
93.	*Power, William J.	July 12.	I. C. C.
94.	*Herrick, Alfred B.	July 13.	I. C. C.
95.	*Kendall, Arthur L.	July 13.	I. C. C.
96.	*Beverly, Edward P.	July 13.	I. C. C.
97.	*McDonald, Donald E.	July 13.	I. C. C.
98.	*Pinckney, Victor H.	July 13.	I. C. C.
99.	*Noland, Lloyd.	July 14.	I. C. C.
100.	*Lundishef, Alexander A.	July 15.	I. C. C.

* Employee entitled to a bar.
† Name omitted awaiting presentation of evidence of citizenship.

The Kangaroos of Empire gave a minstrel show at that place on Wednesday evening, May 19.

OFFICIAL CIRCULARS.

Decoration Day to be Observed May 31.
 CULEBRA, C. Z., May 17, 1909.

CIRCULAR No. 251.
 As May 30, 1909, Decoration Day, falls on Sunday, the following day, Monday, May 31, 1909, will be observed as a holiday in the Canal Zone, and, as far as practicable, all public business will be suspended on that day.
 GEO. W. GOETHALS,
Chairman and Chief Engineer.

Changes in Department of Sanitation.
 CULEBRA, C. Z., May 18, 1909.

CIRCULAR No. 252.
 The following changes in the organization of the Department of Sanitation are announced, effective May 20, 1909:

The position of "Assistant Chief Sanitary Officer" is created, and the position of "Executive Officer" is abolished.

Lieut.-Col. John L. Phillips, Medical Corps, U. S. A., is appointed Assistant Chief Sanitary Officer.

Maj. Charles F. Mason, Medical Corps, U. S. A., is appointed Superintendent of Ancon Hospital.

Capt. Robert E. Noble, Medical Corps, U. S. A., is appointed General Inspector.

GEO. W. GOETHALS, *Chairman.*

No Alterations to Commission Buildings.
 CULEBRA, C. Z., May 21, 1909.

CIRCULAR No. 253.
 Effective this date, no alterations to Commission buildings will be made without the specific approval of the Chairman and Chief Engineer.

Requests for alterations should not be presented unless it can be shown that there is some material short-coming in the present construction, or unless conditions have arisen requiring the building for other purposes than those for which it was originally intended.

Commission buildings are considered to be well planned and adapted for the general needs of the Isthmian service, and any expense for changes requested to suit individual preferences will not be authorized.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Leave of Absence.

CULEBRA, C. Z., May 17, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:
 Application for leave of absence should not be forwarded to this office more than thirty days before the leave requested will begin.

By direction of the Chairman.

W. H. MAY, *Secretary to the Chairman.*

Acting Chief Sanitary Officer.

ANCON, C. Z., May 20, 1909.

SPECIAL ORDER.
 Lieut.-Col. John L. Phillips, Medical Corps, U. S. Army, Assistant Chief Sanitary Officer, Department of Sanitation, is hereby appointed Acting Chief Sanitary Officer during my absence from the Isthmus.

W. C. GORGAS, *Chief Sanitary Officer.*

Approved:
 GEO. W. GOETHALS,
Chairman and Chief Engineer.

Money Transmitted to the Treasurer.

EMPIRE, C. Z., May 21, 1909.

ALL CONCERNED:
 All checks and money orders for hunting license fees and other moneys transmitted to the Treasurer of the Canal Zone, should be made payable to "Treasurer of the Canal Zone" and not to an individual.

EUGENE H. ASHL,

Acting Treasurer of the Canal Zone.

Approved: JO C. S. BLACKBURN,
Head of Department of Civil Administration.

Changes in District Quartermasters.

CULEBRA, C. Z., May 21, 1909.

TO ALL CONCERNED:
 The following changes in District Quartermasters are announced, effective May 28, 1909:

Mr. J. B. Jeffries, District Quartermaster, will be in charge of the Las Cascadas District.

Mr. M. D. Smith, will act as District Quartermaster of the Porto Bello District, in the absence of Mr. M. R. Currie, on leave.

C. A. DEVOL,
Chief Quartermaster.

Special Train Service.

PANAMA RAILROAD COMPANY,
 COLON, R. P., May 17, 1909.

Owing to the fact that all of our equipment is needed for regular passenger service on the Sundays following pay days, we will, in the future, endeavor to avoid

the running of any special trains on these particular Sundays. Parties getting up special trains will be requested to kindly select some other Sunday in the month.
 HIRAM J. SLIFER,
General Manager.

Proposals for Buildings.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p.m., Saturday, May 29, 1909, when they will be publicly opened, for the erection by contract of 1 Type 21 House, Corozal, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$50 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money-order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$150, conditioned upon the faithful performance of the contract. The Commission reserve the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals.
 C. NIXON,
Purchasing Agent on the Isthmus.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p.m., Saturday, June 5, 1909, when they will be publicly opened, for the erection by contract of 3 type-14 houses, and 2 type-27 houses, at Gatun, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidders will be required to deposit \$200 for the 2 type-27 houses and \$500 for the 3 type-14 houses when the contract is awarded, conditional upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals. Separate proposals will be received for the different type houses.
 C. NIXON,
Purchasing Agent on the Isthmus.

Amended Water Rates.

The following amended water rates were adopted by the Isthmian Canal Commission on January 27, 1909:

The following rates shall be collected for the use of water drawn from the public mains in the Canal Zone through private connections:

For domestic purposes: Residences, boarding houses and rooming houses, not more than three fixtures, for each connection, \$1.50 per month.

For business purposes: General stores and shops, banks, bakeries, barber shops, and other similar establishments, not more than three fixtures, for each connection, \$1.50 per month. Bars, canteens, and restaurants, not more than three fixtures, for each connection, \$3 per month.

For each fixture in addition to those provided for above, 75 cents per month.

The above rates are subject to a discount of 3 1/2 per cent, if paid within fifteen days from date of bill.

For bottling establishments, laundries, stables, truck gardens, amusement parks, distilleries, hotels, and other similar establishments, meters shall be installed, under the provisions of section 5 of these regulations.

Water furnished through meters will be charged for at the following rates:

In the administrative districts of Cristobal, Gorgona, and Empire, 50 cents per thousand gallons, or any fraction thereof including and above 500 gallons, with a minimum rate per quarter of \$5, for which 10,000 gallons may be used. A discount of 20 cents per thousand gallons will be allowed if payment is made within fifteen days from date of bill.

In the administrative district of Ancon 20 cents per thousand gallons, or any fraction thereof including and above 500 gallons with a minimum rate per quarter of \$2, for which 10,000 gallons may be used. A discount of 5 cents per thousand gallons will be allowed if payment is made within fifteen days from date of bill.

All charges herein specified are in United States currency.

Water furnished the Panama Railroad Company shall be charged for as provided in the special contract between the railroad company and the Isthmian Canal Commission.

Rates for the use of water for purposes not enumerated in this schedule, and for all special purposes, shall be fixed by the Superintendent of Public Works, with the approval of the head of the Department of Civil Administration.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, May 22, 1909:

	STATIONS.					
	Vigia.	Alhajueta.	Gamboa.	Bohio.	Gatun (Canal)	Gatun (W. D.)
Height of low water ab. m'an sea-level, ft.	125	92	46	1	0	0
Maximum height above mean sea-level, feet:						
Sunday, May 16....	125.6	92.8	48.5	3.3	1.1	0.9
Monday, May 17....	134.6	98.8	58.9	5.8	1.4	1.1
Tuesday, May 18....	130.0	96.2	59.0	11.8	4.8	3.6
Wednesday, May 19	127.8	94.4	54.1	8.9	3.9	2.9
Thursday, May 20....	127.4	94.3	51.8	7.4	2.9	2.3
Friday, May 21....	126.0	93.1	49.2	4.5	2.6	1.4
Saturday, May 22....	130.0	95.7	52.9	4.2	1.2	0.7

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 1, 1909 (75th meridian time):

DATE.	High.		Low.		High.
	A. M.	P. M.	A. M.	P. M.	
May 26.....			2.38	8.50	3.15
May 27.....			3.37	9.51	4.17
May 28.....			4.38	10.54	5.18
May 29.....			5.37	11.52	6.17
				P. M.	
May 30.....	12.28	6.31	12.43	7.05	.....
May 31.....	1.18	7.18	1.26	7.47	.....
June 1.....	1.58	7.59	2.03	8.25	.....

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Rainfall, May 1 to 22, 1909, Inclusive.
 (MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	1.40	5.34
Brazos Brook.....	.99	5.63
Gatun.....	2.30	6.71
Bohio.....	1.50	6.89
<i>Central Division—</i>		
Tabernilla.....	1.71	6.26
San Pablo.....	1.58	4.99
Bas Obispo.....	2.04	8.67
Gamboa.....	3.88	12.23
Empire.....	.91	5.14
Camacho.....	1.23	7.12
Culebra.....	.91	5.02
<i>Pacific Division—</i>		
Rio Grande.....	.86	5.16
Pedro Miguel.....	1.34	6.30
Balboa.....	1.55	8.39
Ancon.....	1.58	7.89
<i>Atlantic Coast—</i>		
Porto Bello (to 5 p.m. May 22)...	2.64	7.85
Nomhre de Dios (to 5 p.m. May 15)	2.46	5.38
<i>Upper Chagres.</i>		
El Vigia.....	3.12	10.33
Alhajueta.....	3.88	9.94

Supplies for Canal Work.

The following steamers arrived at the port of Cristobal during the week ending May 22, with supplies for the Isthmian Canal Commission:

Thelma, May 15, from Mobile, with 75,000 feet oak lumber for car repairs; 250 tons pig iron for Gorgona foundry, and 2 marine boilers to provide steam for towing machines.

Prince Joachim, May 17, from New York, with 1,000 barrels cement for stock.

Cartago, May 20, from New Orleans, with 4 concrete mixers for Pacific Division; 1 water tank, 50,000 gallons for Pacific Division, and 800 cases kerosene oil for stock.

Advance, May 21, from New York, with 1,000 barrels cement for Gatun spillway; 200 drawbar castings; 330 steel knuckles, and 500 packages air brake equipment for Mechanical Division; 300 kegs wire nails for stock; 36 packages dredge machinery for dredge *Mindi*; 131 pieces castings for clapets at Balboa, and a quantity of other material aggregating 3,540 packages, weighing 650 tons.

The City of Sydney arrived at Balboa, on May 23, from San Francisco, with 16 bales rubber sleeves for Pacific Division.

One dozen keys and a circular brass check No. 40107 were left in the office of the Cristobal Observatory on or about May 8. Owner please call, or send for them.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Lieut.-Col. Geo. W. Goethals, U. S. A.,
Chairman, Culebra.
Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
Lieut.-Col. D. D. Gaillard, U. S. A., Empire.
Maj. Wm. L. Sibert, U. S. A., Gatun.
Civil Engineer H. H. Rousseau, U. S. N.,
Culebra.
Mr. Jo C. S. Blackburn, Ancon.
Col. W. C. Gorgas, U. S. A., Ancon.
Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.

Lieut.-Col. Geo. W. Goethals, Chairman
and Chief Engineer.
William Howard May, Secretary to the
Chairman.
M. B. DePutron, Assistant to the Chairman.
C. A. McIlvaine, Chief Clerk.
John K. Baxter, Assistant Chief Clerk.
H. S. Farish, Surveying Officer.
Caleb M. Saville, Assistant Engineer.
Lieut.-Col. H. F. Hodges, Assistant Chief
Engineer.
C. O. Carlson, Secretary.
Edward Schildhauer, Electrical and Mechanical
Engineer.
Henry Goldmark, L. D. Cornish, H. F. Tucker
and T. B. Mönliche, Designing Engineers.

Civil Engineer H. H. Rousseau, Assistant
to the Chief Engineer.

J. C. Parsons, Secretary.
A. B. Nichols, Office Engineer.
P. O. Wright, Jr., Architect.

Central Division.

Headquarters, Empire.

Lieut.-Col. D. D. Gaillard, Division Engi-
neer.
A. B. Bronk, Chief Clerk.
Louis K. Rourke, Assistant Division Engineer.
A. S. Zinn, Resident Engineer.
Mark W. Tenny, Assistant Engineer.
R. W. Hebard, Assistant Engineer.
W. L. Thompson, Assistant Engineer.
Geo. H. Ruggles, Assistant Engineer.
Fred A. Potts, Assistant Engineer.

Atlantic Division.

Headquarters, Gatun.

Maj. Wm. L. Sibert, Division Engineer.
R. M. Sands, Chief Clerk.
Maj. Chester Harding, U. S. A., Assistant Divi-
sion Engineer.
Maj. Edgar Jadin, U. S. A., Resident Engineer.
Maj. J. P. Jervy, U. S. A., Resident Engineer.
Capt. G. M. Hoffman, U. S. A., Assistant En-
gineer.
Capt. Horton W. Stickle, U. S. A., Assistant En-
gineer.
L. G. Thom, Assistant Engineer.
F. C. Stanton, Assistant Engineer.
R. B. Smith, Superintendent of Dredging.

Pacific Division.

Headquarters, Corozal.

S. B. Williamson, Division Engineer.
J. C. Keller, Chief Clerk.
John M. G. Watt, Assistant Division Engineer.
W. G. Comber, Resident Engineer.
A. I. Campbell, Resident Engineer.
H. O. Cole, Assistant Engineer (Office).
Wm. F. M. Acheson, Assistant Engineer.
James MacFarlane, Superintendent of Dredging.

Mechanical Division.

Headquarters, Culebra.

Geo. D. Brooke, Superintendent of Motive
Power and Machinery.
F. W. Doty, Chief Clerk.
Earle J. Banta, Mechanical Engineer.
A. L. Robinson, Electrical Engineer.
E. C. Cummings, Master Mechanic, Gorgona
Shops.
W. O. Johnson, Master Mechanic, Empire
Shops.

Subsistence.

Headquarters, Cristobal.

Maj. Eugene T. Wilson, U. S. A., Subsistence
Officer.
W. F. Shipley, Chief Clerk.
Lieut. Frank O. Whitlock, U. S. A., Assistant
Subsistence Officer.

Quartermaster's.

Headquarters, Culebra.

Maj. C. A. Devol, U. S. A., Chief Quarter-
master.
C. H. Mann, Chief Clerk.
Lieut. R. E. Wood, U. S. A., Assistant Chief
Quartermaster.
Capt. Courtland Nixon, U. S. A., Depot Quar-
termaster, Mount Hope.
C. L. Parker, C. C. McColey, Inspectors.

District Quartermasters.

B. C. Poole, Ancon and Balboa.
C. E. Heisey, Bas Obispo.
A. R. Bennett, Corozal.
Ira A. Giles, Cristobal.
John M. King, Culebra.
C. P. Allen, Empire.
R. M. Gamble (acting), Gatun.
S. D. Roper (acting), Gorgona.
J. B. Jeffries, Las Cascadas.
Roy R. Watson, Pedro Miguel and Paraiso.
M. D. Smith (acting), Puerto Bello.
J. T. Smith (acting), San Pablo and Tabernilla.

Civil Administration.

Headquarters, Ancon.

Jo C. S. Blackburn, Head of the Department.
H. D. Reed, Executive Secretary.
G. A. Ninas, Chief Clerk.
Tom M. Cooke, Chief, Division of Posts, Cus-
toms and Revenues, Ancon.
Herman A. Gudger, Deputy Collector, Ancon.
E. Lewis Baker, Deputy Collector, Cristobal.
George M. Shontz, Prosecuting Attorney, Ancon.
Grosvenor A. Porter, Chief of Police, Ancon.
D. E. McDonald, Chief Clerk.
C. E. Weidman, Fire Chief, Cristobal.
Geo. L. Campen, Supt of Public Works, Ancon.
C. R. Sargent, Chief Clerk.
J. J. Reidy, Asst. Supt. Public Works, Cristobal.
H. L. Smith, Superintendent of Schools, Ancon
Edgar P. Beck, Treasurer of Canal Zone, Empire

Canal Zone Judiciary.

Headquarters, Ancon.

Supreme Court—H. A. Gudger, Chief Justice.
Walter Emery, Clerk, Ancon.
Lorin C. Collins, Associate Justice, Cristobal.
Wesley M. Owen, Associate Justice, Empire.
Circuit Court, First Circuit—H. A. Gudger,
Judge, Ancon.
Walter Emery, Clerk.
Circuit Court, Second Circuit—Wesley M. Owen,
Judge, Empire.
Elbert M. Goolsby, Clerk.
Circuit Court, Third Circuit—Lorin C. Collins,
Judge, Cristobal.
Nelson R. Johnson, Clerk.
M. C. Rerdell, Senior District Judge, Cristobal.
S. E. Blackburn, District Judge, Ancon.
Edgar S. Garrison, District Judge, Empire.
J. B. March, District Judge, Gorgona.
Thomas E. Brown, Jr., District Judge, Cristobal.

Law.

Headquarters, Washington, D. C.,

Richard Reid Rogers, General Counsel,
Washington, D. C.

George M. Shontz, Attorney for Isthmian Canal
Commission and Panama Railroad Company,
Ancon.

George H. Bartholomew, Assistant Attorney.

Sanitation.

Headquarters, Ancon.

Col. W. C. Gorgas, Chief Sanitary Officer.
Lieut.-Col. John L. Phillips, U. S. A., Assistant
Chief Sanitary Officer.
Capt. Robert E. Noble, U. S. A., General In-
specter.
Harry E. Bovay, Chief Clerk.
H. R. Carter, Director of Hospitals, Ancon.
Maj. Charles F. Mason, U. S. A., Superin-
tendent Ancon Hospital, Ancon.
Surgeon J. F. Leys, U. S. N., Superintendent
Colon Hospital, Cristobal.
Surgeon J. C. Perry, P. H. and M. H. S., Chief
Quarantine Officer, Ancon.
Surgeon Claude C. Pierce, P. H. and M. H. S.,
Quarantine Officer, Colon.
Dr. Fleetwood Gruver, P. H. and M. H. S., Quar-
antine Officer, Panama.
Joseph A. LePrince, Chief Sanitary Inspector,
Ancon.
Dr. J. G. Evans, Acting Health Officer, Panama.
Dr. M. F. Connor, Health Officer, Colon.
C. L. Stockeberg, Superintendent of Plumb-
ing, Culebra.

Disbursements.

Headquarters, Empire.

Edward J. Williams, Disbursing Officer.
Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.

W. W. Warwick, Examiner of Accounts.
T. L. Clear, Assistant Examiner of Accounts.

Purchasing Department.

Headquarters, Washington, D. C.

Capt. F. C. Boggs, U. S. A., General Pur-
chasing Officer.
C. E. Dole, Chief Clerk.

Capt. Courtland Nixon, Purchasing Agent on
the Isthmus.

Maj. Wendell L. Simpson, U. S. A., Purchas-
ing Agent, 24 State Street, New York City.

F. C. Nordsiek, Assistant Purchasing Agent, 24
State street, New York City.

S. R. Redfern, Assistant Purchasing Agent,
Custom House, New Orleans, La.

Panama Railroad Company.

Headquarters, Colon.

(New York office, 24 State Street.)

H. J. Slifer, Assistant to the President, and
General Manager, Colon.

G. E. Geer, Assistant to the General Manager.

R. Budd, Chief Engineer.

J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Pan-
ama Railroad Steamship Company, of the Royal Mail
Steam Packet Company, of the Hamburg-American
Line, and of the United Fruit Company's Line, and
the Panama Railroad Company's dates being subject to
change:

NEW YORK TO COLON.

Colon	P. R. R. Wednesday	May 26
Tagus	R. M. Saturday	May 29
Panama	P. R. R. Wednesday	June 2
Prinz Joachim	H. A. Saturday	June 5
Advance	P. R. R. Monday	June 7
Magdalena	R. M. Saturday	June 12
Allianca	P. R. R. Saturday	June 12
Colon	P. R. R. Friday	June 18
Prinz Aug. Wilhelm	H. A. Saturday	June 19
Panama	P. R. R. Thursday	June 24
Orinoco	R. M. Saturday	June 26
Advance	P. R. R. Wednesday	June 30
Prinz Joachim	H. A. Saturday	July 3
Allianca	P. R. R. Tuesday	July 6
Atrato	R. M. Saturday	July 10
Colon	P. R. R. Monday	July 12
Panama	P. R. R. Monday	July 19

Persons desiring to meet steamers at Cristobal
should apply in advance of arrival at the Customs
office, room 8, building No. 1, Cristobal, for customs
line permits, which are necessary to obtain admit-
tance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and
Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Advance	P. R. R. Wednesday	May 26
Magdalena	R. M. Tuesday	June 1
Allianca	P. R. R. Tuesday	June 1
Colon	P. R. R. Monday	June 7
Prinz Aug. Wilhelm	H. A. Tuesday	June 8
Panama	P. R. R. Monday	June 14
Orinoco	R. M. Tuesday	June 15
Advance	P. R. R. Saturday	June 19
Prinz Joachim	H. A. Tuesday	June 22
Allianca	P. R. R. Thursday	June 24
Atrato	R. M. Tuesday	June 29
Colon	P. R. R. Wednesday	June 30
Prinz Aug. Wilhelm	H. A. Tuesday	July 6
Panama	P. R. R. Tuesday	July 6
Advance	P. R. R. Monday	July 12
Oruba	R. M. Tuesday	July 13
Allianca	P. R. R. Saturday	July 17
Prinz Joachim	H. A. Tuesday	July 20
Colon	P. R. R. Friday	July 23
Panama	P. R. R. Friday	July 30

NEW ORLEANS TO COLON.

Abangarez	U. F. C. Saturday	May 22
Parismina	U. F. C. Saturday	May 29
Cartago	U. F. C. Saturday	June 5

COLON TO NEW ORLEANS.

Abangarez	U. F. C. Tuesday	June 1
Parismina	U. F. C. Tuesday	June 8

COLON TO BARBADOS, CALLING AT TRINIDAD.

Tagus	R. M. Tuesday	June 8
Magdalena	R. M. Tuesday	June 22
Orinoco	R. M. Tuesday	July 6

Sailings of the French line (Cie. Générale Trans-
atlantique) for Venezuelan ports, Martinique and
Guadeloupe on the 3d and 20th of each month.

The next sailings of the Leyland Line will be as
follows: *Memphian* on May 29, for Tampa, Fla., via
Kingston, Jamaica. *Louisianian* on June 7, for New
Orleans, via Kingston, Jamaica.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Operations at Porto Bello.

The rock crushing plant at Porto Bello is delivering crushed material as fast as the barges arrive to carry it away, but up to the present time there have not been enough barges to keep the plant running at its full capacity. A barge load is equivalent to about 680 cubic yards of crushed rock, and the normal working capacity of the two main No. 9 crushers, and of the four secondary No. 6 crushers is approximately 2,500 cubic yards per day. Since the completion of the unloading cableway at the Gatun handling plant, the barges have been making more trips, and with the cableway working steadily, it is expected that the crushers will shortly develop their full capacity. The present output amounts to about 1,200 cubic yards per day. The type of crusher used at Porto Bello will handle rock of a maximum size 22 by 26 inches. The No. 12 crusher, which will be installed at Ancon quarry, will take care of a rock 3 by 3 by 7 feet. To furnish rock in suitable size for the Porto Bello crushers, it is necessary to do a good deal of blasting, an average of 1,200 "doby" slots being fired in a day, involving the use of from three-fourths to a full ton of dynamite.

The motive equipment in handling rock to the crushers at Porto Bello consists of 10 Porter locomotives and 50 Oliver dump cars. Twenty-five additional cars have been asked for. There are seven steam shovels on the ground. Three 70-ton Bucyrus shovels are at work loading rock, a 45-ton Bucyrus and a Model-60 Marion shovel are doing pioneer work, and two shovels are idle. Thirty air drills are operated when the plant is running full capacity. An Ajax drill sharpener has recently been installed near the quarry site. This machine will do the work of from three to four men, and handle from 300 to 400 irons per day. A well-equipped machine shop is maintained in which repairs are

made to rock-crusher machinery, drills and locomotives, and practically all plant machinery. Two additional boilers are to be installed in the engine room, making a total of eight.

An extension to the type-18 bachelors' quarters is under construction, which will provide for 12 additional rooms. This was made necessary by the increase in the gold force, which now numbers 104 men. An engine shed for housing locomotives will be built in front of the police station. It will be a frame structure sheathed with galvanized iron. A large cement drain has been completed to carry the storm water from the hill back of the laborers' quarters into the bay. At the foot of this drain, over which a plank walk has been built, a small dock has been put in for use in loading garbage on boats for disposal in another part of the bay. A small temporary storehouse is maintained for the crusher plant and machine shop, and the erection of a permanent store near the dock is under consideration. The commissary facilities are confined to a small room under the hotel dining room, and the construction of a suitable commissary building is contemplated.

The 27,000,000-gallon reservoir on the hill back of the gold employes' quarters is furnishing an abundance of potable water. The last report of the physiologist shows that this water is excellent in quality, although a slight odor is noticeable due to the presence of algae in the streams that feed the reservoir.

Steamships Shawmut and Tremont.

Dredging operations are being actively prosecuted in preparation for the docking of the *Shawmut* and *Tremont*, the two ships that are expected to bring most of the cement that will be used in the construction of the Locks for the Canal. The *Ancon* is at work in the old French canal near Cristobal dredging a channel to dock No. 13, and also in dredging a connecting channel from the old French canal to the present Canal channel. The dipper dredge *Mindi* was recently at work for about a week between docks Nos. 1 and 2 at Colon, and is now at dock No. 13. All the dredging is to a depth of 33 feet.

Recent advices from the offices of the Panama Railroad Steamship Company in New York are to the effect that the repairs to these vessels will be completed in time for them to be placed in commission in July, and that they will reach Cristobal on their first trip the last week of that month. The voyage from New York to Cristobal will consume eight days.

Several changes have been made in the captains of the ships of the Panama Railroad Steamship Company, owing to the addition of the *Shawmut* and *Tremont*. Captain Skillings has been transferred from the *Colon* to the *Shawmut*, Captain Sukeforth from the

Allianca to the *Colon*, and Captain Hammond from the *Advance* to the *Allianca*. Captain Corning remains on the *Panama* and Captain Mowbray will have command of the *Advance*. Captain Garlick, who has been in command of the *Tremont* ever since she was launched, will retain command of that vessel.

Air Compressors to Work 24 Hours.

Owing to the increased use of compressed air, it has been found necessary to operate the air compressor plants at Empire and Rio Grande the full 24 hours of each working day. The plant at Las Cascadas is still operating in the day time only, but it is expected that the same schedule of hours will go into effect there shortly. There are 12 compressors in service, working to their full day time capacity, supplying air to the main pipe line, which extends from Corozal to Bas Obispo, about 14 miles, and by which all rock drills, rock crushers, drainage pumps, etc., are operated.

Completed Section of Canal.

The last dipper load of earth was removed from the cut at Matachin on Tuesday, May 25, thereby completing the excavation at that point. The finished section consists of a cutting 500 feet wide, approximately 2,500 feet long, and with sides averaging about 45 feet in height. The Chagres River makes a deep bend at Matachin, forming what is known as Point No. 2, and crosses the Canal at both upper and lower ends of the completed section, the water being held back by earth dikes. As the present bed of the Chagres is desired for use as a dumping ground, it is proposed to blow up the dikes at the next reasonably high stage of water, and allow the river to occupy its permanent channel. The river was at the proper height one time during the past week, but the tracks at the bottom of the Canal had not then been removed. Five gangs were employed on this work during the past few days, and the Canal at this point is now entirely completed. The total amount of material excavated was 1,750,000 cubic yards.

Completion of Miraflores Tunnel.

The Miraflores tunnel, which will carry the relocated line of the Panama railroad through the hill back of Miraflores village, was completed on May 8, and the work of laying and ballasting the track has been begun. The tunnel was originally intended to be 600 feet long, but on account of slides it has been lengthened so that the present total length between portals is 736 feet. The tunnel section is a semi-circular arch resting on vertical side walls, and provides a clearance of 15 feet laterally, and 21 feet 3 inches vertically, above top of rail. Through the rock section, the walls and roof are 2 feet 3 inches thick; through the earth section the walls vary from 3 feet 6 inches to 4 feet 6 inches thick, while the roof is 2 feet 6 inches

NOTES OF PROGRESS.

(Continued.)

thick at the center. The floor is 3 feet thick through the earth section, no artificial floor being necessary in the rock portion. All concrete is heavily reinforced with 3/4-inch Ransome twisted bars, or old French rails. There is a slight grade downward in each direction from the middle of the tunnel to provide drainage. Two lines of 6-inch porous tile along the side walls will carry off the water which percolates through weep-holes. Five recesses, 3 feet wide by 7 feet high, have been built in the side walls for the use of workmen, and others, who happen to be in the tunnel during the passage of trains. The track will be laid with 90-pound open hearth steel rails on creosoted ties. The bottom of these ties will be 17 inches above the floor of the tunnel to allow for ballast.

The tunnel excavation was begun July 1, 1907, and completed July 9, 1908, at which time, 12,800 cubic yards of material had been taken from the tunnel proper, and 40,500 cubic yards from the approaches. The laying of concrete was begun during August, 1908, and in the same month a slide developed in the south side of the hill through which the tunnel runs, the entire side hill and summit moving south and east for a distance of 50 feet, carrying with it 230 feet of tunnel, and completely demolishing the timber lining in that section of the hill. This stopped all work on the earth section until January, 1909, when the bore was again opened and the work carried to completion, the tunnel as finished being on the original alignment and grade. When the slide first developed, a heavy retaining wall was built at the south end, so located as to form an extension of the tunnel, as well as the south portal. This lengthened the tunnel 100 feet at its south end. The location of the north portal was also changed to permit a flatter slope on the north side of the hill. The total excavation from the tunnel proper was 21,100 cubic yards, and from the approaches, 42,400 cubic yards, 63,500 cubic yards in all.

Cave-in at Gorgona.

A section of the west bank of the Canal near the southern extremity of the yards at Gorgona caved in on Thursday, May 20, and came near carrying with it a lot of old French material. The bank at that point is 40 or 50 feet high and is composed wholly of earth, which recent rains had loosened. A portion of switch track, which ran along the side of the Cut, was undermined and left suspended in the air. As there were indications that other sections of the bank might fall in at any time, it was decided to move the scrap material to a place of safety. There were over 50 carloads of car and locomotive parts, boilers, I-beams, etc., piled up at that place.

Improving Panama Suburbs.

Notices have been sent to all lessees in the suburbs of Guachapali and Santa Cruz that, in order to put these sections of Panama city in a proper sanitary condition, certain buildings will be condemned and demolished, and that those found in good repair will be moved to conform to the new building lines. Property owners may inform themselves con-

cerning these changes by applying at the Health Office, Panama. Certificates will be granted in cases where it is not considered necessary to raze the property. This action is the first step in the general plan for the sanitary improvement of these localities, which is provided for in Sundry Civil Act of March 4, 1909.

Panama Railroad Action.

At a meeting of the Board of Directors of the Panama Railroad Company, held in New York City on April 5, 1909, Lieut.-Col. H. F. Hodges of the Isthmian Canal Commission was elected second vice-president of the Company for the ensuing year.

At the same meeting a bid was accepted for a supply of 400,000 tons of coal for the Isthmus for the year beginning April 1, 1909; 200,000 tons at \$2.34, and 200,000 tons at \$2.44.

A contract was also approved for the shipment of the coal to the Isthmus by the Earn-Line Steamship Company at the rate of \$1.40 per gross ton.

Reservations on P. R. R. Steamships.

Commencing June 7, 1909, reservations on the steamships of the Panama Railroad Company will be made for employes of the Isthmian Canal Commission and the Panama Railroad Company in accordance with the following rules:

No reservation will be made until the regular transportation request has been issued by the Chairman's office, or by the office of the General Manager of the Panama Railroad Company in the case of a Panama railroad employe.

Upon receipt of transportation request, the employe may secure a reservation on the steamship for which issued, either by presenting same in person to the ticket agent of the Panama Railroad Company in Colon, or by forwarding the request to the ticket agent, enclosing money order for the full amount shown thereon.

The ticket agent will at once acknowledge receipt of request and money order from employe, and notify him the number of stateroom and berth to which assignment has been made, if accommodations are available. If all accommodations have been sold on the steamship for which request is issued, the employe will be so notified, and reservation made on the next following steamer.

If no accommodations are available on the following steamer, a new application must be submitted, through Head of Department, for a steamer sailing at a later date.

On the arrival of each boat at Cristobal, steamer tickets will be immediately mailed to all employes who have forwarded money order and request by mail, and for whom reservations have been made, but no tickets will be issued until the boat has docked.

No reservation will be made by mail unless request and money order are in the hands of the ticket agent at least three days before date of sailing.

Local station agents will check baggage from stations along the line through to New York upon presentation of railroad transportation and steamer ticket.

When requesting reservation by mail, address letter: "Ticket Agent, Panama Railroad Steamship Company, Cristobal, C. Z.," and make money order payable to "Panama Railroad Company, Cristobal, C. Z."

Do not fail to forward request with money order, and give post-office address on the Isthmus.

Employes who, under existing rules, have secured reservations by mail for steamers scheduled to sail on or after June 14, and who are holding their transportation requests to be exchanged for steamer tickets on date of sailing, should forward same at once to the ticket agent, and upon the arrival of the boat for which issued, tickets will be mailed to such employes in accordance with the foregoing rules.

New Oil House at Gorgona.

A new oil house, to be used in connection with the Quartermaster's store at Gorgona shops, is under construction, and will take the place of the old building, which was too small. It will be 40 feet wide, and 110 feet long, and a good deal of the lumber in the old building is utilized. The floor will be made of old car sills, covered with old French iron plates. The house will be used to store all inflammable materials, such as core compound, oils, paints, plumbago, cotton waste, etc., and suitable racks and bins for their proper disposal will be provided.

All B. of R. T. in the Canal Zone are requested to send their name and lodge number to B. T. Falkner (Genesee No. 289), Las Cascadas, C. Z.

STATEMENT OF CLASSIFIED EXPENDITURES TO MARCH 31, 1909.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1908. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Department of Civil Administration.	Department of Sanitation.	Department of Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.	\$1,446,407.73	\$4,636,630.37	\$13,410,795.01	\$4,296,732.98	\$19,345,697.87	\$43,136,263.96
Fiscal year 1908.	704,610.15	2,310,212.01	16,680,660.46	1,494,956.41	11,684,215.15	32,874,654.18
Fiscal year 1909:						
July, 1908.	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August, 1908.	77,019.80	145,870.37	1,599,556.90	60,798.76	517,046.09	2,400,291.92
September, 1908.	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
October, 1908.	59,612.51	155,676.68	1,448,614.64	67,696.17	727,544.14	2,459,144.14
November, 1908.	59,374.12	147,957.24	1,369,805.86	77,406.64	480,139.10	2,134,682.96
December, 1908.	65,526.32	166,321.70	1,500,404.77	70,936.43	893,337.24	2,696,526.46
January, 1909.	51,416.82	164,605.80	1,550,843.72	65,209.51	1,418,185.90	3,250,261.75
February, 1909.	60,782.04	139,368.18	1,453,781.43	54,105.63	596,564.67	2,304,601.95
March, 1909.	60,130.85	127,669.50	1,611,343.85	39,267.70	776,821.41	2,615,233.31
Total.	2,739,645.52	8,322,000.32	42,714,758.69	6,371,820.60	37,687,267.89	98,835,493.02

SOCIAL LIFE OF THE ZONE.

Program of the Women's Club Movement.

The Women's Clubs in the Canal Zone were organized during the months of September and October, 1907, to promote social life among the wives and families of Canal and Panama railroad employes. Eight clubs were formed at that time and later another was added, but the closing of one of the clubs has brought the number down to the original eight.

As organized, departments were provided for in all the clubs, but some of them have found it necessary to make changes in the by-laws and devote their efforts to the promoting of social life, church work, and general public interests. They are active in the observance of national holidays and Christmas celebrations. Civic work has been taken up by the women, and the improvements recommended to the authorities have, in almost every case, been gladly received and acted upon. The women's rest room at the Cristobal station was erected by the Panama railroad at the suggestion of the local club. The room is furnished with wicker chairs, two reclining sofas, and a table, where reading matter is supplied. A toilet room with running water adjoins. The room is constantly used by women and the older girls from the Line who attend the Cristobal school. At the recommendation of this club certain improvements in the accommodations for women in the Colon prisons were made during the last year.

On the Line, shelters for hospital patients have been erected at the railway stations; canopies for protection from sun or rain in transporting patients from the local hospitals to the trains have been provided; unsafe bridges have been repaired or removed; and, at Gorgona, at the request of the women, a police officer is stationed at the railroad crossing for the protection of children going to and from school. At each town where the railroad station is situated at a distance from the married quarters, the Commission has supplied a conveyance for the accommodation of the women and children.

Certain philanthropic work has been done outside the Zone. Evenings of recreation have been instituted in Panama for the news boys, and gifts were made to them at Christmas. Visits to public institutions have resulted in the adoption of improvements suggested by the women. The Federation has had special interest in the leper colony at Palo Seco. Personal gifts were sent to the inmates at Christmas, fireworks provided for the celebration of national holidays and other occasions.

Numerically, the clubs are not so strong as they were during the first six months of their existence, but the organizations have been revised and are better adapted to conditions here, and the working force is still large. The formation of committees to work in conjunction with corresponding committees of the General Federation has enlarged the scope of the club work. Books for study, children's libraries, and donations to regular circulating libraries and portfolios of art works have been sent by States' organizations and private individuals; regular correspondence has been established between the Zone clubs and journals in the States devoted to club interests.

The following is a list of the federated

clubs, with the nature of organization, date of founding and other information:

Cristobal, Department Club—Meetings at the clubhouse on the first and third Wednesdays. Annual meeting and election of officers in April. Vacation April to October. Dues \$1, payable annually. Organized September 27, 1907. Mrs. Albert Herman, corresponding secretary.

Gatun, Department Club—Meetings in the Commission church building first and third Fridays. Election in November, February and May. Vacation June to October. Dues 25 cents, payable monthly. Organized October 4, 1907. Mrs. A. P. McCulloch, acting secretary.

Gorgona, Social and Civic Club—Meeting in the clubhouse every Thursday. Election annually in April. Dues payable monthly. No vacation period. Organized July, 1907. Mrs. J. F. Phillips, secretary.

Las Cascadas, Social Club—Meetings at the homes of members, first and third Thursdays. Election semiannually, January and June. Dues 40 cents, payable monthly. No vacation period. Organized October 17, 1907. Mrs. W. D. Stanton, secretary.

Empire, Department Club—Meetings at the clubhouse first and third Thursdays. Annual meeting and election of officers in April. Vacation at the discretion of the club. Dues \$1, payable annually. Organized October 3, 1907. Mrs. Abbie B. Hillerman, secretary.

Paraiso, Social Club—Meetings in the social hall, Commission hotel, first and third Thursdays. Annual meeting and election of officers, May. Vacation at the discretion of the club. Dues \$1, payable annually. Organized September, 1907. Mrs. T. C. McLaughlin, secretary.

Pedro Miguel, Department Club—Meetings in the social hall Commission hotel, first and third Wednesdays. Election semiannually, April and October. No vacation period. Dues, payable monthly. Organized October 2, 1907. Mrs. H. E. Weber, secretary.

Ancon, Department Club—Meetings in club rooms first and third Wednesdays. Annual meeting and election of officers in June. Vacation June to October. Dues \$1, payable annually. Organized October 9, 1907. Mrs. W. T. Dozier, corresponding secretary.

The Canal Zone Federation of Women's Clubs was organized October 12, 1907. Joined the General Federation of Women's Clubs in the States in June, 1908. Meetings are held in January, October and May. Annual meeting with election of officers in May. Mrs. Frederick Mears, Cristobal, corresponding secretary.

The Pedro Miguel Woman's Club held its semiannual election of officers in April. Mrs. H. Girdner is president, Mrs. Edward Brown, vice-president, and Mrs. H. E. Weber, secretary.

The Las Cascadas Woman's Club, at a meeting held last week at the residence of Mrs. W. D. Drysdale, voted to use the money in the club treasury to purchase books for the public school in that town.

The women at Porto Bello held a bazaar on the landing dock on Thursday evening, May 20, this being the first social entertainment attempted in the town. The dock was lighted with electricity, and decorated with flags and palms. Music was furnished by the local orchestra. Fancy articles, cakes, ice

cream and sweets were sold. The proceeds, which amounted to \$114, will be devoted to a piano fund. The committee of arrangements were: Mrs. W. D. Waltman, chairman, assisted by Madames Thomas, Werner, Barker, and Thompson. Mrs. Joseph Lawrence was treasurer.

A piano is needed for dances and other social entertainments, and for church services. The ladies will inaugurate another entertainment by which they hope to realize the remainder of the amount needed. A dance was given at Porto Bello on Saturday evening, May 29, music being furnished by the Marine band from Camp Elliott.

A lawn tennis club has been organized at Corozal, with A. R. James, president; A. P. Cray, secretary and treasurer, and F. T. Hamlin, M. B. Hostetter and R. P. Woodson, executive committee. A tennis court is being laid out in front of the Corozal hotel, and will be ready for use in a short time.

The Corozal Athletic Club is holding practice meets almost nightly, preparatory to taking part in the athletic program of the Fourth of July celebration at Ancon.

PERSONAL.

Joseph Bucklin Bishop, accompanied by his wife and daughter, sailed from Cristobal on Tuesday, June 1, on the *Allianca* for two months' absence in the States. Among the other passengers on the *Allianca* were: Joseph A. LePrince, Madame LePrince, Miss LePrince and George F. Halsey.

The Jounkheer de Jong Van Beek, Governor of the Dutch West Indies, accompanied by his wife and aide, arrived on the Isthmus on May 25, and spent two days in sightseeing along the line of the Canal.

Mr. Lewis E. Willson and Miss Bertha Marie Knudson Njös were married on Thursday evening, May 27, at the home of Mr. and Mrs. C. K. Lucas, Cristobal, C. Z., Rev. Carl H. Elliot officiating.

Mr. Elwood Paxton Sine and Miss Ethel Catharine Konshaw were married on Tuesday, May 25, at the home of Mr. and Mrs. W. H. McFarlane at Gatun, C. Z., Rev. J. Wesley Holland of Culebra officiating.

Missing Man.

Information is desired in regard to Olley Brownell, who disappeared from Jacksonville, Fla., on April 1, 1909, and is supposed to be in the Canal Zone. Anyone having knowledge concerning him is requested to communicate with C. W. Bach, Bas Obispo, C. Z.

Red Cross Buttons.

A supply of Red Cross buttons has been received by Maj. C. A. Devol, president of the Canal Zone Branch, and will be distributed by him among the chairmen of the various districts. The buttons will be furnished to members who call upon the chairmen for them.

All Red Cross members whose post-office addresses have been changed since enrolling are requested to notify the treasurer, H. D. Reed, Ancon, of their new address.

Kangaroos' Dances.

Empire Court, No. 1, I. O. P. K. announces that their regular midweek dance, held every Tuesday evening at Kangaroo hall, Empire, which was heretofore for Kangaroos only, is now open to the public. All Kangaroos and their friends are cordially invited. Admission, 50 cents; ladies free. Refreshments are served; music by Talty.

FIVE YEARS OF CANAL WORK.

Progress Made Under American Control, Since May 4, 1904.

IV.

Civil Government of the Zone.

The Act of Congress approved April 28, 1904, authorized the President to take possession, on behalf of the United States, of the Canal Zone, acquired from Panama by the Treaty of February 26, 1904, and provided that until the expiration of the Fifty-eighth Congress all military, civil and judicial powers necessary for the government of the Zone, and for "maintaining and protecting the inhabitants thereof in the free enjoyment of their liberty, property and religion" should be vested in such persons and exercised in such manner as the President should direct. The President under this authority, in a letter addressed to the Secretary of War on May 9, 1904, authorized the Canal Commission "to make all needful rules and regulations for the government of the Zone and for the correct administration of the military, civil and judicial affairs of its possessions." The letter appointed Maj. Gen. George W. Davis, U. S. A., Governor of the Canal Zone.

General Davis arrived on the Isthmus May 17, 1904, and on May 19, issued a proclamation announcing to the inhabitants of the Zone that the government of the Zone had been assumed by him, acting for and in the name of the President of the United States. On June 16, an agreement of transfer of the Zone from Panama to the United States, containing a provisional delimitation of the Zone as described in the Canal Treaty, was signed by General Davis and officials of Panama.

On July 1, the Zone was divided by an order of the Governor into six municipal districts; four of them, in which the seat of government under Panama was in the Zone, retained their old names, and two, Ancon and Cristobal, were newly created. The Canal Commission, acting as the legislative branch of the Canal Zone Government, enacted laws on September 1, 1904, creating five municipal districts, each with a mayor, municipal council, secretary and treasurer, and, on September 2, creating the executive branch of the government, with the offices of governor, executive secretary, treasurer and auditor, the departments of public health, revenues, police and prisons, and justice, and the bureau of education.

On April 1, 1905, the President issued an order dividing the Commission into three departments. Under that order the second department was known as the department of government and sanitation. On November 17, 1906, another order was issued by the President, placing the government of the Zone (except the department of sanitation, which was made an independent department), together with the Commission's legal work, under the general counsel of the Commission. Under that order the department was known as the department of law and government.

Effective April 15, 1907, an order was issued by the President abolishing the municipal districts in the Zone created in 1904, and creating four administrative districts. On April 2, 1907, the Secretary of War, by direction of the President, issued an order abolishing the department of law and gov-

ernment, and vesting the authority of the chief executive of the Canal Zone in the Chairman of the Commission. The Chairman, on May 9, 1907, delegated that authority to a member of the Commission as head of the department of civil administration, and the President by the order of January 6, 1908, formally created "a department of civil administration charged with the duty of administering the civil government within the Canal Zone."

The work of the executive branch of the Zone Government as the Department of Civil Administration of the Canal Commission, is now divided among the Divisions of Posts, Customs and Revenues, Police and Prisons, Schools, Fire Protection, and Public Works, and the offices of Prosecuting Attorney, Treasurer, and Auditor of the Canal Zone. The judicial branch includes the Supreme, Circuit, and District Courts of the Zone.

The Division of Posts, Customs and Revenues includes the postal, customs and internal revenue services, the rental of public lands and custody of land records, and the administration of estates of Americans dying in the Zone in the service of the Commission, or the Panama Railroad Company.

On June 24, 1904, the Secretary of War, by direction of the President, issued an order establishing a postal service in the Zone, with nine post-offices. The service was placed by order of the Governor under the supervision of the Treasurer of the Zone, and Panama railroad station agents were appointed postmasters. From June 24 until July 17, 1904, Panama postage stamps (which were Colombian stamps surcharged "Panama") having the words "Canal Zone" overprinted with a rubber stamp, were used in the Zone. On July 17 a supply of United States stamps, surcharged "Canal Zone," was put into use.

Since December 12, 1904, under an agreement with the Republic of Panama, postage stamps purchased from Panama at 40 per cent of their face value, and surcharged with the words "Canal Zone," have been used. United States domestic rates of postage have always applied between the Zone and the United States. A registry system was established in August, 1905, and a money order system in June, 1906.

The number of post-offices in the Zone has been increased to 17 since the organization of the service, and mail is handled for employees of the Commission at Porto Bello through the Cristobal post-office. The following table shows the sales of stamps, the mail matter registered, and amount of money orders sold since the establishment of the service:

PERIOD.	Value of stamps sold.	No. of articles registered.	Value of money orders issued.
June 24, '04-June 30, '05	\$11,537.23	.....	.....
July 1, '05-June 30, '06	28,529.31	*43,623	‡\$50,067.15
July 1, '06-June 30, '07	54,803.79	95,327	2,318,965.34
July 1, '07-June 30, '08	72,709.54	142,089	4,686,684.98
July 1, '08-Apr. 30, '09	62,031.84	‡92,047	4,321,478.80

*Beginning August, 1905.

‡Beginning June, 1906.

†To December 31, 1908.

While the table illustrates the growth of the service, it does not indicate the total

amount of mail matter handled, as the greater part, estimated at 70 per cent, is carried under the Government frank.

The total expenditures for the postal service during the fiscal year 1907-1908 were \$153,129.69, of which \$31,160 was paid to Panama for postage stamps. Deducting that amount, the expenditures were \$121,969.69, as against \$92,018.68, total revenues, leaving \$29,951.01, as the cost to the Government of handling official mail free.

The customs service of the Zone includes the entry and clearance of ships at the ports of Cristobal and Ancon, the signing and discharge of seamen, the enforcement of Panama tariff laws against merchandise arriving at Canal Zone ports destined for Panama, and the enforcement of the Panama Chinese exclusion law as applied to the Canal Zone. No customs duties are collected, as an Executive Order issued December 3, 1904, provides that no goods shall be imported at Ancon and Cristobal except those necessary and convenient for the construction of the Canal and for the use of employes of the Commission, fuel for sale to vessels, and goods in transit.

Originally the internal revenues of the Zone included only the tax on the distillation of liquor, the manufacture of rum from native sugar cane being one of the few industries of the Isthmus. The municipalities were authorized to tax the retail sale of liquor, the keeping of dogs, public conveyances, restaurants and hotels, various amusements, lands and buildings, and the sale of commercial commodities. The revenues of the municipalities were collected and disbursed by the municipal officials.

When the municipalities were abolished there was created in each administrative district the office of tax collector, charged with the assessment and collection of taxes. At the same time, the Canal Commission was authorized to enact ordinances respecting taxation. Taxes include at present a real estate rental tax, miscellaneous license fees, merchandise taxes, poll tax, distillation and retail liquor license taxes. At the time of the transfer of the Zone the retail liquor license tax varied from \$1 to \$5 a month. In 1905, it was increased to \$600 a year, with the effect of reducing the number of saloons from 327 to 60. In 1907, it was increased to \$1,200. The number of saloons is now 56. The taxes collected since the organization of the government are shown by the following table:

July 1, 1904, to June 30, 1905	\$32,716.90
July 1, 1905, to June 30, 1906	87,825.12
July 1, 1906, to June 30, 1907	121,296.46
July 1, 1907, to June 30, 1908	122,082.41
July 1, 1908, to April 30, 1909	143,564.78
Total	\$507,485.67

Zone funds collected from taxation and other local sources are expended for local purposes and disbursed and accounted for on the Isthmus. In addition to the principal sources of such funds—taxation, land rentals, the postal service, etc.—judicial fines and costs also constitute a considerable source of revenue. By authority of Congress, the revenues received from the postal service are applied to the maintenance of that service, and other funds are used for the support of the public school system, the payment of the expenses of the administrative districts, and the construction and maintenance of public works.

The Canal Zone is approximately 448

square miles in area. About 245 square miles are owned by the United States under the terms of the Treaty, and by purchase from the French Canal Company and other private owners. At the time the land was acquired from the French Canal Company much of it was under lease. The leases were continued in force by the Commission, and other leases have been executed from time to time under authority of an Act of Congress passed July 28, 1892. At the last session of Congress a bill was passed authorizing the leasing of public lands in the Zone for a term of 25 years. Lots for building purposes in towns are now rented by the Commission at rates varying from 5 to 30 cents per square meter per annum, while agricultural land is rented at \$3 a hectare (2.47 acres) per annum. The number of leases and the rentals collected since the organization of the Zone are indicated by the following table:

LEASES IN EFFECT.	Agricultural lands.	Building lots.	Rentals collected, preceding year.
June 30, 1905.....	372	478	*\$13,296.12
June 30, 1906.....	121	405	9,277.96
June 30, 1907.....	83	479	7,974.78
June 30, 1908.....	194	878	17,436.76
April 30, 1909.....	468	1,567	22,666.81

*Including collections from May 4, 1904.

On June 2, 1904, the Governor of the Canal Zone authorized the organization of a Zone police force, which has since been increased, from time to time, and at present consists of: 1 chief, 2 lieutenants, 12 sergeants, 20 corporals, 119 first-class policemen, and 96 policemen, a total of 250, all Americans, except the policemen who, for the most part, are natives of the British West Indies who have served in the British army, and who are of special value in the maintenance of order in the Zone among the people of their own race. In addition to the general maintenance of order and protection of property, the police have charge of the Zone penitentiary at Culebra and the local jails throughout the Zone (in which persons awaiting trial and serving misdemeanor sentences are held), and act as deputy marshals, court bailiffs and deputy coroners, as guards on passenger trains, pay cars and at pay offices, and in some instances as watchmen at shops, storehouses, railroad crossings, and hospitals. The following table shows arrests made, felony convicts received in the penitentiary, and coroner's cases investigated by the police since the organization of the force:

PERIOD.	Arrests.	Convicts.	Coroner's cases.
June 2, 1904, to June 30, 1905....	2,130	21	14
July 1, 1905, to June 30, 1906....	3,748	46	45
July 1, 1906, to June 30, 1907....	5,831	87	136
July 1, 1907, to June 30, 1908....	6,075	95	140
July 1, 1908, to April 30, 1909....	5,150	101	123

The Commission, by Act No. 8 of September, 1904, authorized the establishment of a school system in the Zone. In December, 1905, a Superintendent of Schools for the Zone was appointed. Seven schools conducted by the municipalities were taken over by him. The first school of the general Zone system was opened under his direction on January 2, 1906, at Corozal. Thereafter rapid progress was made in the establishment of schools; buildings were repaired, others were rented, and supplies were se-

cured. In 1907, high schools for white children were established at Culebra and Cristobal. Schools are now conducted for white children at 12 towns, and for colored children at 17 towns. Children living at towns where there are no schools are provided with railroad, wagon or boat transportation to the nearest school town. The following table indicates the enrolment and attendance at the schools:

	WHITE.		COLORED.		TOTAL.	
	Enrolment.	Attendance.	Enrolment.	Attendance.	Enrolment.	Attendance.
April, 1906.....	.....	.....	.....	.....	866	611
July, 1906.....	89	55	1,155	719	1,244	774
January, 1907....	173	133	1,354	1,037	1,527	1,170
June, 1907.....	176	121	1,575	1,078	1,751	1,199
December, 1907..	398	353	1,067	697	1,465	1,050
June, 1908.....	460	366	1,256	755	1,716	1,141
December, 1908..	638	556	1,178	763	1,816	1,319
May, 1909.....	656	539	1,313	764	1,969	1,303

In October, 1905, the Commission authorized the establishment of a Fire Department for the Zone, and on December 1, a Fire Chief was appointed. His first work was the organization of volunteer companies, composed of Commission and Panama Railroad Company employes. In November, 1906, the first paid company, composed of experienced firemen from the States, was established at Cristobal. The organization now consists of six paid and 19 volunteer companies. Electric telegraph fire alarm systems have been installed at Cristobal (connecting with Commission and railroad property in Colon and with the docks and storehouses at Mount Hope), Gorgona, Empire, Culebra, and Ancon (connecting with Commission and railroad property in Panama and Balboa).

The equipment of the paid company at Cristobal consists of a steam fire engine, a chemical engine, a hook and ladder truck and a hose wagon. Each of the other paid companies is equipped with a two-horse hose wagon. The volunteer companies are equipped with hose reels.

The municipalities, before they were abolished, erected public markets at Empire, Gorgona, and Cristobal, and public slaughterhouses at Empire and Gorgona. Since then markets have been erected at Pedro Miguel, Paraiso, Culebra, Las Cascadas, and Tabernilla, and a new market has been built at Cristobal.

Little had been done to open roads throughout the Zone when Canal work began in 1904. The old paved trails built by the Spaniards were practically impassable, and a few trails leading from the railroad to interior villages of the Zone, from which the vegetation was cut from time to time were little used, except in the dry season. Since then about 60 miles of trail have been cleared, 20 miles of which were partially graded and drained and provided with light bridges. About 12 miles of macadam road have been constructed, and about 12 miles are in course of construction at present, and about 10 more have been surveyed, and work will be undertaken as soon as funds are available. In addition, the streets in the villages of Empire and Gorgona have been macadamized and provided with concrete curbs and drains, and systems of water works and sewers have been installed, and public latrines have been built, in those and many other towns. Both local (misdemeanor) and penitentiary (fel-

ony) prisoners are used on this work, and much of it has been done by them. All this work is in addition to the roads, waterworks and sewers constructed by the Commission from funds appropriated by Congress, for use directly in the construction of the Canal.

Commission legislation in 1904 provided that until the Zone Treasurer and Auditor were appointed, the duties of those offices should be performed by the Disbursing Officer and Auditor of the Commission. This arrangement was continued until October, 1908, when a separate treasurer of the Zone was appointed. Accounting regulations governing the receipt and disbursement of Zone funds were adopted in December, 1905, and were revised in October, 1908. They follow, as closely as conditions on the Isthmus permit, the laws and treasury regulations of the United States governing public moneys.

Two banks, one in the United States and one on the Isthmus, have been designated as depositories of Zone funds and all such funds not required for current use are deposited with them, interest being received on funds deposited in the United States.

The order of the President of May 9, 1904, which continued in force the laws of Panama, authorized the temporary appointment of a judge for the Canal Zone to have "authority equivalent to that usually exercised in Latin countries by a judge of a court of first instance." A judge was appointed under that authority in July, 1904. August 16, 1904, the Commission, by Act No. 1 of the Laws of the Canal Zone, created the judicial branch of the Zone government, consisting of a supreme court, three circuit courts, and five municipal courts, the first two being courts of record, the Supreme Court with a Chief Justice and two associate justices, who were also judges of the circuit courts.

The Executive Order effective April 15, 1907, abolishing the municipalities, created in each administrative district a District Judge to exercise the authority formerly exercised by municipal judges, with a senior District Judge to sit in the absence of the other judges and to preside at meetings of District Judges.

The office of Prosecuting Attorney was created by Act No. 8, passed by the Commission in September, 1904. Since then the Prosecuting Attorney and his assistants have represented the Government in all criminal prosecutions in the courts of the Canal Zone. While this work is distinct from the Commission's legal work of a civil nature, for the sake of convenience, the Prosecuting Attorney is also the attorney of the Commission on the Isthmus in charge of civil matters.

In addition to the laws and executive orders already referred to, the Canal Commission, before its authority to pass laws for the Zone expired, enacted, among other laws, a penal code, a code of criminal procedure, laws suppressing lotteries, prohibiting gambling, and respecting the exercise of the right of eminent domain; and since then the President has issued executive orders having the force of law amending the penal code, extending United States patent, trade mark, and copyright laws to the Zone, providing for marriage by Protestant clergymen, regulating insurance companies, providing for the registration of land titles, enacting a code of civil procedure and authorizing trial by jury in capital cases.

CANAL ZONE ROADS.

Opening Lands to Agriculture in Order to procure a Permanent Population.

The policy of constructing highways in the Canal Zone has the dual purpose of connecting the villages along the line of the Canal, and making a permanent population by opening the land to agriculture. A trunk line of highways will serve also to keep people and pack animals off the Panama railroad line, and thus prevent much loss of life and property. Neither the railroad nor the Canal would have much effect in promoting agriculture, if access from the lands now covered with jungle were not afforded by roads. A trunk line of roads parallel with the Canal is in process of construction, with the purpose of building lateral branches out from the trunk into the fertile territory five miles broad on either side of the Canal. These branches will connect with roads that the Government of Panama has projected into the interior of the Republic.

A glance at a map of the Canal Zone, containing the outlines of Gatun Lake, shows that this strip of land, 50 miles long and 10 miles wide, will be divided into two parts by the lake. The highway system will therefore consist of two distinct trunks with their branches; one running from Cristobal to Gatun on the north shore of Gatun Lake, and the other from Gorgona near the south end of the lake to Panama. Both are well advanced in construction. The lands to which the roads will give access comprise about 290,000 acres, and about half of this will be covered by Gatun Lake or used for Canal purposes. Three-fourths of the land is owned by the United States. The intention of the Government as expressed in the laws on the subject is to lease the land for agricultural purposes only, and to limit the term to not more than 25 years. The roads are paid for from funds collected by taxation under provisions in the appropriations act, as follows:

All funds hereafter collected * * * or raised by taxation in whatever form under the laws of the government of the Canal Zone are hereby appropriated * * * The revenues derived from the postal service to the maintenance of that service; the remaining revenues, after setting aside a miscellaneous and contingent fund of \$10,000; to the maintenance of the public school system in the Zone; to the construction and maintenance of public improvements within the Zone; to the maintenance of the administrative districts, including payment of salaries and wages incident thereto; to the maintenance of Canal Zone charity patients in the hospitals of the Isthmian Canal Commission, and to the maintenance of administrative district prisoners.

The amount of revenues from all sources since American occupation, and the amounts expended on roads, are shown in the following statement:

REVENUES FROM MUNICIPALITIES.	
Receipts—	
June 19, 1904, to June 30, 1905...	\$28,860.66
July 1, 1905, to June 30, 1906....	92,527.27
July 1, 1906, to April 14, 1907....	115,477.13
Total.....	\$236,865.06
EXPENDITURES FOR ROADS AND TRAILS.	
June 19, 1904, to June 30, 1905....	*\$261.69
July 1, 1905, to June 30, 1906....	*8,291.88
July 1, 1906, to April 14, 1907....	28,627.05
	\$37,180.62
CANAL ZONE REVENUES.	
Receipts—	
To June 30, 1905.....	\$10,274.80
Fiscal year, 1906.....	12,196.61
Fiscal year, 1907.....	†124,179.80

*In accounts prior to July 1, 1906, expenditures for roads and trails were not shown separately, but were included in public improvements, and these figures are approximate.

†The municipalities were abolished on April 15, 1907, and this amount includes \$82,611.86, balance of municipal revenues on hand on that date.

Fiscal year, 1908.....	223,695.18
July 1, 1908, to March 31, 1909..	184,641.35

Total.....	\$554,987.74
EXPENDITURES FOR ROADS AND TRAILS.	
Fiscal year, 1908.....	\$21,487.11
July 1, 1908, to March 3, 1909....	36,074.96
	\$57,562.07

Grand total of expenditures for roads and trails to March 31, 1909.....*\$94,742.69

These amounts do not represent the total expenditures for highways. Streets and roads built to give access to Commission quarters, or to construction work on the Canal are paid for from Commission funds. The amounts given above represent only the expenditures from Canal Zone funds for roads in Zone villages and connecting them.

Little had been done to open roads throughout the Isthmus when the American occupation began in 1904. In fact a few ill kept trails leading from the more important villages of the interior, and almost impassable in the rainy season, represented the only attempt at road building. Then, as now, the chief avenue for travel of men and pack animals was the line of the Panama railroad, which acted as a trunk for the trails to the interior. Practically the only trails that represented a systematic attempt at permanent construction were those built by the Spaniards in the sixteenth century and later—the old pack roads from Nombre de Dios, Porto Bello, and Cruces to Panama. These trails have a surface of cobble-stone and are comparatively well preserved, but years of disuse have allowed trees to grow up between the stones, and the jungle to envelop the paths and the rains to wash out the stones. A road that had been graded by the French from Panama to Corozal, was washed out and almost impassable in 1904 because of the rapid growth of vegetation.

The first roads made by the Americans were those extending from the city of Panama westward to Balboa, formerly La Boca, a distance of about 2½ miles, and eastward through the Sabanas to the boundary of the Canal Zone, a distance of 3¾ miles. They were built in 1905 and were macadam roads of the best type. On account of the great cost of good macadam roads, experiments were made in the dry season of 1906 and 1907 to see if a cheaper class of highway would not serve all the necessary purposes for communication with the interior. A number of trails were cleared and surfaced with earth, one from Empire to the Zone boundary in the direction of Chorrera, another from Empire to Las Cascadas, a third from Bas Obispo to Cruces and still another from Corozal to Arraijan. In all about 35 miles were cleared and about twenty miles were constructed. The longest trail covered a distance of five miles, extending from Empire to the Zone line where it connected with the native trail to Chorrera. The route of the old trail along the low places was abandoned, and a path 6 feet broad was cut around the edge of the hills, fills were made, and light bridges built. The distance was greatly shortened. The trails were well made, but were not covered with rock. One rainy season showed the uselessness of building roads without surfacing them with rock and draining them. Many of the fills were washed out, the bridges were washed away or soon rotted, and the cuts along the edges of the hills were worn down so as to be impassable. Since this experiment was made nothing but well drained

*Outstanding bills are not included in this total.

and crushed stone roads have been constructed.

The road from Cristobal to Gatun is eight miles long. The section that runs through Cristobal and Mount Hope was built in 1907, and is one mile long. The section from Mount Hope to Gatun has been graded the whole distance of seven miles and the work of surfacing it with crushed rock is now in progress. This section has been graded to a width of 24 feet and will be macadamized to a width of 16 feet. It runs from an elevation of about two feet above sea-level to 140 feet above, and the greatest grade is 6 per cent. The cuts made balanced the fills. Thirty-four culverts were built. A wire fence will be placed on either side the road for the whole distance from Mount Hope to Gatun. The work has been done by prisoners and paid for from Canal Zone funds.

The main highway between Panama and Gorgona is being built in seven sections as follows:

Panama to Corozal.....	3.3 miles
Corozal to Pedro Miguel.....	4.37 miles
Pedro Miguel to Paraiso.....	1.08 miles
Paraiso to suspension bridge near Empire	4.06 miles
East end of suspension bridge to Empire	0.19 miles
Empire to Las Cascadas.....	2.3 miles
Las Cascadas to Gorgona.....	3.14 miles

Total.....18.44 miles

The road from Panama to Corozal was built by the old French Canal Company in 1886, and in 1904 and 1905 it was cleared by the Isthmian Canal Commission and the culverts were repaired. It has been practically rebuilt, the old French culverts have been extended and new culverts constructed. This highway leaves the Sabanas road at a point about 4,000 feet from the Caledonia Bridge. From that point to the railroad station in Corozal is a distance of 17,500 feet. It is macadamized to a width of 16 feet, and has a 3-foot earth shoulder on either side, and ditches 4 feet wide. The maximum grade is 9 per cent, but this only for a short distance, and the controlling grade is less than 3 per cent. This section is in use and will be rolled during the wet season.

The road from Corozal to Pedro Miguel runs parallel to the Panama railroad tracks from Corozal station to the point near the hotel where it turns east across the savannas to the foot of the hills on the Hurtado estate. From the hotel to the summit of the road on Hurtado hill the maximum grade is 6 per cent and the governing grade about 4 per cent. From the summit one can see the site of the Miraflores Locks power house and the opening of the tunnel on the relocated line of the Panama railroad. When the Canal is completed Miraflores Lake will also be in plain view from this hill. From the summit the road drops to the crossing of the Cardenas River, where a wooden bridge of 60-foot span will be built. From this point it rises to the Miraflores dump and runs along the east side of the dump to the hill through which the Miraflores tunnel runs. The course is over the hill at the Miraflores tunnel, the maximum grade being about 7 per cent and the governing grade 4 per cent. From this point can be seen the site of Miraflores Locks, and a good view is obtained of Culebra Cut as far as Gold and Contractor's Hills. On the completion of the Canal, Miraflores Lake will also be visible from the summit at the tunnel. From the tunnel the road lies along the relocated line of the Panama railroad crossing the Caimito River on the railroad culvert and the Pedro Miguel River on a 15-foot extension of the railroad culvert. At present rock has been placed

on the section from Corozal to Cardenas River, a distance of about one mile, and this will be rolled during the coming wet season. All the subgrade has been completed from the Cardenas River over the Miraflores divide. No grading will be done on the dumps, or along the relocation of the Panama railroad, until the railroad grade is raised. Although the road is not completed beyond the Cardenas River there is an old ford at the point where the bridge will cross and the right of way may be followed on horseback almost the entire distance to Pedro Miguel. This road is of the same construction as that from Panama to Corozal.

Surveys have been made of the section that will connect Paraiso with Empire. It will run east of Gold Hill to the suspension bridge which will carry it across Culebra Cut. It will have a macadam surface 10 feet wide with 3-foot shoulders. The maximum grade will be about 5 per cent. The construction involves 13,500 cubic yards of crushed rock.

At Empire the highway will cross Culebra Cut on a suspension bridge with a 7-foot roadway. Work on the bridge is in progress. As the bridge is designed primarily to carry the air and water mains of the Central Division over the Cut, the expense will be borne jointly by the Department of Construction and Engineering and the Canal Zone treasury. This bridge is built only for temporary use, and as soon as the Canal is completed it will be torn down as the clearance above normal water level will be only 108 feet 6 inches, not sufficient to allow ships to pass.

From Empire to Las Cascadas the grading is almost completed, and a large amount of macadam has been laid. This section has a macadam surface 14 feet wide, and the maximum grade is 5 per cent. About 14,000 cubic yards of embankment have been made, of which nearly half was from side hill cuts. This work is paid for from Canal Zone funds, and prison labor is used.

The section from Las Cascadas to Gorgona has been surveyed, and the grading has been completed from Gorgona to the Mandinga River. This work will be completed by prison labor.

Only two of the lateral roads which will open up the interior of the country have been projected. One of these will run west from the main highway at Empire to the Canal Zone boundary where it will connect with a road projected by the Panama Government northeast from Chorrera to the Zone line. It will open up a desirable farming section. The other lateral road is already under construction. It will run east from the suspension bridge over Culebra Cut at Empire to Las Cascadas plantation, a distance of 3.07 miles. Ultimately it may be extended to Cruces on the Chagres River. It will also open up a good farming region and a section that will be traversed by the relocated Panama railroad.

Colon Riot Punishments.

As a result of the riot at Colon on the night of May 10, one lieutenant and three policemen, members of the Colon police force, have been found guilty of improper conduct in connection with the affair, and expelled from the force. In addition, the lieutenant was sentenced to confinement for two months, and the policemen each to one month.

FOURTH OF JULY.

Celebration to be Held at Ancon and Cristobal.

Since the meeting of May 1, preliminary plans for the celebration of the Fourth of July at Ancon have been made. Commissioner Blackburn, as chairman of the executive committee, has appointed the following chairmen of subcommittees, constituting together the executive committee:

Dance, H. H. Rousseau; decorations, B. C. Poole; amusements, F. C. Freeman; transportation, H. J. Slifer; finance, W. M. Wood; Marines, Maj. B. H. Fuller; fireworks, Lieut. R. L. Wood; music, C. E. Jennings; publicity, H. D. Reed. Each chairman has appointed the members of his subcommittee.

At a meeting held on May 12, the executive committee approved estimates for expenditures aggregating \$2,000, and subscription blanks are now being circulated to raise the necessary funds.

The program as arranged includes foot races, fire department exhibition, Marine contests, pony and mule races, bucking horse contests, and a tug-of-war, with fireworks and a dance at Hotel Tivoli at night.

At a recent meeting of representatives of the Ancon and Cristobal committees, arrangements were made for the two committees to cooperate. The I. C. C. band will play at Ancon, and the Marine band at Cristobal. All material on the Isthmus available for decoration will be divided equally between Ancon and Cristobal, and fireworks for both places will be ordered in one lot by Lieutenant Wood. Mr. Slifer, who is chairman of the transportation subcommittee at each place, has arranged a schedule of trains running at frequent intervals throughout the day, so that people at any place on the Line may attend either celebration.

Davis Pardoned

Thomas F. B. Davis, a colored journalist, who has been serving a term in the Culebra penitentiary for libel, was pardoned on June 1, 1909, by Governor Blackburn. Davis was arrested at Ancon on January 22, 1909, was tried in Empire Circuit Court, and found guilty on March 9, 1909, on three counts of libel and on one count of publishing false reports of a court. He was sentenced to serve 30 days on each conviction and to pay the costs.

There was not a delinquent tax payer in the town of Gorgona for the fiscal year 1907-1908. The last outstanding assessment was paid on May 26, 1909, the day before the date the property was advertised for sale.

Concert by I. C. C. Band.

HOTEL TIVOLI, ANCON, C. Z.,
Sunday, June 6, 1909, at 6 p. m.

PROGRAM.

- 1 March—*The Tivoli*.....Jennings
First performance.
- 2 Selection—*The Prima Donna*.....Herbert
{ a Characteristic—*Kerry Mill's Barn*
- 3 { *Dance*.....Mills
b Indian Descriptive—*Trailing the Trail*.....Spaulding
- 4 Overture—*Poet and Peasant*.....Suppe
- 5 Concertstuck—*The First Heart Throbs*.....Eilenberg
- 6 Medley Selection—*Hits of 1909*.....Remick
- 7 Tone Poem—*In Lovers' Lane*.....Pryor
- 8 Suite de Ballet—*Antony and Cleopatra*.....Gruenwald
- 9 Intermezzo—*Kisses*.....Hubbell
- 10 March—*The Sousa Swing*.....Brown
CHAS. E. JENNINGS, Musical Director.

A concert will be given at Cristobal, Wednesday June 16.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 8, 1909 (75th meridian time):

DATE.	High.	Low.	High.	Low.	High.
	A. M.	A. M.	P. M.	P. M.	P. M.
June 2.....	2.34	8.39	2.41	9.03	.....
June 3.....	3.10	9.19	3.18	9.42	.....
June 4.....	3.47	9.58	3.55	10.21	.....
June 5.....	4.27	10.38	4.34	11.02	.....
June 6.....	5.07	11.21	5.18	11.43	.....
June 7.....	5.49	12.05	6.02	.....	.....
June 8.....	.....	A. M.	A. M.	12.55	6.49
		12.29	6.36		

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, May 29, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboboa.	Bohio.	Gatun (Canal)	Gatun (W. D.)
Height of low water ab. m. a sea-level, ft.	125	92	46	1	0	0
Maximum height ab. mean sea-level, feet:						
Sunday, May 23...	128.2	95.1	53.4	6.9	1.9	1.4
Monday, May 24...	133.5	98.0	56.7	5.3	1.1	0.8
Tuesday, May 25...	131.8	96.8	56.5	11.5	4.4	3.4
Wednesday, May 26...	131.8	97.0	56.4	13.8	7.1	5.7
Thursday, May 27...	130.4	96.1	53.9	9.1	5.8	4.5
Friday, May 28...	123.6	95.5	54.5	9.3	4.0	3.2
Saturday, May 29...	131.8	96.9	55.1	5.9	2.3	1.8

Rainfall, May 1 to 29, 1909, Inclusive.
(MIDNIGHT TO MIDNIGHT.)

Stations.	Maximum in one day	Total for period.
<i>Atlantic Division—</i>		
Cristobal.....	1.60	7.20
Brazos Brook.....	1.35	7.30
Gatun.....	2.30	8.93
Bohio.....	4.19	13.69
<i>Central Division—</i>		
Tabernilla.....	2.36	10.06
San Pablo.....	2.65	9.00
Bas Obispo.....	2.42	12.97
Gamboboa.....	3.88	15.35
Empire.....	1.75	7.71
Camacho.....	1.23	9.34
Culebra.....	1.63	7.34
<i>Pacific Division—</i>		
Rio Grande.....	1.40	7.31
Pedro Miguel.....	1.34	8.45
Balboa.....	1.55	9.60
Ancon.....	1.58	8.74
<i>Atlantic Coast—</i>		
Porto Bello (to 5 p. m. May 27)...	2.64	8.49
Nomhre de Dios (to 5 p. m. May 22)	2.46	5.88
<i>Upper Chagres.</i>		
El Vigia.....	3.12	15.49
Alhajuela.....	3.88	14.32

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., June 2, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- Ammanuel, Jo.....Lees, Miss
- Bardelson, Samuel.....McCulloch, Wm.
- Brady, Luey.....Morris, N. N.
- Brown, Capt. R. D.....Navalo, Rosenda
- Erion, C. M.....Prescott, Mr. & Mrs. Richard D.
- Ford, Miss A Igeryana.....Pusey, Obadiah D.
- Gilmore, Capt. S. F.....Reichard, James H.
- Harper, O. Granville.....Reisingler, Mrs. F.
- Henry, Robert.....Rodie, Alex. H.
- Johnston, W. Caley.....Rundle, R.
- Jones, Frank.....Strobinger, Fred
- Kempton, C. W.....Whaler, Mrs. J. W.
- Kenyon, Mrs. Mas.....Woodford, Earl.

FOUND—A sum of money. Owner can recover same by applying to J. W. Lucey, room 17, house 45, Las Cascadas, C. Z., and proving ownership.

The following steamers have recently arrived at; Balboa: May 23, *City of Sidney* from San Francisco; May 24, *Costa Rica* from Central America; May 26, *Ecuador* from Guayaquil.

OFFICIAL CIRCULARS.

Employment of Hourly "Gold" Men.

CULEBRA, C. Z., May 24, 1909.

CIRCULAR No. 254.

Hereafter no hourly "gold" men shall be employed except at standard rates of pay which have been established and which do not exceed 65 cents base pay, except in the case of bricklayers for whom the rate of pay per hour is 72 cents, and patternmakers and plumbers, for whom the base rate of pay is 75 cents per hour. It is not intended to reduce, by the application of this order, the pay of any employe now on the rolls who was originally appointed at a higher base pay.

In addition to the above maximum base rates of pay, certain "special" rates have been authorized for machinists, boilermakers, blacksmiths, pipefitters, and moulders. These "special" rates of 70 and 75 cents per hour are for "leading men" exclusively, i. e., men who not only have silver employes under them but who also exercise supervision and have jurisdiction over the work of other white mechanics doing the same class of work. These "special" base rates of pay of 70 and 75 cents are to be granted exclusively to "leading men" permanently assigned to such duties, and when any employe receiving either of these "special" base rates of pay is relieved from permanent duty as "leading man" his pay shall be reduced to correspond to his new duties, not exceeding the maximum standard rate of pay for such work.

It is requested that the duties of all mechanics at present holding "special" ratings be scrutinized and their rates of pay reduced, if necessary, to comply with this order.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Construction and Repair of Buildings.

CULEBRA, C. Z., May 26, 1909.

CIRCULAR No. 255.

Effective July 1, 1909, all work in connection with the construction and repair of Commission buildings, and of wooden walks, will be transferred to the Quartermaster's Department. New construction work will, in general, be performed by contract, and repairs will be made by Commission forces.

Contracts to be entered into that will not expire until after July 1, and beginning with the construction of one type No. 17 and three type No. 27 buildings at Ancon, will be under the charge of the Quartermaster's Department. Contracts now in force will be completed under present supervision.

What are known as "division structures" will be repaired by the Quartermaster's Department. The method of initial construction of such buildings will be determined in each case by the Chief Engineer.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Hotel and Commissary Coupon Books.

CULEBRA, C. Z., May 28, 1909.

CIRCULAR No. 256.

Effective June 1, 1909, the order of December 13, 1907, regarding the issue of hotel and commissary books, is modified as follows:

Hotel books will be issued to gold employes only. Commissary books will be issued to all employes.

Coupon books will be issued at any time except on the last two days and the first four days of each month. Books may, however, be issued during these six days to new employes reporting for duty or to employes returning from vacation leave, sick leave or other authorized absence.

Employes are requested to obtain, as far as practicable, all hotel and commissary books required by them for the month at one time.

Commissary books of a value of less than \$5 will not be issued to gold employes and not more than one book of the \$5 denomination will be issued in any one month to a gold employe whose salary exceeds \$100 per month.

The subsistence officer will formulate a simple method whereby the time during which commissary books may be used will be extended upon the request of the owner.

The redemption of unused portions of commissary books will hereafter be made by the Panama Railroad Company in accordance with regulations which will be issued by the local auditor of the Panama Railroad Company and the Examiner of Accounts of the Isthmian Canal Commission.

The issue of commissary books to gold employes will be limited to two-thirds of the amount of their monthly pay. No change in the present limit for silver employes of \$15 is made.

The issue of hotel and commissary books must at no time exceed the amount of pay earned by an employe (except in the case of the special hotel meal book issued to new employes arriving from the United States), and deductions therefor will be made on

payrolls for the month in which the issue is made; provided, however, that coupon books may be sold for cash in amounts necessary for immediate needs to employes who have no pay due them by reason of their first assignment to duty or return from authorized absence, and to families in cases where the employe who usually provides the books is absent on account of illness or with proper authority.

GEO. W. GOETHALS, Chairman.

Electric Lights.

CULEBRA, C. Z., May 27, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Greater economy should be exercised in the use of electric current for lighting. Night watchmen should be instructed to turn off lights in buildings where they are stationed at daylight, and to use no unnecessary lights at night. Lights in quarters shall not be left burning in the daytime on porches or in living rooms, and no lights shall be allowed to burn all night except in "dry rooms." Additional switches should be installed wherever necessary to effect a saving.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Telephone Service.

PANAMA RAILROAD COMPANY,
COLON, R. P., May 27, 1909.

On and after June 1, 1909, the Panama Railroad Company will be prepared to furnish the use of its telephone system to any and all employes of either the Isthmian Canal Commission or the Panama Railroad Company, that may be occupying quarters owned by either organization.

Applications for the installation of a telephone will be made by letter to the employe's Head of Department who will refer same direct to General Manager's office.

Applicant will then be furnished with an estimate of the cost of installation which must be paid by the applicant. The cost of the instrument will not be included as it is the intention to have all telephones remain the property of the railroad company.

When estimate of cost of installation is accepted, the connection will be made.

The rate fixed as a monthly rental for local service is two dollars and fifty cents gold (\$2.50).

All bills will become due on the first day of the month and no fractional parts of month will be considered.

Outside or long distance calls will be charged for on monthly bills at toll rates for each three (3) minutes or fraction thereof, as per following schedule:

	Colon.	Mount Hope.	Gatun.	Gorgona.	Bas Obispo.	Las Cascadas.	Empire.	Culebra.	Paraiso.	Pedro Miguel.	Corozal.	Panama.
Colon.....	20	20	30	30	35	35	35	40	40	45	50	
Mount Hope....	20	20	30	30	35	35	35	40	40	45	50	
Gatun.....	20	20	25	30	30	30	30	35	35	40	45	
Gorgona.....	30	30	25	20	20	20	20	20	20	20	25	
Bas Obispo....	30	30	30	20	20	20	20	20	20	20	20	
Las Cascadas..	35	35	30	20	20	20	20	20	20	20	20	
Empire.....	35	35	30	20	20	20	20	20	20	20	20	
Culebra.....	35	35	30	20	20	20	20	20	20	20	20	
Paraiso.....	40	40	35	20	20	20	20	20	20	20	20	
Pedro Miguel..	40	40	35	20	20	20	20	20	20	20	20	
Corozal.....	45	45	40	20	20	20	20	20	20	20	20	
Panama.....	50	50	45	25	20	20	20	20	20	20	20	

Full rates will apply between 7 a. m. and 6 p. m. Half rates will apply between 6 p. m. and 7 a. m. Central operators will keep and charge time consumed.

All bills must be paid promptly through nearest station agent monthly.

Parties desiring to discontinue the use of the service must notify the General Manager's office by letter.

H. J. SLIFER, General Manager.

Approved:

GEO. W. GOETHALS, President.

Proposals for Buildings.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p. m., Saturday, June 5, 1909, when they will be publicly opened, for the erection by contract of 3 type-14 houses, and 2 type-27 houses, at Gatun, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidders will be required to deposit \$200 for the 2 type-27 houses and \$500 for the 3 type-14 houses when the contract is awarded, conditional upon the faithful performance of the contract. The Commission reserves the right

to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals. Separate proposals will be received for the different type houses.

C. NIXON,
Purchasing Agent on the Isthmus.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Panama.....	P. R. R. Wednesday.....	June 2
Prinz Joachim.....	H.-A. Saturday.....	June 5
Advance.....	P. R. R. Monday.....	June 7
Atrato.....	R.-M. Saturday.....	June 12
Allianca.....	P. R. R. Saturday.....	June 12
Colon.....	P. R. R. Friday.....	June 13
Prinz Aug. Wilhelm.....	H.-A. Saturday.....	June 19
Panama.....	P. R. R. Thursday.....	June 24
Magdalena.....	R.-M. Saturday.....	June 26
Advance.....	P. R. R. Wednesday.....	June 30
Prinz Joachim.....	H.-A. Saturday.....	July 3
Allianca.....	P. R. R. Tuesday.....	July 6
Orinoco.....	R.-M. Saturday.....	July 10
Colon.....	P. R. R. Monday.....	July 12
Panama.....	P. R. R. Monday.....	July 19
Oruba.....	R.-M. Saturday.....	July 24

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca.....	P. R. R. Tuesday.....	June 1
Colon.....	P. R. R. Monday.....	June 7
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	June 8
Panama.....	P. R. R. Monday.....	June 14
Magdalena.....	R.-M. Tuesday.....	June 15
Advance.....	P. R. R. Saturday.....	June 19
Prinz Joachim.....	H.-A. Tuesday.....	June 22
Allianca.....	P. R. R. Thursday.....	June 24
Orinoco.....	R.-M. Tuesday.....	June 29
Colon.....	P. R. R. Wednesday.....	June 30
Prinz Aug. Wilhelm.....	H.-A. Tuesday.....	July 6
Panama.....	P. R. R. Tuesday.....	July 6
Advance.....	P. R. R. Monday.....	July 12
Oruba.....	R.-M. Tuesday.....	July 13
Allianca.....	P. R. R. Saturday.....	July 17
Prinz Joachim.....	H.-A. Tuesday.....	July 20
Colon.....	P. R. R. Friday.....	July 23
Tags.....	R.-M. Tuesday.....	July 27
Panama.....	P. R. R. Friday.....	July 30

NEW ORLEANS TO COLON.

Cartago.....	U.F.C. Saturday.....	June 5
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COLON TO NEW ORLEANS.

Abangarez.....	U.F.C. Tuesday.....	June 1
Parismina.....	U.F.C. Tuesday.....	June 8

COLON TO BARBADOS, CALLING AT TRINIDAD.

Tags.....	R.-M. Tuesday.....	June 8
Magdalena.....	R.-M. Tuesday.....	June 22
Orinoco.....	R.-M. Tuesday.....	July 6

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line will be as follows: *Lousianian* on June 7, for New Orleans, via Kingston, Jamaica.

Supplies for Canal Work.

The following steamers arrived at the port of Cristobal during the week ending May 29, with supplies for the Isthmian Canal Commission.

Oruba, May 23, from New York, with 225 cases sapollo for stock; 1 water cylinder for pump at Porto Bello.

Sarnia, May 25, from New York, with 2,000 barrels cement for stock; 20 tons material for Gatun cableways; 65 tons steel for stock; 11 tons material for Gatun handling plant.

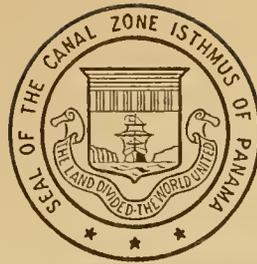
Allianca, May 26, from New York, with 21 tons material for Gatun and Miraflores handling plants; 1,000 barrels cement for Gatun spillway; 2,000 gallons engine oil for stock; 5,500 gallons valve oil for stock; 22,750 electric fuses for stock; 16,000 pounds calcium carbide for Porto Bello, and a miscellaneous cargo aggregating 3,145 packages, weighing 383 tons.

Abangarez, May 27, from New Orleans, with 20,000 pounds colored cotton waste for stock; 11 tons castings for steam shovel repairs; 1 20-ton locomotive coaling crane for Mechanical Department; 21 packages electrical material for Gatun handling plant; 13 packages castings for car repairs.

Vicinia, May 27, from Brunswick, Ga., with 395 switch ties for stock.

Memphian, May 27, from Liverpool, with 2 suction pipes for dredge *Culebra* at Balboa.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, JUNE 9, 1909.

No. 41.

The Canal Record

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Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

May Excavation.

The grand total of Canal excavation during the month of May was 2,896,095 cubic yards, which is 558,554 cubic yards less than the total for April and 1,166,537 less than the highest record, that of March, 1909. Of the 2,896,095 cubic yards, 2,837,893 were chargeable to "Work" construction and 58,202 to "Plant." The amount removed from the Canal prism was 2,575,917 cubic yards. There were taken out by steam shovels 1,732,077, and by dredges 1,105,816, cubic yards. There were 25 working days during the month, the same as in April. The mean rainfall for the month in the territory in which excavation was in progress was 9.82 inches as compared with 4.36 inches the previous month.

In the Atlantic Division the total excavation was 522,622 cubic yards, 150,079 less than were removed in April. Of this total 129,395 cubic yards were removed by steam shovels and 393,227 by dredges. In addition to the latter amount the dredges in this division excavated 276,379 cubic yards in deepening the channel and approaches to the docks of the Panama Railroad Steamship Company at Cristobal, which is not counted as Canal excavation. If included it would bring the total amount excavated by the dredges in this division to 669,606 cubic yards, 148,616 more than were removed in April. There were 284,967 cubic yards of material placed in Gatun Dam and 10,722 cubic yards of concrete were laid on the floor of the spillway during the month.

The total excavation in the Central Division was 1,513,133 cubic yards, 269,633 less than were removed in April. Of this total 1,082,217 cubic yards were taken from the Culebra Cut, 386,170 from the Canal prism elsewhere than in the Cut, and 44,746 from the Obispo Diversion, which is outside the Canal prism.

In the Pacific Division the total excavation was 860,340 cubic yards, 138,842 less than

were removed in April. Of this total 121,905 were removed by steam shovels and 738,435 by dredges. There were 22,063 cubic yards placed in the dam at Pedro Miguel Locks and 59,647 cubic yards in the dams at Miraflores.

The detailed statement of excavation in the three divisions follows:

ATLANTIC DIVISION.

LOCALITY.	"Work" Excavation.	"Plant" Excavation.	Total excavation
	cu. yds.	cu. yds.	cu. yds.
Dry excavation—			
Locks, Dam and Spillway.....	52,786	5,202	57,988
Miraflores.....	71,407		71,407
Total.....	124,193	5,202	129,395
Wet excavation—			
Atlantic entrance....	315,370		315,370
Locks, Dam and Spillway.....	52,011	25,846	77,857
Total.....	367,381	25,846	393,227
Total wet and dry excavation.....	491,574	31,048	522,622

CENTRAL DIVISION.

All dry excavation—			
Culebra Cut.....	1,082,217		1,082,217
Chagres section.....	386,170		386,170
Obispo Diversion.....	44,746		44,746
Total.....	1,513,133		1,513,133

PACIFIC DIVISION.

Dry excavation—			
Locks, Dams and Spillway.....	88,566	27,154	115,720
Diversions.....	6,185		6,185
Total.....	94,751	27,154	121,905
Wet excavation—			
Pacific entrance.....	720,753		720,753
Miraflores Locks.....	7,322		7,322
Diversions.....	10,360		10,360
Total.....	738,435		738,435
Total wet and dry excavation.....	833,186	27,154	860,340

TOTAL CANAL EXCAVATION.

Dry excavation.....	1,732,077	32,356	1,764,433
Wet excavation.....	1,105,816	25,846	1,131,662
Total.....	2,837,893	58,202	2,896,095

Mean rainfall along Canal (twelve stations) 9.82 inches.

By "Work" Excavation is meant excavation actually made for one of the constituent parts of the Canal, such as Prism, Diversions, or Locks, etc.; that is, it represents material taken from the area to be occupied by the Canal, and constitutes excavation useful for the completed Canal.

By "Plant" Excavation is meant excavation outside of any of the constituent parts of the Canal, such as Prism, Diversions, or Locks, etc. It includes material necessary to be excavated for construction purposes only and is chargeable against the particular plant item for which it is performed, such as Prism, Diversions, Locks, etc.

Protecting Cristobal Sea Front.

A section of the shore front bordering on Roosevelt Avenue, Cristobal, is being filled in with large concrete blocks in order to break the force of the waves and to prevent inroads by the sea during "northers." In the time of the old French Canal Company a barrier of concrete blocks and large rocks was constructed along the beach from the east end of Roosevelt Avenue to Cristobal Point. The greater part of the old barrier is still

intact, although many of the concrete blocks have been honeycombed by the action of the waves, and at the point where the present work is being done there is a gap in the barrier.

It was at first planned to build a sea wall from Dock 11 to a point near the new Panama railroad station, but as this would necessitate removing most of the material now lining the shore front, it was abandoned as too costly, and it was decided to fill in the exposed portion with cement blocks after the method adopted by the French. Each block contains a cubic yard of material and 300 of them will be required. They are made on the spot, at an average cost of about \$4 each, and are placed in positions best calculated to resist the force of the waves.

Pacific Division Work.

The status of operations at the Pedro Miguel Locks indicates the probable completion of excavation in the west chamber by the first of July. There is still considerable excavation remaining to be done in the east chamber. Six steam shovels are busy at this point, working in the hardest kind of trap rock. The rock is so hard that drill operations are frequently impeded, and there have been instances where four drills have been dulled in making a foot of progress. The work of clearing the channel north of the locks, preparatory to installing the handling plant apparatus, has been started. The site of the plant will be between the east and west storage trestles, which will run parallel with the Canal for a distance of about 900 feet. The west storage trestle is completed, and the piling of the approach to the east trestle is being driven. These trestles will be used in dumping rock and sand for the handling plant.

At the Miraflores Locks, three steam shovels are excavating in gray and argillaceous sand stone. The shovels are down to grade in certain sections of the upper Locks. It is estimated that it will take about four months to remove all material from the upper lock site. The dredge *Sandpiper* is working a short distance away making a channel toward the site of the upper lock gates. It made but little progress during May, owing to its being laid up three weeks for repairs.

Excavation for the core wall of the west dam at Miraflores has been completed, and the laying of concrete has been begun. Some work has been done on the flume that will carry the pipe from the dredge *Sandpiper* to the middle portion of the dam. As soon as it is finished, the dredge will be able to begin pumping material into the dam.

The water in Cocoli lake, which is destined to be a receptacle for the Rio Grande and Cocoli rivers after the damming of the former, is rising steadily. The stage on May 29 was 21 feet 2 inches above mean sea-level, and the lake is rising at the rate of a

NOTES OF PROGRESS.

(Continued.)

tenth of a foot per day. When the water reaches a stage of 35 feet, which will probably occur before the close of the rainy season, it will overflow into the Rio Grande River. The lake will cover an area of about six square miles and will submerge all that section between the Pedro Miguel and Miraflores Locks, west of Miraflores village, and also a considerable area to the west of the west dam.

The new cement shed located west of Miraflores Locks is about 50 per cent completed. It will consist of two sections, divided by the loading track which runs longitudinally directly through the center of the building. The outside dimensions are 400 feet long, and 140 feet wide. The east section is nearing completion, and the foundations have been laid for the west section. The storage capacity of the shed is 70,000 barrels.

The concrete foundations of the Miraflores power house are well under way. The concrete work in the boiler room section is practically completed, and the work of putting the six boilers in place began Tuesday, June 1, which was the date set for their installation some time ago. Very good results have been obtained from the concrete mixed with Taboguilla Island sand, which was used on this work, and the surface of the power house floor is as hard and smooth as slate. An effort will be made to have one turbo-generator ready for operation on August 1.

One steam shovel and two orange peel dredges are excavating in the Rio Grande diversion, which lies east of the canal between Miraflores and Corozal. This is designed to shut off the river which crosses the Canal several times between these points. A new track is being laid from Cardenas hill to the sand dock at Balboa, and is within half a mile of completion.

Changes in Oil Pipe Line.

The Union Oil Company of California is preparing to rebuild two sections of its pipe line, one section between the plant at Petrolia and El Diablo Hill, near Corozal, and the other from Mindi Junction to Tiger Hill. The old pipe line between Petrolia and Corozal, followed the Panama railroad cut-off from the Balboa track to the wye, and then ran along the main track. It was laid three years ago, much of it in a swampy locality that is daily inundated by the tides, and the action of the salt water has deteriorated the pipe to such a degree that it has not been safe to subject it to a high pressure. The new line will follow one of the Commission dump tracks in a nearly direct line to El Diablo Hill.

The new section from Gatun to Tiger Hill will only be temporary for as soon as the relocated track of the Panama railroad is completed, the entire pipe line from Gatun to Bas Obispo will be changed to parallel it. At Bas Obispo, the pipe will probably cross the Canal, where it will again join the old line.

There has been a considerable increase during the past few months in the amount of oil supplied to the Commission. The April run was about 47,000 barrels, and the May

run about 43,000 barrels, the amount usually fluctuating in alternate months. Oil vessels are now arriving at the rate of one every two or three weeks, as the stock of the Isthmus until recently has been very low.

Checking Baggage for Steamers.

The General Manager of the Panama Railroad Company wishes to call the attention of all persons interested to the following:

Passengers for Panama railroad steamships will avoid a great deal of confusion to themselves, and the probable loss of baggage, if they will see that their baggage, with full directions, is delivered to the agent on steamer sailing day, at least one hour before the train is due to leave their station; and they will also avoid a great deal of confusion, and possible loss of baggage, if they will check their baggage through to New York. Each agent is provided with blank tags for either the hold or the stateroom, and it is requested that all pieces of baggage be plainly marked with the person's name and final destination in the States.

Ancon Pumping Plant Enlarged.

Two new Canton-Hughes steam pumps, each having a capacity of 500 gallons of water per minute, have been installed at the Ancon pumping station. The main equipment of the plant originally consisted of three Worthington pumps, and in putting in the new machines, one of the Worthington pumps was removed. The new pumps are designed primarily for emergency use in connection with the recently completed 1,000,000 gallon high pressure reservoir on Ancon Hill, the Worthington equipment being able to keep the reservoir supplied under normal conditions.

Each of the new pumps is fitted with a 5-inch discharge pipe, which unite in an 8-inch pipe, connecting a short distance from the plant with the main pipe line to the reservoir. The latter is now full of water and its use has cut down the operation of the pumping machinery to 8 or 10 hours daily, whereas when the 50,000 gallon high pressure tank was the sole storage supply, the pumps were kept running the entire 24 hours. This has effected a considerable saving in fuel. The new high pressure reservoir supplies the higher part of Ancon, and the upper floors of houses in the Tivoli section, a new 3-inch pipe line having been laid to the latter locality for that purpose. The daily consumption of water from this reservoir is approximately 300,000 gallons.

Two horizontal 125 horsepower boilers have also recently been installed at the plant in substitution of two of the three vertical Manning boilers of 78 horsepower each, which constituted the original boiler equipment. Only one is kept constantly in service. In addition, the plant has two

small pumps, one a boiler feed pump, and the other used for furnishing Hotel Tivoli with sterilized water. The exhaust from the two latter pumps is carried into the water feed tank for the boilers, and utilized to heat the water. It is planned to also utilize the exhaust of the larger pumps, at present going to waste, in the same manner, which will supply nearly the desired temperature of 212 degrees.

Change in Time of Train No. 3.

Attention is directed to the time of train No. 3, on the Panama railroad which has been slightly changed on time table No. 4, effective June 1, 1909. The new schedule is a trifle faster and will cause the train to arrive at Culebra eight minutes earlier than formerly. There is no change between Colon and Bohio, and from the latter place to Panama the new schedule is as follows:

A. M.		A. M.	
Leave Bohio.....	6.10	Leave Las Cascadas..	6.59
Frijoles.....	6.17	Empire.....	7.07
Tabernilla.....	6.25	Culebra.....	7.11
San Pablo.....	6.30	Paraiso.....	7.19
Mamei.....	6.37	Pedro Miguel.....	7.22
Gorgona.....	6.44	Miraflores.....	7.26
Matachin.....	6.48	Corozal.....	7.31
Bas Obispo.....	6.53	Arrive Panama.....	7.40

Lidgerwood Unloaders in May.

The fourteen Lidgerwood unloaders in the Central Division during the month of May unloaded 2,843 trains, aggregating 49,779 cars. Of this number 1,395 trains, composed of 23,715 cars, were unloaded by the five unloaders at Tabernilla; 615 trains, composed of 11,070 cars, were unloaded by six unloaders at the Miraflores dumps; and 833 trains, composed of 14,994 cars, were unloaded by three unloaders at Balboa. As all the cars were of 20-yard capacity the material unloaded represented about 995,980 cubic yards.

May Rainfall for Three Years.

STATION.	1907.	1908.	1909.	Years of record	Average.*	No. rainy days—1909.
<i>Atlantic Division—</i>						
Noubre de Dios.....			8.11	0	.....	19
Porrio Bello.....		21.03	9.69	1	.....	21
Cristobal.....	6.33	22.49	7.21	38	12.45	17
Brazos Brook.....	6.82	22.10	7.51	2	12.46	23
Gatun.....	9.56	17.30	8.9-	4	16.92	22
Gatunillo.....		22.54	9.29	1	.....	25
Trinidad.....		18.41	10.79	1	.....	23
Bohio.....	8.38	18.59	13.69	14	13.93	21
<i>Central Division—</i>						
Tabernilla.....		14.79	10.07	1	.....	20
San Pablo.....		11.34	9.00	1	.....	18
Gambao.....	5.98	15.29	15.37	27	10.72	23
Bas Obispo.....	6.02	13.18	12.98	15	10.72	24
Empire.....	6.36	12.91	7.73	4	9.53	22
Camacho.....	5.39	17.29	9.34	2	11.34	24
Culebra.....	7.49	12.63	7.36	17	11.37	22
Rio Grande.....	7.35	14.26	7.32	4	11.24	24
<i>Pacific Division—</i>						
Pedro Miguel.....		14.73	8.50	1	.....	23
Balboa.....	6.09	8.65	9.69	12	6.54	20
Ancon.....	4.44	7.64	9.10	10	8.50	25
<i>Upper Chagres—</i>						
El Vigia.....			15.54	0	.....	23
Alhajucla.....	5.05	19.72	14.32	8	12.21	22

*Since station established, 1909 not included.

WEATHER CONDITIONS, CANAL ZONE, MAY, 1909.

Stations	Pressure (reduced to mean of 24 hours.)	Temperature.				Mean relative humidity.	Precipitation.			Wind.					
		Mean.	Maximum.	Date.	Minimum.		Date.	Total inches.	Station average per month.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Cristobal.....	29.852	79	89	21	72	18	89	7.21	12.45	17	4 679	S. E.	26	S. E.	25
Culebra.....	29.853	79.1	91	15	68	18	92	7.36	11.37	22	3.944	N. W.	23	N. W.	25
Ancon.....	29.847	79.4	90	31	70	18	50	9.10	8.50	25	4.406	N. W.	23	S. E.	25

SOCIAL LIFE OF THE ZONE.

Decoration Day Services—Women's Clubs and Other Features.

Observances of Decoration Day were held at Ancon and Cristobal on Sunday, May 30, under the auspices of the Army and Navy Union, detachments of U. S. Marines stationed at Camp Elliott, members of friendly societies and others taking part.

At Ancon, memorial services were held in the Protestant chapel at ten o'clock, the Rev. William Cross of Cristobal, officiating. The chapel was decorated with flags and flowers, and special music was rendered. Thirty members of the George W. Goethals Garrison, No. 1, Regular Army and Navy Union, accompanied by a detachment of forty Marines and thirty members of the Uniformed Rank, Knights of Pythias, arrived in Panama on the morning train and marched to the chapel. The garrison flags were placed before the chancel steps by two sentinels. At the conclusion of the service, the party proceeded to Ancon cemetery where flags and flowers were placed on the graves. Earlier in the day, a detachment of twenty men visited Flamenco Island in Panama Bay, for the purpose of placing suitable decorations on the graves of the American and British soldiers and sailors who are buried there.

At Cristobal about 300 persons took part in the celebration arranged by the Gen. Henry W. Lawton Garrison, No. 40. The company assembled at the Union church and marched to the Cristobal station where a special train left for Mount Hope at 10.30. The parade was headed by the Marine band, followed by the members of the garrison, Kangaroos, Knights of Pythias, Red Men, the Daughters of Pocahontas, and a large number of American school children. At the close of the services in the cemetery, conducted by the garrison chaplain, the company proceeded to the Red Men's plot where the memorial services of that order were held.

Public observance of Decoration Day on the Isthmus was inaugurated by the Army and Navy Union in 1908. There are two garrisons with headquarters at Empire and Cristobal, and an Army and Navy Club has recently been organized at Porto Bello with 22 members.

The rooms of the Ancon Woman's Club are open every evening for those who wish to read or meet for social purposes. Books and magazines are furnished and a member of the club is in attendance. The last general meeting of the club will be held on June 16. The departments will continue their work during the vacation period. In response to a request for reading matter for the inmates of the Culebra penitentiary, the club is preparing a box of books and magazines which will be forwarded at once. A committee composed of Mrs. H. E. Bovay, Mrs. Boxer and Miss Beattie, was appointed to take charge of the work. Donations of books may be sent to Mrs. Charles H. Jewett, at the District Quartermaster's Office, Ancon.

Dr. Dora Martin, representing the National Anti-cigarette League was a recent visitor to the Isthmus, having been sent by Texas League boys and friends of the organization. The purpose of her visit was to look over the ground and to organize leagues among the American boys in the Zone public schools.

Several public addresses were given in the Commission clubhouses, and leagues were organized in Gorgona and Empire. The organizations are offered by the boys under a superintendent elected by them at a general meeting. Business meetings and rallies are held once a month, when addresses of an educational character are made.

The Las Cascadas district of the Canal Zone Red Cross effected its permanent organization on Saturday, May 30. Mrs. Frank I. McAllister was elected chairman, Mrs. Charles O. Snyder, treasurer, and Mrs. W. D. Stanton, secretary. Mr. and Mrs. J. C. Barnett, Mrs. W. L. Thompson and Mrs. Frank Walraven constitute the executive committee.

Children's Day was celebrated in the Empire and Gatun Sunday schools on June 6. Special programs were given, the pupils taking part in the music and recitations.

The Odd Fellows in the Canal Zone held their annual memorial service in the Commission chapel at Culebra on Sunday, June 6.

The Empire district of the W. C. T. U. held a mothers' meeting on June 3, there being a good attendance. A meeting of all the district organizations has been called for Thursday, June 17, at 2.15 p. m., at the Commission chapel, Empire, at which time a federation of the unions will be effected. All women who are interested in this movement are cordially invited to be present.

Children's Day exercises will be held on Sunday, June 13, at the Methodist Episcopal Church in Panama. Special music will be provided. All are cordially invited.

The Caribbean Conference of the Seventh-day Adventists is constructing a church and business building in Cristobal on land granted for the purpose by the Panama railroad, adjoining the Salvation Army Social Institution. The building, which is being erected at a cost of \$6,000, contains a church with seating capacity of 200; a printing plant where the literature of the church is published, including the two journals, *The Caribbean Watchword* and the Spanish quarterly, *El Centinela*; and two apartments occupied by the superintendent's family and the members of the editorial staff. A school will be established later. The Conference has been established on the Isthmus for about five years, the principal congregation being at Mount Hope, where services are held on Saturdays. There are also congregations at Bohio, Empire and Panama, the members numbering in all about three hundred. The Caribbean Conference includes Costa Rica, Nicaragua, New Providence and adjacent islands.

Chief Justice Gudger, of the Canal Zone Supreme Court, will address a meeting in St. Luke's Church, Ancon Hospital chapel, on Sunday evening, June 13, at 8 p. m. The Brotherhood of St. Andrew extends a cordial invitation to young men especially to attend.

On Sunday, June 13, at 3 p. m., the National Baptist Mission, which is now located in a building on Ancon Boulevard, will lay the four corner stones for the erection of their church in Guachapali, on land of the Panama railroad. The four corner stones will be laid by Mr. Hiram J. Slifer, General Manager of the Panama railroad, Master Domingo Obaldia, junior son of the President of the Republic of Panama, and Miss Lane, granddaughter of Governor Jo C. S. Blackburn of the Canal Zone, and friendly

societies. After the completion of the stone laying an address will be given by Mr. Slifer. Invitations have been issued to the various fraternal orders to participate.

The regular dance of the Tivoli Club will be given at Hotel Tivoli, on the evening of June 12.

Personal.

Mr. Sydney B. Williamson, Division Engineer, and family returned to the Isthmus on the *Panama*, which arrived at Cristobal on June 8.

Missing Men.

Information is desired in regard to the following:

James W. Peniston, colored American, who was employed in the Central Division as pit foreman, up to March, 1906, and whose last address was Las Cascadas. Any one having knowledge concerning him is requested to communicate with his sister, Mary E. Peniston, care of Snow Hill Institute, Snow Hill, Ala.

Logan Rush Weathers, 20 years old, who disappeared from his home at Columbus, Georgia, in October, 1908. Any one having knowledge concerning him is requested to communicate with the New York Life Insurance Company, New York City, N. Y.

D. A. Fuller of Cleveland, Ohio. Any one having knowledge concerning him is requested to communicate with the American Consol General, Panama.

Vigliani Michael Guisepe di Stefano. Any person having knowledge concerning him is asked to communicate with the Italian Consul, Panama, Republic of Panama.

Suicide of A. Bienkowski.

Apoliary Bienkowski, fatally shot himself in the mouth, Sunday night, June 6, in a coach on the road between Panama and Balboa. Mr. Bienkowski had recently complained of feeling mentally depressed, and this condition is believed to have been responsible for his suicide. He was 43 years of age, unmarried, and was a naturalized American citizen, having been born in Warsaw, Poland, where his relatives still reside. He emigrated to the United States in the 80's, and came to the Isthmus about seven years ago, where he engaged in business as a news-dealer, subsequently establishing the Panama Railroad News Agency. He was a member of Ancon court, No. 7, Independent Order of Panamanian Kangaroos and that order will have charge of the funeral ceremonies which will be held from the Ancon lodge hall on Sunday, June 13, at 3 p. m. The social session of Ancon court, No. 7, which was to be held on Friday evening, June 11, has been postponed as a mark of respect.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., June 9, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Barnes, John, Jr.	Lynn, Mrs. Dr.
Celey, Monson	Malone, R. A.
Debler, William A.	McKeown, Daniel
Dunn, Geo. W.	Moore, George
Fuller, D. A. (2)	Moore, Charles A. (2)
Gaddis, Mr.	Palmer, George W. A.
Haynes, Harry	Purvey, J. E.
Healey, Geo. W. (2d class)	Rath, T. J.
Henderson, Hugh	Reimann, Mrs. R.
Howe, W. G. (2)	Sandford, Walter Horatio
Howe, William H.	(2d class)
Jackson, Clarence	Spencer, Mrs. Helen
Jeffries, Joseph	Vreeland, W. K.
Kelly, Dan	Walker, Mrs. Marie
Logan, A. C.	Whitwood, L.
Loose, Charles	Yagura, J.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION. MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and From/Outside/To Canal/Prism. Includes monthly data for 1907 and 1908, and totals for 1909.

Total to June 1, 1909—1,072,004 cubic yards.

*No work done outside of Canal Prism

COLON—DREDGES.

Table with columns for Months (1907, 1908, 1909) and From/Outside/To Canal/Prism. Includes monthly data for 1907 and 1908, and totals for 1909.

Total to June 1, 1909—13,005,548 cubic yards.

In this total are included 399,820 cubic yards excavated in 1905, and 1,027,643 cubic yards in 1906. There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and From/Outside/To Canal/Prism. Includes monthly data for 1907 and 1908, and totals for 1909.

Total to June 1, 1909—4,551,935 cubic yards.

In this total are included 26,628 cubic yards excavated from the Canal prism October to December 1906. In addition there were 449,704 cubic yards removed by dredges from Gatun locks in December, 1908, January, February, March, April and May, 1909.

CENTRAL DIVISION.

CULEBRA SECTION—STEAM SHOVELS.

Table with columns for Months (1904, 1905, 1906, 1907, 1908, 1909) and From/Outside/To Canal/Prism. Includes monthly data for 1904-1908, and totals for 1909.

Total to June 1, 1909—33,225,207 cubic yards.

CHAGRES SECTION—STEAM SHOVELS.

Table with columns for Months (1907, 1908, 1909) and From/Outside/To Canal/Prism. Includes monthly data for 1907 and 1908, and totals for 1909.

Total to June 1, 1909—6,240,125 cubic yards.

*No work done outside Canal prism.

CANAL EXCAVATION TO DATE.

Table with columns for By French Companies, By Americans, Steam shovels, Dredges, Total, and C. Yds. Includes cumulative totals for excavation to date.

EXCAVATION IN TERRITORY OF PRESENT DIVISIONS

Table with columns for DIVISIONS, Amount excavated, Cubic yards—Total, and Estimated amount yet to be excavated. Includes data for Atlantic, Dry excavation, Dredges, Central, Culebra, and All other points.

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Table with columns for Months (1908, 1909) and From/Outside/To Canal/Prism. Includes monthly data for 1908 and 1909.

Total to June 1, 1909—655,260 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY—STEAM SHOVELS

Table with columns for Months (1908, 1909) and From/Outside/To Canal/Prism. Includes monthly data for 1908 and 1909.

Total to June 1, 1909—1,105,508 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at Balboa locks and dams in 1907, 139,298 cubic yards at Cordoba Hill March to December, 1908, and 143,191 cubic yards by dredges at Miraflores locks in January, February, March, April and May, 1909.

BALBOA—DREDGES

Table with columns for Months (1905, 1906, 1907, 1908, 1909) and From/Outside/To Canal/Prism. Includes monthly data for 1905-1909.

Total to June 1, 1909—15,339,830 cubic yards.

There were also 172 cubic yards removed by steam shovels outside of the prism during October, 1906, and 10,360 cubic yards by dredges in the Rio Grande division in May, 1909.

FIVE YEARS OF CANAL WORK.

Progress Made Under American Control, Since May 4, 1904.

V.

Canal Funds and Method of Disbursement.

After taking over the Canal property on May 4, 1904, funds necessary for carrying on the work were temporarily disbursed by Lieut. Mark Brooke, United States Army, from an amount borrowed from the Director-General of the French company, who was subsequently repaid. The monies thus expended were repaid from the appropriation "Canal Connecting the Atlantic and Pacific Oceans." The Disbursing Office was originally located on the first floor front of the old Administration Building in Panama, where former employes of the French company made up all the pay rolls and vouchers for the continuation of the work under American control. With but two or three exceptions, they spoke only French or Spanish, and the few American employes as a rule spoke only English.

The money of the country at this period was Colombian silver, the value of which fluctuated from day to day. An arrangement was reached whereby the laborers would, as a rule, be paid in the money of the country, and the American employes in United States currency, which arrangement practically obtains at the present day, except in the case of contracts made with Europeans and others on a gold basis. The Disbursing Officer secured a supply of Colombian silver from time to time by advertising for bids in the Panama papers for the sale of checks on the United States Sub-treasury at New York. For instance, if the Disbursing Officer desired to purchase \$75,000 worth of silver, the advertisement would state that at 12 o'clock noon on a certain date, bids would be received for checks to this amount, payable in Colombian silver, with the privilege of rejecting any and all bids.

The bid or bids which gave the best returns were accepted in amounts sufficient to cover the amount advertised, the average price paid governing the expenditures made from this particular sale until the fund was exhausted. The premium paid varied from 117 on May 23, 1904, the date of the first sale, to 110 in August, 1904, and rose from then to 115 in January, 1905, the date of the last sale under this method. This made the Colombian peso vary from \$.4606 (expressed in United States values), to \$.4755, it being worth \$.464 at the time the last sale was made on January 23, 1905. The requirements of the Disbursing Office at that time were much more limited than now, a total of \$523,000 in round numbers sufficing for expenditure from May 23, 1904, up to the time that Panamanian money was introduced, the above amount meeting all the silver rolls, as well as many vouchers which were paid in silver.

The value of the Colombian peso expressed in United States money was so variable that it required a great deal of work to make payments and figure the credit due the Disbursing Officer when expenditures were made in silver.

The total transactions under the above

arrangement are shown in the following table:

DATE OF SALE.	*Premium.	Value of dol-lars local cur-rency in U. S. currency.	Silver received.
May 23, 1904.....	117.1082	0.4606	\$32,566.24
June 13, 1904.....	113.697	0.4679	32,054.55
July 5, 1904.....	111.037	0.47385	42,444.44
August 2, 1904.....	110.361	0.47537	63,108.30
August 16, 1904.....	110.288	0.475537	105,144.18
September 17, 1904.....	111.5875	0.472617	105,793.75
October 10, 1904.....	113.132775	0.459191	85,253.11
October 27, 1904.....	113.823150	0.4676762	85,529.26
November 11, 1904.....	114.25675	0.45673	85,702.75
November 28, 1904.....	114.5007076	0.466199	139,425.46
December 23, 1904.....	114.5632875	0.466063	171,650.63
January 23, 1905.....	115.505581	0.464025	159,645.00

*Rate would be 100+ premium, or in first case 217.1082 pesos for each \$100 U. S. exchange.

The situation was much simplified when the United States minted the money for the national currency of Panama, which was issued by that Republic during the month of March, 1905, the value of its peso having been fixed at the ratio of two for one. As there were no coins in the original mintage of less than five cents value, and as the rates of pay were figured to the cent, it was soon found necessary for Panama to issue additional fractional currency, which was done about one year later. The original silver 5-cent piece, which was practically out of circulation, the issue having been bought up by coin collectors and souvenir hunters, was replaced by a 5-cent nickel coin and in addition, a 1-cent nickel coin of the value of half a cent in United States currency was issued.

The gold payments were originally made in United States paper of the various denominations, but this was found to be rather expensive, as well as inconvenient, for the reason that merchants and others shipped these bills out of the country almost as fast as they were brought in. They made a cheap means of exchange, simply requiring postage and registry fee for their transmittal, and saved the merchants from paying exchange to the banks, thus placing the expense of furnishing this money on the Commission.

On May 1, 1905, an agreement, which had previously been made by the Secretary of War with bankers in the city of Panama, commonly known as the "Bankers' Agreement," became effective. The Commission, under its terms, secured from four banking firms of Panama, all the United States money necessary for the work on the Isthmus, upon the payment of a premium of 3/4 of 1 per cent. The agreement also stipulated that the bankers were to furnish all the silver required at the ratio of two dollars silver for one of gold, the payment for both the gold and silver thus received to be made through the Disbursing Officer by check on the Assistant Treasurer of the United States at New York, the bankers requiring the premium, however, to be paid in cash. This agreement expired by limitation on the last day of April, 1906, and was not renewed.

Meanwhile preparations had been made for securing future funds by the shipment of gold coin from the United States, using the accumulated silver on hand for the pay-

ment of sums less than \$10 silver (\$5 gold) only, the remainder being paid in gold coin. On account of the export tax imposed by the Republic of Panama on coin, either gold or silver, this money could not be shipped out to advantage as was done in the case of bills, so that the coin remained on the Isthmus. The bankers finally announced their willingness to receive Disbursing Officer's checks on the Sub-Treasury at New York at par, in exchange for gold and silver, so that the shipments of gold from the United States grew less and less, none having been shipped for about a year and a half past. As payments made on the gold rolls alone for the calendar year 1908 amounted in round numbers to \$9,000,000, and gold received from the sale of postal money orders, etc., was about \$2,000,000, under the bankers' agreement it would have been necessary to purchase about \$7,000,000, the premium on which at three-fourths of one per cent would be \$52,500. As the requirements for the payment of gold rolls alone have been between \$8,000,000 and \$9,000,000 per year since May 1, 1906, the date the agreement expired, it will be seen that a considerable saving has resulted.

At the beginning of the work, it was customary to issue checks to employes for such amounts as they required each month as an accommodation in forwarding money to the United States. The abuse of this privilege led to its abolition, as it was discovered that some employes were securing these checks for the purpose of selling them to merchants and others as New York exchange. Within the past few months this arrangement has again been put into effect, with the restriction, that a check for the entire amount due to an employe only will be given for each month upon request, and with the distinct understanding that it is only for purpose of transferring money to the United States, and that the privilege will be cut off if abused.

The accounts of the Disbursing Officer, under the regulations of the Treasury Department, were made up and transmitted at the close of each quarter up to and including December 31, 1904. At this time, because of the rapidly increasing disbursements, the Secretary of the Treasury directed that they be furnished monthly, which has since been done. Following is a statement of disbursements made by disbursing officers of the Commission on the Isthmus from the beginning of operations up to April, 1909, which shows a rise from about \$33,000 expended during May and June, 1904, to about \$2,000,000 monthly at the present time:

1904.		
May 19-June 30.....	\$33,197.90	
July 1-September 30.....	268,218.17	
October 1-December 31.....	393,677.89	\$695,093.96
1905.		
January.....	\$155,821.14	
February.....	245,000.10	
March.....	287,272.76	
April.....	302,261.36	
May.....	300,163.34	
June.....	377,040.99	
July.....	350,476.58	
August.....	452,035.97	
September.....	537,564.29	
October.....	666,335.03	
November.....	665,643.77	
December.....	624,914.62	4,964,529.95
1906.		
January.....	\$716,681.24	
February.....	734,315.86	
March.....	771,710.30	
April.....	857,288.15	
May.....	814,687.00	

June.....	885,079.08
July.....	884,636.72
August.....	930,075.63
September.....	998,082.01
October.....	1,452,704.87
November.....	1,046,999.01
December.....	1,37,147.42

1907.

January.....	\$1,306,428.32
February.....	1,711,946.65
March.....	1,412,011.91
April.....	1,559,505.50
May.....	1,869,830.70
June.....	1,303,318.92
July.....	1,536,695.95
August.....	2,011,537.87
September.....	2,165,926.25
October.....	2,198,591.60
November.....	1,749,663.99
December.....	2,651,994.93

1908.

January.....	\$2,445,746.71
February.....	2,138,057.92
March.....	2,406,526.58
April.....	2,177,452.10
May.....	1,942,580.00
June.....	2,577,690.23
July.....	2,009,819.88
August.....	2,001,625.21
September.....	2,415,537.98
October.....	2,377,713.18
November.....	1,852,673.51
December.....	2,259,450.18

1909.

January.....	\$2,120,463.15
February.....	2,129,040.26
March.....	2,112,111.63

Grand total..... \$71,263,069.77

October 1, 1908, the last mentioned duties were transferred to the new Examiner of Accounts, and the office of Treasurer of the Canal Zone was made a separate position, so that the Disbursing Office now has more nearly disbursing office duties assigned to it than obtained before the change. In addition to the disbursement of funds, it also has charge of the stock, and the distribution of commissary and hotel books and meal tickets. The following statement shows the issue of books and tickets in the various denominations, by months, for one year, June, 1908, to May, 1909, inclusive:

MONTHS.	COMMISSARY BOOKS.			HOTEL BOOKS.		Meal tickets.
	\$2.50	\$5.00	\$10.00	\$15.00	\$4.80	30 & 40c.
June, 1908.....	5,185	14,665	4,575	4,200	360	.....
July, 1908.....	7,990	13,445	4,602	4,602	71	.....
August, 1908.....	7,590	16,110	7,637	2,858	210	.....
September, 1908.....	7,900	14,978	6,364	5,280	232	.....
October, 1908.....	5,521	12,864	5,130	2,121	210	.....
November, 1908.....	10,040	19,515	10,330	4,733	285	288,300
December, 1908.....	4,824	11,565	4,695	2,471	106	235,700
January, 1909.....	7,335	17,099	9,523	2,947	277	205,500
February, 1909.....	7,706	13,490	6,539	4,533	255	191,202
March, 1909.....	6,860	14,000	6,975	2,850	450	202,500
April, 1909.....	7,150	16,810	8,106	4,295	178	105,100
May, 1909.....	6,380	16,050	8,375	2,955	220	172,698
Total.....	\$4,485	180,591	78,299	43,845	2,854	1,401,000
Value.....	\$211,212.50	\$902,955.00	\$782,990.00	\$657,675.00	\$13,699.20	.....
Grand total value.....		\$1,897,157.50		\$671,374.20		

The payment to the Panama Railroad Company on account of commissary books furnished employees of the Commission now averages about \$180,000 monthly, while deductions made on account of hotel books averages about \$44,000 monthly.

At the outset some criticism developed over the lapse of time between the close of a month and the pay day for employees, which led to an investigation being made into the systems and practices in use by leading contractors in the United States, with the object of ascertaining if it might be practicable to improve the system and make payments more promptly. A thorough investigation showed that the systems in use by contractors could not be adopted by the Commission, because of their lack of protection, but that payments were being made as promptly on the Isthmus, as in the case of most large contractors. Later, when the work became better organized, it was found possible to reduce the time, and the payments now begin on the first of each month for the preceding month at the main office at Empire, and at Ancon and Cristobal, while the pay car visits every portion of the work where employees are engaged on the 12th, 13th, 14th and 15th of each month.

The method of pay-roll payment is somewhat different from that in vogue in the United States, the envelope system in common use there, not being practicable on the Isthmus from the fact that it is not certain where the employe will be found, or when he will present himself for payment, and for the additional reason that as payments are made in gold and silver coin, the envelopes would be easily worn through resulting in possible loss. The signature roll payment, which was in effect for about a month during the summer of 1905 on the Isthmus, was likewise found to be impracticable because of the scattered forces, and the fact that payments so made would require the actual use of the pay roll on each payment. The old system was then returned

to and with slight modification is in use at present.

The present arrangement consists in the use of certificates made out for each individual payment, which are checked and authenticated by the Examiner of Accounts and the Disbursing Officer, and returned by the latter to the timekeepers, who in turn deliver them to the individual employes. This certificate, when properly signed by the payee and witnessed by an employe who is bonded for that purpose, and presented by the payee on the pay car or at any of the pay offices with his brass check for identifi-

cation, is immediately paid the amount called for thereon. This system is working satisfactorily, as not only does an employe know what is claimed to be due him, but he can secure his money at any point where payments are made, regardless of the fact that the pay roll is in the Disbursing office.

The payment of silver at the present time amounting to about \$1,600,000 in Panama currency monthly, requires the constant services of five men in counting and rolling the money in packages convenient for payment, and weighing 55 pounds per \$1,000, requires a total of 44 tons per month.

Order of Construction Foremen.

The order of Isthmian Construction Foremen was organized January 24, 1909, and its membership is composed of foremen in the employ of the Isthmian Canal Commission and Panama Railroad Company. There are 290 members in the order at present, of which number Gatun local has 45. The members of the grand lodge executive committee are: J. E. Curry, president; W. B. Green, secretary; J. E. Clarke, grand treasurer; C. C. Simonson, chairman; Chris. Kirchner, A. H. Stewart, and W. E. McCann, grievance committee. The officers of Gatun local, No. 1, are: D. W. Bass, president; J. Loyal Seward, secretary; Albert F. Gabler, treasurer; Locals No. 2, Tabernilla; No. 3, Gorgona. No. 4, Bas Obispo; No. 5, Empire; No. 6, Pedro Miguel, and No. 7, Ancon, will not elect their permanent officers until after the second session in June. The regular meeting of the grand lodge is the first Sunday of each month. Gatun local meets every Friday night at 8 o'clock.

Liquor Licenses.

Sixty applications for liquor licenses in the Canal Zone were received up to May 29, the last day on which applications could be filed. Last year at the same date there were 72 applications, of which number 63 were favorably acted upon by the Commission. At the end of May, 1909, 58 of the 63 licenses were still in force.

Silver employes were paid semi-monthly up to and including September, 1907, the November, 1907 pay day being for the month of October, and constituting the first payment made monthly to gold and silver employes alike. At the beginning of the work, the question of monthly pay days for silver men was considered, but decided as impracticable at the time on account of the limited facilities for feeding the silver force, and the inability of the laborers to retain their money a sufficient length of time to provide themselves with the necessaries of life from one month to the next. Moreover, the Chinese merchants with whom they dealt principally, refused to trust them longer than for the half-monthly period. Upon the opening of commissaries and laborers' kitchens, it became practicable to make monthly payments to silver employes. The total number of payments made to gold employes from June 1, 1905, to February 28, 1909, inclusive, was 211,374, amounting to \$25,598,697.87. The total to silver employes in the same period aggregated 1,510,438, payments amounting to \$25,985,688.28, United States currency. The grand total to both gold and silver employes in the above period was 1,721,812 payments, amounting to \$51,584,386.15.

Up to the spring of 1905, the Disbursing Officer had the responsibility for regulations governing the preparation of all vouchers and pay rolls, and the auditing for the Commission of all payments made on the Isthmus. At that time, a Local Auditor was sent from the United States, who subsequently died of yellow fever. His successor held the position until March, 1906, when the Disbursing Officer acted as Local Auditor until a new appointee arrived in October, 1906, the force of time inspectors, however, continuing in the Disbursing Officer's charge. In September, 1907, the title of Local Auditor was changed to Examiner of Accounts and the time inspection force transferred to his charge, while property accountability and the statistical work of the Commission reverted to the Disbursing Officer. On

SOME SHOVEL RECORDS.

Highest Excavation in Central Division.

The highest steam shovel records in the Central Division up to the present time are:

Highest Monthly Record, Entire Division.

2,065,827 cubic yards in March, 1909, 27 working days; average per day, 76,512 cubic yards.

Highest Daily Record, Entire Division.

78,559 cubic yards, April 5, 1909, 57 shovels; average per shovel, 1,378 cubic yards.

Highest Monthly Records.

45-ton Bucyrus—25,713 cubic yards, July, 1908, shovel No. 59, 26 days; average per day, 989 cubic yards.

70-ton Bucyrus—53,043 cubic yards, March, 1909, shovel No. 122, 27 days; average per day, 1,965 cubic yards.

95-ton Bucyrus—58,483 cubic yards, October, 1908, shovel No. 230, 27 days; average per day, 2,166 cubic yards.

Model-60 Marion—41,219 cubic yards, March, 1908, shovel No. 152, 26 days; average per day, 1,585 cubic yards.

Model-91 Marion—55,419 cubic yards, August, 1908, shovel No. 256, 25 days; average per day, 2,217 cubic yards.

Highest Daily Records.

45-ton Bucyrus—1,356 cubic yards, February 5, 1908, shovel No. 58.

70-ton Bucyrus—2,300 cubic yards, February 9, 1908, shovel No. 131.

95-ton Bucyrus—3,941 cubic yards, March 2, 1909, shovel No. 220.

Model-60 Marion—1,704 cubic yards, April 18, 1908, shovel No. 152.

Model-91 Marion—3,485 cubic yards, January 21, 1909, shovel No. 265.

Monthly records are based on place measurement and daily records are based on car measurement.

Shovels in the one-hundred class are 75-ton Bucyrus and Model-60 Marions with dippers of a capacity of 2½ cubic yards. Shovels in the two hundred class are 95-ton Bucyrus and Model-91 Marions with dippers of a capacity of 5 cubic yards. Shovels in the fifty-class are 45-ton Bucyrus shovels with dippers of a capacity of 1¾ cubic yards. These shovels are under steam for eight hours per day, but are not actually worked during this entire period, time being lost by the necessity of moving the shovel forward, blasting stone too big for the shovel to handle, keeping the shovel supplied with cars, etc.

Isthmian Baseball.

The 1908-09 season of the Isthmian baseball leagues is drawing to a close. The series of games conducted by the Atlantic League have been successful, and the league leaders are already planning for next year. This league is composed of five clubs, viz.: Dry Dock, Panama Railroad Commissary, Panama Railroad Company, Colon, and Civil Administration. The members of the first three teams are drawn from employes at Colon and Cristobal, the players on the Colon team are made up of merchants and professional men of Colon, and the talent on the Civil Administration club is represented by employes of that department in Cristobal and elsewhere. The games are all played at Colon, and the attendance has been gratifying, varying from 600 to 1,200 each game. The Dry Dock team leads the league, with the

Commissary club a close second. It is proposed to put up a new park at Colon prior to the opening of the next league season. The Panama Railroad Company has granted the ground for the purpose, and the business men of Colon will contribute to a fund for the erection of enclosure and grand stand. The Civil Administration club will play a post series of games with the Gorgona team of the old league.

The season in the regular Isthmian League closes June 13. Empire took the lead early in the race, and is an easy pennant winner. Ancon won a double-header over the M. P. & M. team on the Ancon grounds, Sunday May 30, and Empire added another to its string of victories at Empire park. The Ancon-Empire game on Sunday June 6, was won by Empire, score 7 to 1. The Gorgona-M. P. & M. game was forfeited to Gorgona, the M. P. & M. failing to appear with a full nine. The standing of the clubs on June 7, was as follows:

	Played.	Won.	Lost.	Per cent.
Empire	28	21	7	.750
Gorgona	29	13	16	.448
M. P. & M.	28	12	16	.429
Ancon	29	11	18	.379

Cristobal Fourth of July Celebration.

The general committee having in charge the Fourth of July celebration at Cristobal is composed of E. C. Harington, chairman; C. R. Chisholm, secretary; A. Fechtig, treasurer, and the following chairmen of sub-committees: W. S. Perry, finance; Mr. Kilgour, fireworks; Lieutenant Barber, athletics; Capt. H. W. Stickle, aquatics; H. J. Slifer, transportation; Capt. C. Nixon, printing; John Burke, reception and music; H. C. Ragsdale, dance; Ira A. Giles, decorations; C. E. Weidman, fire department. In addition, the following are members of the general committee, representing the neighboring towns: Maj. J. P. Jervey and Capt. G. M. Hoffman, Gatun; Messrs. Waltman and Storm, Porto Bello; Messrs. Coclrán and Booz, Gorgona, and Mr. Metcalf, Tbernilla. Major Jervey, Lieutenant Barber, and C. R. Chisholm have been appointed to sit with the three representatives from Ancon on the joint executive committee.

Arrangements for the program have been about completed, and will consist of aquatic races between tugs, launches and sail boats; swimming contests; running, jumping, potato and three-legged races; a wall scaling exhibition by the Marines; exhibition drill by the fire department; a practical illustration of the Pampier life-saving feat; volunteer hose company races, etc. The program will conclude with a display of fireworks in the evening, and a ball at Lincoln House. Music will be furnished throughout the day by the Marine band.

Subscription lists are being circulated to secure funds for the celebration of the Fourth of July at Ancon and Cristobal. The funds for the celebration at each place are being collected and handled separately, and each list indicates the place at which the money subscribed on it will be used. The committees at both places desire that each subscriber will see that his name is entered on the list for the place to which he desires his contribution to go.

Order of Isthmian Conductors.

The next regular meeting of the Order of Isthmian Conductors will be held in Cristobal lodge hall, on Sunday, June 13, at 3 p. m. Important business.

COMMISSION CLUBHOUSES

Activities of the Young Men's Christian Association.

CULEBRA.

The local bowling tournament for the duck pin championship resulted in a tie between E. W. Palmer and B. C. Quinby, 17 games being won and 6 lost. Mr. Quinby won the roll off. P. L. Pierce had high average of 91 and W. L. Dalton, high score of 116.

The local pool tournament was won by W. L. Dalton, I. H. Fleischman, second, and Don H. Beaman, third.

The local chess tournament for the possession of the W. H. Baxley medal was won by Mr. Charles Wilson, having lost only two out of nine games. Messrs. Wm. Dubois, F. E. Sterns, and D. H. Beaman were tied for second place, each having lost three out of nine games. On Monday, June 7, Mr. Wilson will play a simultaneous match against all comers.

EMPIRE.

A special bowling match was played on Thursday night, June 3, between the "Lonesomes" (single men) and the "Hen-Pecked" (married men) of the Empire Y. M. C. A., the latter team being defeated. The teams and scores were:

Married men—Gorham, Euerle, Shore, Shaughnessy, Mead, Drake; scores, 772, 692, 758, total 2,222. Single men—Hagan, Maloney, Johnson, Cohen, Edwards; score, 817, 755, 749, total 2,351.

The local handicap tournament, which has been in progress for the past month, will close on Wednesday, June 9. Mr. Potter leads with an average of 181 for 26 games and Barrett is second with 172.

CRISTOBAL.

A local bowling league, consisting of teams from the Dry Dock, Commissary, Q. M. D. and P. R. R. has been organized.

RESOLUTIONS OF SYMPATHY.

Daniel Kealy.

At a meeting of Cholo Tribe, No. 5, Improved Order of Red Men, held at Gorgona, C. Z., on May 26, 1909, the following resolutions were passed:

WHEREAS, It has pleased the Great Spirit in His divine wisdom, to call from the hunting grounds here below to the happy hunting grounds above, the spirit of our late chief and senior sagamore, Daniel Kealy, and while we bow in humble submission to His divine commands, yet we deeply regret and deplore the loss of one who endeared himself to all who were privileged to become acquainted with him; therefore, be it

Resolved, That Cholo Tribe, No. 5, extends to the bereaved widow and family its heartfelt sympathy in this time of their affliction, and assures them that the tribe considers that it has a sacred charge to lighten their burden and help make smooth the rough places of the trail of life for them; be it further

Resolved, That the charter of Cholo Tribe, No. 5, and the stump of its senior sagamore be draped in mourning for a period of 90 days, and that a copy of these resolutions be suitably enroscled and presented to the family of the deceased, and that a copy be sent to THE CANAL RECORD, and that they be published therein; also that they be inserted in the record book of the tribe.

T. J. BRODERICK, J. E. TUCKER, H. SIMONS, Committee.

Mrs. Elizabeth Argraves.

WHEREAS, God, in His Supreme wisdom, has seen fit to remove from our number one of our most beloved fellow teachers, Mrs. Elizabeth Argraves; and WHEREAS, We sincerely mourn the loss of her friendship and cooperation, therefore, be it

Resolved, That we, the teachers of the Canal Zone, extend to the bereaved husband and friends our deepest and most heartfelt sympathy; and be it further

Resolved, That a copy of these resolutions be sent to the husband and a copy be published in THE CANAL RECORD.

JESSIE J. HELLER, MAMIE MIRACLE, Committee.

LOST—A ribbon watch box, locket seal pendant with initials "A. M. C." Attached to the ribbon was a pin of the Geological Society of American Universities with "A. M. C." on the back. Supposed to have been lost on Panama railroad train on Friday, May 28. Finder is requested to return it to Mr. Allen M. Chamberlin, care W. M. Wood, Empire, C. Z.

Commissary Hours.

The hours during which commissaries are open are as follows:

Cristobal, 8 a. m. to 12.30 p. m., 2 p. m. to 7 p. m.
Culebra, 8 a. m. to 12.30 p. m., 2.30 p. m. to 7 p. m.
All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

OFFICIAL CIRCULARS.

Reservations on Panama Steamships.

CULEBRA, C. Z., May 29, 1909.

CIRCULAR No. 257.

The following instructions with reference to securing reservations on the steamships of the Panama Railroad Company will appear on the new form of transportation request which will be issued on and after June 2, 1909, notice of which will appear in THE CANAL RECORD of that date:

INSTRUCTIONS FOR SECURING RESERVATIONS.

Reservation may be secured either by presenting this request in person to the ticket agent of the Panama Railroad Steamship Company in Colon, or by forwarding same to the ticket agent, enclosing money order for the full amount shown thereon.

The ticket agent will at once acknowledge receipt of request and money order, and notify you the number of stateroom and berth to which you have been assigned, if accommodations are available. If all accommodations have been sold on the steamship for which this request is issued, you will be so notified, and reservation made on the next following steamer. If no accommodations are available on the following steamer, a new application must be submitted through the head of your department for a steamer sailing at a later date.

On the arrival of the boat for which reservation has been made, steamer ticket will be immediately forwarded by mail, or held at the ticket office, if so requested at the time of making reservation, but no tickets will be issued until the boat has docked.

No reservation will be made by mail for the steamship for which this request is issued unless request and money order are in the hands of the ticket agent at least three days before date of sailing.

Local station agents will check baggage from stations along the Line through to New York upon presentation of railroad transportation and steamer ticket. Excess baggage charged for at usual rates.

When requesting reservation by mail, address letter "Ticket Agent, Panama Railroad Steamship Company, Cristobal." Make money order payable to the Panama Railroad Company, Cristobal.

Do not fail to forward request with money order and give post-office address on the Isthmus.

No reservation will be made until the regular transportation request has been issued by the Chairman's office.

Employees, who under existing rules, have secured reservations by mail for steamers scheduled to sail on and after June 14, and who are holding their transportation requests to be exchanged for steamer tickets on date of sailing, should forward same at once to the ticket agent, and upon arrival of the boat for which issued, tickets will be mailed to such employees in accordance with the foregoing rules.

GEO. W. GOETHALS, Chairman and Chief Engineer.

Board to Consider Rules Governing Locomotive Engineers.

CULEBRA, C. Z., June 7, 1909.

TO ALL CONCERNED:

The following are hereby appointed members of a board for the purpose of considering and recommending changes, if any are deemed necessary, in the rules governing locomotive engineers in the care of their engines, adopted October 2, 1907:

Mr. L. K. Ronrke, Acting Division Engineer, Central Division.

Mr. Arthur Sessions, Superintendent of Transportation, Central Division.

Mr. E. J. Banta, Mechanical Engineer, Mechanical Division.

Mr. W. O. Johnson, Master Mechanic, Empire Shops.

Mr. James G. Craig, Locomotive engineer, Central Division.

Mr. Arthur C. Stone, Locomotive engineer, Central Division.

Mr. Ronrke is appointed chairman of the board, and will designate the time and place of all meetings.

GEO. W. GOETHALS, Chairman and Chief Engineer.

Pay for Overtime.

DEPARTMENT OF EXAMINATION OF ACCOUNTS. EMPIRE, C. Z., May 29, 1909.

CIRCULAR No. 11.

To all Timekeepers - Paragraph No. 47, of the instructions governing pay rolls, timekeeping and inspection, provides:

"No overtime can be allowed a gold hourly man until he has completed 8 hours labor on the day in question; nor for silver employes until after 10 hours' labor, and no time in excess of 24 hours in any one day."

It is not intended to prevent payment for overtime to employes who are required to work continuously,

carrying them into the next calendar day. Such employes will be allowed constructive overtime for all time made in excess of 8 or 10 hours from the commencement of their day's service.

T. L. CLEAR, Acting Examiner of Accounts. Approved: GEO. W. GOETHALS, Chairman and Chief Engineer.

Acting Surveying Officer.

CULEBRA, C. Z., June 4, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Effective June 7, 1909, Mr. Charles L. Parker will act as Surveying Officer during the absence of Mr. H. S. Farish on leave. GEO. W. GOETHALS, Chairman and Chief Engineer.

Office of District Tax Collector, Ancon.

DEPARTMENT OF CIVIL ADMINISTRATION, DIVISION OF POSTS, CUSTOMS AND REVENUES. ANCON, C. Z., June 3, 1909.

Notice is hereby given that, effective June 15, 1909, (the office of the District Tax Collector for the District of Ancon will be removed from Balboa, (formerly La Boca), to the office of the Collector of Revenues situated on the third floor of the new Administration Building in Ancon. HERMAN A. GUDGER, Acting Collector of Revenues.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 15, 1909 (75th meridian time):

Table with 6 columns: DATE, High, Low, High, Low, High. Rows for dates June 9 to June 15, 1909, with AM and PM times.

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, June 5, 1909:

Table with 7 columns: STATIONS (Vigia, Alpha, Injela, Gum-bon, Bohio, Gatun (Canal), Gatun (W.D.)), Height of low water above a sea-level, ft., Maximum height above mean sea-level, feet. Rows for dates from Sunday, May 30 to Saturday, June 5.

Concert by L. C. C. Band.

CRISTOBAL, C. Z., Wednesday, June 16, 1909, at 8.15 p. m.

PROGRAM.

- 1 March - The Tivoli... Jennings
2 Selection - The Prima Donna... Herbert
3 Intermezzo - Kisses... Hubbell
4 Overture - Poet and Paesant... Suppe
5 a Characteristique - Kerry Mill's Barn Dance... Mills
b Indian Descriptive - Trailing the Trail... Spaulding
6 Suite de Ballet - Antony and Cleopatra... Gruenwald
7 Simple Air... Thome
8 Medley Selection - Hits of 1909... Remick
9 Tone Poem - In Lovers' Lane... Pryor
10 March - Stars and Stripes Forever... Sousa
CHAS. E. JENNINGS, Musical Director.

A concert will be given at Culebra, Sunday June 20.

The following steamers have recently arrived at Balboa: May 29, Lea from Southern ports, and Lansing from Port Harford. May 31, Paloma from Southern ports, Ceido from intermediate ports, and Fran with lumber for the Commission. June 1, City of Para from San Francisco, and U. S. S. South Dakota from Anapala. Departures were: May 30, Lansing for Port Harford; May 31, City of Sydney for San Francisco; June 1, Ecuador for Guayaquil, and Lea for Southern ports.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Table with 2 columns: Ship Name, Date. Rows for Advance, Atrato, Allianca, Colon, Prinz Aug. Wilhelm, Panama, Magdalena, Advance, Prinz Joachim, Allianca, Orinoco, Colon, Panama, Oruba.

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail Lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Table with 2 columns: Ship Name, Date. Rows for Colon, Prinz Aug. Wilhelm, Panama, Magdalena, Advance, Prinz Joachim, Allianca, Orinoco, Colon, Prinz Aug. Wilhelm, Panama, Advance, Oruba, Allianca, Prinz Joachim, Colon, Tagus, Panama.

NEW ORLEANS TO COLON.

Table with 2 columns: Ship Name, Date. Rows for Abangarez, Parismina, Cartago, Abangarez, Parismina, Cartago, Abangarez.

COLON TO NEW ORLEANS.

Table with 2 columns: Ship Name, Date. Rows for Cartago, Abangarez, Parismina, Cartago, Abangarez.

COLON TO BARBADOS, CALLING AT TRINIDAD. Magdalena, R-M., Tuesday, June 22. Orinoco, R-M., Tuesday, July 6.

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, and from Colon at 1.30 p. m., via Port Limon, for New Orleans.

Supplies for Canal Work.

The following steamers arrived at the port of Cristobal during the week ending June 5, with supplies for the Isthmian Canal Commission.

Prinz Aug. Wilhelm, May 31, from New York, with 35 tons for stock; 1,000 barrels cement for stock; 5 tons steel shafting for stock; 44 pieces boiler parts for Gatun and Miraflores boiler plants.

Finnishbrook, May 31, from Jacksonville, with 40,000 cross ties for stock; 150,303 feet yellow pine lumber for car repairs.

Colon, June 1, from New York, with 3,000 barrels cement for Gatun Spillway; 10 churn drills for Atlantic and Pacific Divisions; 50 tons steel plate for Gorgona shops; 1,000 kegs bolts and rivets for stock; 23 tons bar iron for stock; 26,000 electric fuses for stock; 36,000 feet tape fuse for stock, and a miscellaneous cargo aggregating 7,131 packages, weighing over 1,300 tons.

AT PORT OF BALBOA, Erna, May 31, from Seattle, with 11 spud timbers for dredges; 1,064,411 feet Douglas fir lumber for car repairs.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for the month of May is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed description of the progress of Canal work in all departments and divisions.

Naos Island Breakwater.

A portion of the breakwater that is under construction to Naos Island gave way on Saturday night, June 5, at a point where it crosses the old French canal, $1\frac{1}{4}$ miles from the mainland. The break was due to a sliding movement in the thick deposit of mud, 30 feet deep, that underlies the fill, and extended a distance of about 135 feet. Twelve bents in the trestle were moved 150 feet to one side. Minor slides have happened before causing temporary interruptions, but no extended delays have occurred since the dumping of material began in October, 1906. The work of redriving the piles was begun on Thursday, June 10, and with the broadening of the fill at this point no further trouble is expected.

The breakwater now extends into Panama Bay for a distance of two miles, and about one more mile of fill will complete it to Naos Island. Where the trestle now ends, the water is 15 feet deep at high tide, and the depth between this point and the island varies from 20 to 25 feet at high tide. The deepest water encountered was in the old French channel where it was 35 feet at high tide. The maximum amount of material dumped on the breakwater on days when no interruptions occur is about 2,500 cubic yards. The pile-driver which was recently damaged by fire while at work on the trestle, will shortly resume operations, supplanting the pile-driver now in use. The former machine is capable of driving four bents a day, as compared with three bents a day by the other.

The filling in of a 4-track yard at No. 5

dump, west of the trestle has been begun. This will enable the handling of material closer to the trestle, thereby making a shorter haul. Track-laying has also been started, preparatory to ripping the sea front from Balboa to the land end of the trestle, and from there along the seaward side of the trestle to the Island. Only selected rock will be used for this purpose.

Steamship "Tremont."

The steamship *Tremont*, one of the vessels that has been added to the fleet of the Panama Railroad Steamship Company, will sail from New York on June 23, and will be due at Cristobal about July 1. She will bring 25,000 barrels of cement for the Gatun Locks, and four knocked down barges, each of 400 cubic yards capacity, for use in hauling sand from Chamé to Balboa, in the Pacific Division. It has been decided that both the *Tremont* and *Shawmut* will carry passengers, but arrangements in that respect have not yet been completed.

Enlargement of Dock No. 1, Colon.

According to present plans, Dock No. 1, Colon, will be temporarily used by the new steamships *Shawmut* and *Tremont* in landing their cargoes of cement. The dock has been put in thorough repair, and enlarged by a 310-foot extension at its eastern end, supported by closely-driven piling. Some additional piling has also been placed under the old part to strengthen it. The platform of the extension is 36 feet wide where it joins the old part, and narrows to 27 feet 6 inches at the eastern end, its construction conforming to the bend in the railroad track alongside. The height from platform to roof plates is 17 feet, and to ridge, 23 feet. The roof overhangs the railroad track 12 inches, and the landing platform, 10 feet. The platform is 4 feet 6 inches above the track, and has a 15-inch clearance from cars. The roof supports are so placed as to permit the "spotting" of cars between them. The water alongside the dock is 33 feet in depth, and the distance between Docks 1 and 2 is sufficient to accommodate vessels of the *Shawmut* class, and a barge at the same time. A large proportion of the cement will be unloaded directly into barges for transportation to the Gatun handling plant.

Additions to Dry Dock Plant.

The boiler and machine shops at the Cristobal dry dock plant are being enlarged by extending each building 110 feet in length, and 50 feet in width. Both extensions are frame structures, sheathed with corrugated iron, and are about 40 per cent completed. The building in which the boiler room of the plant is located has been torn down, and a new frame structure is under construction in its place.

Additional machinery is to be installed in both boiler and machine shops. The more

important additions to the boiler department include a rotary splitting shear, a 60-inch throat combination punch and shear, and a horizontal punch pneumatic riveter. In the machine shop there will be installed a new vertical boring mill, horizontal boring mill, slotter, iron planer, three engine lathes, turret lathe, and brass lathe. The equipment of the wood-working establishment will also be increased by the addition of a boring and mortising machine. Another air compressor has been ordered for the plant, which, when installed, will furnish an equipment of two compressors, each having a capacity of 1,250 feet.

May Weather Report.

The meteorological report for May shows that the mean temperature for that month was higher on the Atlantic side of the Isthmus than on the Pacific side, the first time that such has been the case since observations were begun by the Commission. The mean temperature at Cristobal was 79.8 and at Ancon 79.4. The maximum temperature at each place was 90 degrees; the minimum at Cristobal was 72, and at Ancon, 70; the greatest daily range in temperature was the same in each town, 17 degrees. The temperature of the interior was about the average for that section. The highest temperature in the sun at Culebra was 105 degrees on May 15. The lowest temperature at Culebra was 68 degrees on May 18. The greatest daily range at that place was 22 degrees. The rainfall was below the average, except on the Pacific coast and along the Chagres River above Matachin.

Operations at Gatun.

One of the upper lock chambers at Gatun is nearly ready for the placing of concrete. The setting of anchorages is going forward at the rate of 25 anchors per day. Excavation for the curtain wall is in progress. All of the operating machinery in the head towers of the lock cableway has been installed and five of the eight main cables spanning the Locks have been swung. Two of the three unloading cableways are practically completed, and the north cableway, No. 3, is in use transferring rock from the barges to the storage pile. The towers on this cableway are equipped with electric lights for night work. The cableway is operated temporarily by power generated at the boiler house on the east side of the lock site. Approximately 10,000 cubic yards of rock were placed in the storage pile up to June 14.

On the industrial electric road, third rail system, about three quarters of the track has been laid, and one-half is ballasted and ready for the placing of the third rail. Twenty-four flat cars and 12 electric locomotives for use on this road have been set up, and are ready for operation. On the automatic electric road most of the four tracks have

NOTES OF PROGRESS.

(Continued.)

been laid, and the placing of chairs for the two-current rails is in progress. The sand, stone, and cement valves for use under the storage piles are being placed in position.

In the mixer building the main driving motors and accessory machinery have been installed, the machines have been tested and adjusted and they are now ready for making concrete. The 100,000-barrel cement shed is finished, and the installation of ten 3-motor electric traveling cranes is under way. Two of the cranes will be ready for operation this week, while the other 8 will be completed within the next 30 days. The first shipment of cement, due at Cristobal about July 1, amounting to approximately 25,000 barrels, will be unloaded into the two south panels of the shed.

The power house building is finished, with the exception of placing glass in the windows. Work in the turbine room is nearly completed; the electrical apparatus for one of the turbo-generators will be ready for operation by July 1, and the installation of the main steam pipe lines and auxiliary apparatus is in progress. The work of installing the first boiler setting and induced draft apparatus in the boiler room is under way. The two boilers in this setting have been swung, a superheater placed, and the brick work is over half finished.

Construction is in progress on the two 250,000-gallon oil tanks to be used in supplying oil to the boilers. One tank is set up and the foundation and bottom plating for the second tank are finished.

Statement of Cranes.

The following statement shows the number and distribution of locomotive cranes in the service of the Isthmian Canal Commission and Panama Railroad Company, as of May 31, 1909.

	4-ton.	10-ton.	12-ton.	15-ton.	20-ton.	25-ton.	70-ton.	100-ton.	Total.
Atlantic Division.....	..	..	..	1	7	1	..	..	9
Central Division.....	..	1	2	1	1	1	..	..	8
Pacific Division.....	2	..	..	..	..	..	..	..	4
Q. M. Department.....	..	1	..	1	2	..	..	..	4
Mechanical Department.....	3	1	..	2	..	2	..	..	8
Panama Railroad Co....	1	1	..	..	3	..	..	..	5
Total.....	6	4	2	6	14	4	1	..	38

In addition to the above, the Pacific Division is using a derrick crane made at the Gorgona shops. Three more 20-ton cranes have been ordered from the States.

May Money Order Business.

During the month of May, 1909, the sixteen post-offices in the Canal Zone where a money order business is done, sold 14,767 money orders, aggregating \$416,753.76. This is a decrease in the number of orders from April, of 663, and in value of \$21,827.23. Of the May business, \$307,177.54 represented orders drawn payable in the United States and elsewhere, and \$109,576.22 in orders payable in the Canal Zone. The fees collected amounted to \$1,752.56. The orders paid and repaid amounted to \$144,542.88, including \$1,269 representing invalidated money orders paid by the Treasurer.

In the number of orders drawn, Cristobal was first, with 2,982; Empire second, with

1,554, and Gatun third, with 1,497. In the total value of orders, Cristobal was first, with \$89,153.77; Gorgona second, with \$48,748.99, and Empire third, with \$39,830.49. Of the amounts payable in the United States, Cristobal was first, with \$76,398.01; Gorgona second, with \$33,333.98, and Empire third, with \$31,560.82. In orders payable in the Canal Zone, Gorgona was first, with \$15,415.01; Cristobal second, with \$12,755.76, and Pedro Miguel third, with \$9,186.77. Of the amount paid and repaid, Cristobal was first, with \$23,330.42; Gorgona second, with \$17,444.81, and Empire third, with \$15,691.34.

The average of all orders issued was \$28.22. The highest average was at Las Cascadas where 710 orders were issued, amounting to \$24,809.03, an average of \$34.98; the lowest at Ancon where 1,440 orders were sold, aggregating \$28,689.37, an average of \$18.53.

Another French Vessel Recovered.

An old French tug, known as No. 18, has been raised from among the sunken hulks in Folks River and transported to the Cristobal dry dock, where it will be overhauled and put into condition for service. The name plate on the vessel shows that it was built in 1884 by the Lobnitz Shipbuilding Company, of Renfrew, Scotland, the makers of the rehabilitated hopper barge, now in use by the Pacific Division, which was described in THE CANAL RECORD of October 30, 1907. The tug was afloat about two and one-half years ago, when it filled during a period of heavy rains, and sank. It is 75 feet in length, has a 15-foot beam, and is in a fairly good state of preservation. The hull was reconstructed in 1897, and beyond scraping

and painting, few repairs will be necessary. It is equipped with a compound condensing engine, of approximately 150-horsepower, and both engine and boilers will be serviceable after overhauling, and the replacing of certain parts. The Folks River magazine contains a large quantity of spare machinery parts for vessels of this type, which will make the cost of refitting, in material, inconsiderable.

Water Coolers on Locomotives.

The Chairman and Chief Engineer has issued a circular letter, dated June 9, 1909, to the division engineers of the three construction divisions of the Canal work, directing them to install water coolers, of suitable size, for drinking water on all locomotives that are moved outside the limits of the various railroad yards in the Canal Zone.

Dikes at Matachin Blown Up.

The dikes in the Canal cut at Matachin were blown up on Sunday afternoon, June 6, but owing to the low stage of water in the Chagres River, the river maintained its old course until June 9, when there was a 14-foot rise in the river, which poured through the openings in the dikes and flooded the cut in the completed section. A fill is being made across the old bed of the river, which will turn the full flow of water into the new channel.

A Record Walk Across the Isthmus.

Edward Silvey, a clerk in the Department of Civil Administration, walked across the Isthmus on Decoration Day in 12 hours and 15 minutes. He started at 1.25 a. m. from Panama and reached Cristobal at 1.40 p. m. He followed the line of the Panama railroad.

LABOR FORCE FOR MAY.

The report of the Chief Quartermaster for the month of May shows that the number of Isthmian Canal Commission employes actually at work on May 26, was 26,294, of whom 4,262 were "gold" employes, and the remainder were on the "silver" or labor roll. The Panama railroad force was 5,600, and the Panama railroad commissary force numbered 765. Thus the total number of persons at work on the Canal and railroad on the 26th day of May was 32,699. This is a decrease of 1,040 from the total number reported on April 28, which was 33,669, the largest force ever at work in the history of the Panama Canal, either since American occupation or during the French régime. The combined Commission force alone on that date numbered 26,835, the largest number of persons ever at work for the Com-

mission. During May 303 people were added to the "gold" roll and there were 271 separations, the net increase in the force being 32.

The number of family quarters occupied by "gold" employes was 1,504, and the occupants numbered 4,487; bachelor quarters by "gold" employes, 2,060, and the occupants numbered 3,544, of whom 123 are women, and 173 are men living in fire stations, etc., which are not considered regular quarters. The family quarters occupied by West Indians numbered 957, and the occupants 3,233; bachelor quarters, 243; number of occupants, 4,613. The family quarters occupied by European laborers numbered 265, and the occupants 885; bachelor quarters, 125; number of occupants 4,625.

A statement of the force actually at work on May 26, 1909, follows:

DEPARTMENT.	SILVER MEN.								Total Gold and Silver Men.	
	Gold Men.	Monthly.	Artisans.		European Laborers.		West Ind'n Laborers.			
			32 cents and over.	26 cents.	40 cents.	32 cents.	26 cents.	20 cents.		
Construction and Engineering.....	3,155	2,522	3,387	590	3,533	331	2,660	4,684	17,707	20,862
Department of Civil Administration.....	341	170	2	..	2	16	1	10	200	541
Department of Sanitation.....	359	598	81	..	..	..	3	195	875	1,234
Quartermaster's Department.....	247	1,093	467	..	282	12	..	757	2,614	2,861
Subsistence Department.....	55	617	3	1	..	..	..	..	621	676
Disbursements.....	23	8	..	..	..	..	..	..	8	31
Examiner of Accounts.....	82	7	..	..	..	..	..	..	7	89
Totals.....	4,262	5,015	3,940	591	3,817	359	2,664	5,646	22,032	26,294

Panama railroad force, 5,600; Panama railroad commissary force, 765.

TELEPHONE IMPROVEMENTS.

Additional Facilities at Gatun and Culebra.

A new pole line has been constructed by the telephone and telegraph department of the Panama Railroad Company, between Mindi Junction and Tiger Hill, a distance of about 4½ miles, which includes 6 No. 9 and 18 No. 10 hard drawn B. and S. copper wires. It leaves the old line at the junction, runs through Gatun, and connects with the old line at Tiger Hill. The section from Gatun to Tiger Hill will be used only until the completion of the Panama railroad relocation, when the permanent telephone route will parallel that track. A new 100-drop common battery and a 20-drop Magneto combination switchboard is being installed at the Gatun exchange. The exchange is at present located in the office building of the Atlantic Division, but as soon as the improved equipment is ready, the cut-over will be made to the building formerly used as a fire station, on the east side of the railroad.

Additional facilities, consisting of a new 60-drop common battery and 60 drop Magneto combination switchboard, have been installed at the Culebra exchange, which will about double the present capacity. As Culebra is the main trunking point of the entire telephone and telegraph system, it has been decided to establish wire chief headquarters there, instead of at Colon, the change to be made at an early date. This will greatly facilitate making service tests and clearing troubles. About 1,000 feet of telephone line is being moved from the east to the west side of the track at Buenavista, to enable the Central Division to start excavation operations at that point.

A graphical statement has been prepared showing a comparison between the cost of telephone operation by the Panama railroad with the charge for service by standard systems in the United States. During the period of 24 hours, from 7 a. m., May 10, to 7 a. m., May 11, there was a total trunk line mileage of 135,180 miles transmitted through the various exchanges comprising the system. In addition, there were 7,804 local calls handled during the same period. The standard commercial rate charged for toll line service in the States is ⅔ cents per mile, while the cost covering all construction, maintenance and operating charges of the department on the Isthmus, shows a comparative rate of approximately \$.0015 per mile. Between the hours of 10 a. m., and 11 a. m., on May 10, approximately 18,000 trunk line miles were operated, and on the basis of ⅔ of a cent per mile the charge would be \$120. The actual cost upon the Isthmus, was but \$28. The average cost per local call was approximately \$.0075, the greatest number of local calls being between 4 and 5 p. m., when 925 were transmitted through the various exchanges.

Piece-of-Eight.

Thomas Walsh, steward on the suction dredge *Culebra*, is the owner of an old seventeenth century Spanish coin called by the English of the time a "piece-of-eight." The histories of the buccaneering expeditions of three centuries ago make frequent mention of this coin, and in Panama, as elsewhere on the Spanish Main, it seems to have been the principal subsidiary piece of money

in circulation. The coin is of pure silver, octagonal-sided, from which shape it appears to have derived its name, and represented in value, during the period of its circulation, eight Spanish reals, about 40 cents United States currency. The coin owned by Mr. Walsh evidently has a history, for it was found lodged in a joint of the suction pipe of the *Culebra*, and was drawn up from the bottom of Panama Bay.

Bolt Extracting Device.

A bolt extractor has recently been manufactured at the Gorgona shops for use in extracting bolts from the floor of Lidgerwood flat cars undergoing heavy repairs. The machine consists of a cylinder made of a 12-inch length of 8-inch wrought iron pipe, bored and turned true, with a head in each end; top head tapped for ½-inch pipe connection and bottom head equipped with a stuffing box and tapped for ¾-inch pipe connection, heads being fitted to cylinder with 16 threads per inch by ½-inch deep in cylinder. The piston head is made of wrought iron forging, faced and turned to fit cylinder, with a leather cup and follower of ½-inch boiler plate attached, and is also threaded to fit piston rod. The piston rod is made of 2-inch round, cold rolled steel, 14 inches long, bored to 1½ inches, 6½ inches deep in each end, leaving a wall of 1 inch in the center, with a 5-16-inch hole through, and countersunk on top side for a steel ball, which is prevented from coming out by a cap placed in top of bore. This ball is necessary to keep the compression in the cylinder from interfering with the operation of the hammer in piston rod.

A 1½ by 5-inch hammer is contained in bottom of piston rod, operating automatically, with a 1½-inch stroke, the rod being tapped for air connection, 1½ inches from bottom. The head for bottom of rod is made of 2½-inch round machine steel 3 inches long, tapped in one end to fit piston rod, while in the other a T slot is cut and beveled out to slip over the head of bolts.

The piping from top of cylinder is arranged respectively as follows: A ⅜-inch by ½-inch bushing, ⅜-inch street elbow, ⅜-inch by 1¼-inch nipple, ⅜-inch female elbow, ⅜-inch by 2½-inch nipple, ⅜-inch female union, ⅜-inch by 1½-inch nipple, 3-way specially made valve, 2-inch reservoir, ¾-inch tee, with a nipple and street elbow connection to bottom of cylinder; a bushing and a hose, making connection at bottom of piston rod to operate the hammer.

The cylinder is supported by two pieces of T iron tied together at the top by T iron of the same size, and at the bottom with ½-inch flange, made of boiler plate and cut out in center to clear piston rod. A flange of ½-inch boiler plate is attached to bottom of cylinder and slotted a sliding fit on T iron, the cylinder resting on two triangles, which the flange on T iron is notched to fit at two places 10 inches apart, thus allowing the cylinder to be raised in frame, and making it possible to extract a bolt of twice the length of the stroke of the piston. The cylinder may be raised with piston resting on bolt by admitting air into the top of cylinder.

Suitable handles are attached to the T iron, low enough to clear the triangles when in lower notch. One man can extract one 10-inch bolt every two minutes; two men

one each minute. One of the time-saving features of this machine, over a jack, lies in the fact that it takes about the same length of time to raise the jack with a comparatively loose bolt as with a tight one, this machine pulling a loose bolt instantly. Another is that this machine pulls directly over the bolt, having a tendency to straighten and not to bend the bolt. The machine weighs 80 pounds complete, and is operated by compressed air at 80 pounds pressure.

Obituary.

John R. Morris, a locomotive engineer, was killed in a railroad accident near San Pablo on June 9. He was a naturalized American citizen, had lived on the Isthmus ten months, was 38 years old, and married. His widow Mrs. Kate Morris, resides at No. 24 Front Street, Schenectady, N. Y.

F. C. Howland died at Ancon Hospital on June 9. He was an American, 28 years old, had lived on the Isthmus 18 months, was married and his widow resides at Paraiso, C. Z.

James W. Barbour of New Haven, Conn., was accidentally killed at the Panama Railroad machine shops, Cristobal, on June 11. He had lived on the Isthmus three years and three months, was 27 years old and unmarried. His brother, Charles E. Barbour, lives at No. 80 Kensington Heights, Meriden, Conn.

Eugene H. Kingsley of Rocky Grove, Pa., was killed at Empire, on Sunday evening, June 12. He had lived on the Isthmus four years, was 28 years old and married. His widow, Mrs. Annie Kingsley, and two children reside at Culebra.

Missing Men.

Information is desired in regard to the following persons:

Fred O'Brien, of Philadelphia, Pa., who has been missing for two years and who has been heard of in Panama.

William Wehowort, of Chicago, Ill., who disappeared from New York City in February, 1908, and is thought to have come to the Isthmus.

Any one having knowledge concerning either of these men is requested to communicate with the American Minister at Panama.

D. A. Fuller: For whom there are several letters, in the office of the Director of Posts, Ancon, postmarked Cleveland, Ohio, and addressed to Gorgona, C. Z., on one of which is written "Try and locate as father is very sick."

George G. Glane: Any one having knowledge concerning him is requested to communicate with F. H. Gilmore, House No. 64, Gatun.

Fireworks for Palo Seco.

Mr. H. V. Garland, Superintendent of the Palo Seco Leper Colony, asks for contributions of fireworks for the Fourth of July celebration at Palo Seco. They may be sent in care of Dr. H. R. Carter, Director of Hospitals, Ancon.

Card of Thanks.

Mrs. Daniel Kealy of Gorgona wishes to express her gratitude and sincere appreciation for the kindness and assistance given her by the Kangaroos, Red Men, and many other friends in her recent bereavement on the death of her husband.

CANAL WORK FOR MAY.

Monthly Report of the Chairman to the Secretary of War.

CULEBRA, C. Z., June 12, 1909.

The Honorable the Secretary of War,
Washington, D. C.

Sir: I have the honor to submit the following report of operations on the Isthmus for the month of May, 1909:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry.....	Cubic yards.....	124,193	1,513,133	94,751	1,732,077
Work excavation, wet.....	Cubic yards.....	367,381		738,435	1,105,816
Total work excavation.....	Cubic yards.....	491,574	1,513,133	833,186	2,837,893
Plant excavation, dry.....	Cubic yards.....	5,202		27,154	32,356
Plant excavation, wet.....	Cubic yards.....	25,846			25,846
Total plant excavation.....	Cubic yards.....	31,048		27,154	58,202
Total Canal excavation.....	Cubic yards.....	522,622	1,513,133	860,340	2,896,095
Explosives used.....	Tons (2240 lbs)	69.30	251.60	22.65	543.55
Rock drilling.....	Feet.....	80,846	294,428	55,844	431,118
Track removed.....	Miles.....		12.70		12.70
New track laid.....	Miles.....	4.33	12.70	3.37	20.42
Material placed in dams.....	Cubic yards.....	284,967		81,710	366,677
Rock crushed.....	Cubic yards.....	23,560	8,500	3,552	35,612
Cement used.....	Barrels.....	12,150		576	12,726
Concrete placed.....	Cubic yards.....	11,030		1,215.50	12,245.50
New roads built.....	Miles.....	0.07	3.60	0.75	4.42
Water mains laid.....	Feet.....	7,839		157	8,046
Sewers laid.....	Feet.....	1,500	164	412	2,076
Open drains and ditches dug.....	Feet.....	1,900	2,540	1,663	6,103
Average daily force.....		5,407	9,743	3,630	18,620
Rainfall, average.....	Inches.....	8.98	7.73	9.10	9.82
Wash drilling.....	Feet.....			245	245

Atlantic Division.

GATUN LOCKS.

Cement Shed—The construction of this building was continued, and the erection of the cantilever and portal trusses completed. All the cement hoppers, with their screens, were installed, and all of the runways for the ten electric traveling cranes were placed in position ready for bolting.

Barrel Burning Plant—During the month, the construction of this plant was completed, 10,000 fire bricks being laid.

Industrial Electric Road—The work on the subgrade of this road was continued, and 600 feet of roadbed completed. The contractor continued the work of laying track and, at the end of the month, 14,350 feet of single track were laid ready for ballast. Twelve electric locomotives were set up ready for operations. The contract, at the end of the month, was approximately 40 per cent completed.

Automatic Electric Road—Work was continued on the roof for covering the tracks of this road, 60 linear feet for two-track, and 100 linear feet for four-track roof, being completed during the month. The contractor on this road laid 6,100 linear feet of single track, and installed 8 cross-overs.

Mixer Building—During the month, the building proper was completed, and the work of lining up shafting was continued. Four 75-horsepower motors, and accessory apparatus, were installed. Other work consisted of the installation of belt shifters, adjustment of the mixers and installation of the water supply.

Oil Tanks—During the month, the concrete footings for two 250,000-gallon oil tanks were completed, and 176 cubic yards of concrete placed.

Cableway Towers—The installation of ma-

chinery in duplex unloading cableway No. 3 was completed, and unloading operations were commenced. During the month, six barges, approximating 3,900 cubic yards, were unloaded. Work was continued on unloading cableway No. 2, and during the month the installation of the main machinery was completed. The erection of the head and tail towers of the Lock cableways was completed during the month, with the exception of placing the counterweights on the head towers of cableways Nos. 3 and 4. The main operating machinery for these cableways was 90 per cent completed during the month.

Lock Floor Anchorages—The placing of the anchorages for the lock floor in the first chamber of the upper lock on the east side was commenced, and 15 anchors were set.

Power House—Work was continued on the installation of the turbine room machinery, and at the end of the month, turbine No. 1, was 97 per cent completed; turbine No. 2, 90 per cent completed; turbine No. 3, 90 per cent completed; and accumulator, 85 per cent completed. The traveling crane was completed and operated during the month. Practically all of the material to be furnished on the boiler contract, with the exception of the piping, was received during the month.

Drafting Room—The designs of miscellaneous details in connection with the mixer building, cement shed, approach trestle, barrel burning plant, sawmill, forms for openings in Lock floors, were continued.

GATUN DAM.

Construction during the month increased the total fill by 284,967 cubic yards, making the amount at the end of the month 2,577,122 cubic yards. The amount of fill reported represents the volume occupied by the material after it has been placed.

Stripping—Before flooding Gatun Islands, a number of patches of vegetation, which had grown up after the original stripping, were dug out. The stripped area, amounting to 191.2 acres, was not extended during the month.

Clearing—Clearing was continued ahead of dredges No. 82 and No. 83, amounting to 5.3 acres, of which 2.7 acres were grubbed. The total amount of clearing for this purpose amounted to 78 acres at the close of the month.

Hydraulic Fill—Dredge No. 82 was received from the drydock, where she was

undergoing repairs, on May 14. To the end of the month her output, through 2,000 feet of pipe with a lift of 28 feet, amounted to 55,645 cubic yards net, which was pumped from borrow pit No. 1 on the east of the Chagres River. Dredge No. 83 continued pumping into the Dam, the net output during the month being 72,160 cubic yards, which was discharged through 2,500 feet of pipe with a 28-foot lift. Nearly a week was lost by this dredge through the necessary installation of a new impeller and shaft. The total net hydraulic fill in the dam at the close of the month amounted to 487,559 cubic yards.

Emplacements—The material received from Bas Obispo, the Locks, and Mindi amounted to 157,162 cubic yards, which was placed on the north and south toes of the Dam. The total of dry fill at the close of the month was 2,089,563 cubic yards.

Trestles—The south toe trestle was extended 703 linear feet toward the west end of the dam. A new trestle on the north toe was begun on the northwest side of Spillway Hill, and extended 182 feet toward the West Diverson.

GATUN SPILLWAY.

Excavation—Excavation included clearing up the floor by crane and by hand, and cutting the curtain trench at the south entrance by steam shovel. The material, amounting to 4,503 cubic yards in excavation and 5,629 cubic yards in embankment, was utilized for building the Spillway protection levee. The total excavation at the close of the month amounted to 1,290,545 cubic yards.

Concrete—Work was continued on the floor below the Spillway dam, 10,722 cubic yards of concrete being placed, the maximum daily output being 630 cubic yards.

PORTO BELLO.

General miscellaneous mechanical, and repair work was performed during the month. Carpentry work and operations at the quarry were proceeded with, and the crusher produced 23,560 cubic yards of crushed rock during the month.

NOMBRE DE DIOS.

The dredge *Chagres* continued the work of deepening the harbor and opening the channel to the sand zone for half the month, and the other half in deepening the entrance channel. During the month, 4,067 cubic yards of sand were shipped and delivered at the Gatun Spillway.

Harbor and Channel Section.

Dry Excavation Below Sea Level: Mindi—During the month, 17,208 cubic yards of earth and 54,201 cubic yards of rock were excavated by two 70-ton Bucyrus and one Model 91 Marion steam shovels, an average of 23,802 cubic yards per shovel per month of 26 working days.

Dredging: Ocean to Mindi—Four dredges removed from the prism 278,886 cubic yards of earth and 36,484 cubic yards of rock. The dredge *Ancon* removed 2,910 cubic yards of earth at Pier No. 1, Colon, 158,588 cubic yards of earth from the approach channel to Cristobal Harbor, and 77,122 cubic yards of earth from in front of the Cristobal docks. The dredge *Mindi* removed 19,132 cubic yards of earth and 6,714 cubic yards of rock from the French canal, 15,519 cubic yards of earth from Pier No. 1, Colon, and 22,240 cubic yards of earth from in front of Pier No. 13, Cristobal. On May 31st, 40 feet of water

could be carried from 0 to Mile 2 plus 4,800 feet; 30 feet to Mile 3 plus 1,100 feet; 20 feet to Mile 4 plus 1,400 feet, and 10 feet to Mile 4 plus 4,900 feet, the end of the cut.

Municipal Engineering.

The usual work of this subdivision was satisfactorily performed during the month, and included work on the Mount Hope-Gatun Road, and water works at Gatun and Mount Hope. On May 7 the work of constructing a railroad to the reservoir site, which is to furnish a new water supply for Gatun, was commenced.

Building Construction.

The construction of the new commissary at Gatun was 60 per cent completed at the end of the month, and other building construction work was satisfactorily performed.

Central Division.

During the month of May, the total amount of material excavated in the Central Division was 1,513,133 cubic yards, of which 502,397 cubic yards were classified as earth and 1,010,736 cubic yards as rock. Of this quantity 1,499,946 cubic yards were removed by steam shovels, and 13,187 cubic yards by hand. The quantity of material removed from the Canal prism was 1,468,387 cubic yards, while 44,746 cubic yards were removed from the Obispo Diversion.

The daily average number of steam shovels at work during the month was 50.64, as compared with 55.40 for the month of April. For comparison with the work done by steam shovels during the corresponding month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Excavated by shovels		Classification of material.		Av. No. of steam shovels working during month.	W'kg. days in month.	Av. amount excavated per shovel per 8-hour day.
	cu. yds.	cu. yds.	Rock	Earth			
1908:							
May....	1,204,179	747,022	457,157	53.24	25	905	
1909:							
May....	1,499,946	1,004,314	495,632	50.60	25	1,185	

Rainfall at Empire: 1908, 12.91 ins.; 1909, 7.73 ins.

The above table shows that the average output per shovel day was nearly 31 per cent greater in May, 1909, than in the corresponding month of the previous year.

During the month 140,400 cubic yards of material excavated from the prism were transported to the relocation of the Panama Railroad at Caimito, Santa Cruz and Corozal, and dumped as filling in the embankment for the new roadbed, the total at the close of the month for this purpose being 1,129,246 cubic yards. During the month 27,790 cubic yards of rock from Bas Obispo were transported to Gatun and dumped on the toe of the Dam, the total for this purpose at the end of the month being 370,281 cubic yards.

At the Anchorage Basin at Gatun, trees were cut on 193 acres; timber cut, piled, burned and roots grubbed on 16 acres; and, in addition, 46 acres were grubbed and burnt over the completed area of the Alberts contract. In the channel clearing work at La Boca Trinidad, timber was cut, piled and burned on 76 acres. On the contract work with Charles Alberts, at Gatun, timber was cut on 94 acres, and timber was cut, piled and burned on 198 acres.

Work on the Empire suspension bridge

was continued during the month, the concrete anchorages and foundations of the towers being completed and work on the superstructure of the towers commenced.

The daily average number of laborers at work was 8,706.

Pacific Division.

DISTRICT NO 1—LOCKS AND DAMS.

The total excavation during the month amounted to 129,227 cubic yards in this subdivision.

At Pedro Miguel, in addition to the regular operations, work preparatory to the installation of the handling plant and of the concrete mixing plant for the lock floors was commenced.

At Miraflores, moderate progress was made in the work at the power house. Repairs to the suction dredge *Sandpiper* were not completed until May 18, and the operation of the dredge was seriously retarded after work was resumed, by the large percentage of rock boulders encountered.

DISTRICT NO. 2—DREDGING.

Seven dredges were in operation during the month, excavating material as shown in the following table:

Dredge	Type.	Cubic yards.		Remarks.
		In prim	Auxiliary	
Culebra	Suction	287,700	.....	Scow measurement
Gopher	Ladder	133,620	.....	Place measurement
Mole...	Ladder	87,892	.....	Place measurement
Badger	Ladder	81,377	.....	Place measurement
Mamot	Ladder	66,910	.....	Place measurement
Dipper	Dipper	63,154	.....	Place measurement
O. P....	O. P.	.....	10,360	Place measurement
Total	.....	720,753	10,360	

The necessary maintenance of floating equipment was taken care of, and a large amount of other mechanical work was performed at the shops.

DISTRICT NO. 3—MUNICIPAL AND BUILDING WORK.

Municipal and building work was satisfactorily performed during the month, a large number of jobs being completed. The filtration plant, Ancon steam plant, and Rio Grande crusher were successfully operated. The Ancon reservoir was completed and work was continued on the Ancon corral, Corozal-Panama and Corozal-Miraflores roads. Certain maintenance work on waterworks and sewers was performed, and ditches and drains necessary for sanitary work were constructed and maintained.

Mechanical Division.

The manufacturing and repair work of this Division was satisfactorily performed during the month.

Relocation of Panama Railroad.

During the month, 161,414 cubic yards of material were excavated, and 332,527 cubic yards placed in embankment. At the close of the month, the total amount of excavation accomplished was 1,280,863 cubic yards, and the total amount of material placed in embankment was 4,497,680 cubic yards. The necessary work of constructing trestles for filling and the construction of bridges and culverts was continued.

Permanent track was laid in the Miraflores tunnel, 90-pound open hearth steel rails, creosoted cross-ties and crushed stone ballast being used.

During the month, 7,111 linear feet of permanent track were laid, making the total at the close of the month, 98,747 linear feet.

The force of laborers during the month averaged 1,862 men.

Quartermaster's Department.

During the month, there were 303 additions to the gold force, and 271 separations, making a net increase of 32. The combined force actually at work for the Isthmian Canal Commission and Panama Railroad Company on April 28, 1909, was 33,699, the largest in the history of Canal construction, under either the Americans or French. The force for the Commission alone on that date (26,835 men) was the largest number ever at work.

This increase was in West Indian employes. There was no corresponding increase in the gold force, but, on the contrary, a decrease. The gold force for the first four months of 1909 averaged almost 700 men less than for the same period in 1908. There has also been a decrease in the number of European employes. The employment of Europeans reached its maximum during the first six months of 1908, when the number constantly employed averaged over 5,000. Since that time there has been a steady decrease, and a marked decrease during the last sixty days. On May 19, 1909, there were 3,961 Europeans on the work, a less number than have been employed at any time since April, 1907, and over 1,000 less than the average during the early part of 1908.

Out of the total number of Commission gold employes not now occupying married quarters, only 13 per cent have signified their desire to secure such quarters by filing application for same, although the lists have been open to all without reference to date of entry into the service, since August, 1908. The relatively small number of applications appears to indicate that the change in the rules relieving the Commission of any obligation to supply family quarters to men employed on or after January 1, 1908, has apparently had the effect of confining employments since that date largely to bachelors.

Under the system of contracting for one year for all standard supplies, to apply on the fiscal year 1909-1910, advertisements have been issued covering all classes of material, and contracts have been made for a large proportion thereof. The prices obtained, and the cooperation manifested by all concerned, indicate that the plan will be a success, although, as was expected, its inauguration has developed minor difficulties. It is, however, apparent that the experience in this direction gained this year will be very valuable in contracting next year for material and supplies.

Subsistence Department.

The operation of the Hotel Tivoli during the month showed a loss of \$351.24. There was a loss of \$1,402.66 on the line hotels, and a profit was made on the operation of the kitchens and mess halls. The net operations of the Subsistence Department for the month showed a profit.

Department of Civil Administration.

COURTS.

The Supreme Court was not in session during May. In the Circuit courts, 11 civil and 25 criminal cases were disposed of, and in the district courts, 81 civil and 577 criminal cases were disposed of.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

The total revenues of the Canal Zone in

May aggregated \$19,798.56. The general revenues (included in total revenues) amounted to \$12,278.59.

The postal revenues were \$5,756 on account of stamp sales, \$11.41 on account of newspaper postage, and \$1,752.56 on account of money order fees. Money order sales during the month amounted to \$416,753.76, of which \$307,177.54 was payable in the United States and foreign countries and \$109,576.22 in the Canal Zone. Sixty-nine dispatches of mail were made to foreign ports by the Cristobal exchange office.

Twenty-six vessels entered at and 23 cleared from the port of Ancon, and 15 vessels entered at and 15 cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

On May 7 Joaquin Segrera, Colombian, was hanged at the Culebra penitentiary. Segrera was convicted on February 4, 1908, in the Circuit Court for the Second Judicial Circuit of the Canal Zone, of murder in the first degree, and was subsequently sentenced to be hanged on September 18, 1908, but by various reprieves, his execution was postponed until the date mentioned.

A riot occurred at Colon on May 10, in which two persons were killed and several injured. At about 6.20 p. m. Panamanian police arrested a Jamaican on Bolivar Street near the Zone boundary. The Jamaican broke away from the police and ran across the boundary into the Canal Zone. A large number of West Indians had gathered and followed the Jamaican into the Zone, when a Panamanian plain-clothes officer drew a revolver and fired several shots in the air; and a riot was precipitated. The Zone police were promptly on the scene and quelled the disturbance in a few minutes.

The number of arrests during May was 607, as compared with 457 in April. The total effective strength of the police force on May 31 was 173 officers and men, and the total force of the Division on that date aggregated 250 officers and men.

There were 149 prisoners confined in the district jails at the close of the month. Eight convicts began penitentiary sentences during the month, 9 were discharged at the expiration of their sentences, and on May 31st, 117 convicts were confined in the penitentiary.

DIVISION OF PUBLIC WORKS.

The usual business of this Division was conducted during the month. The amount of water consumed in Panama during May was 28,631,000 gallons, and in Colon the amount consumed during the month was 19,107,300 gallons.

DIVISION OF FIRE PROTECTION.

Three alarms of fire were responded to by the Canal Zone Fire Department during the month, one at Colon, one at Cristobal and one at Gorgona. The two fires at Colon and Cristobal involved Commission property valued at approximately \$40,000, the damage amounting to \$55. The fire at Gorgona occurred in a private building, practically no damage resulting.

DIVISION OF SCHOOLS.

The total enrollment in the white schools during the month was 647, and the average daily attendance 553. In the colored schools the total enrollment was 1,286, and the average daily attendance 716.

Department of Sanitation.

A comparison of the general statistics with those of any preceding May during American control indicates very satisfactory progress in sanitation. The annual death rate from all causes for white employes was 14.11 per thousand, and for colored employes the annual death rate was 7.87 per thousand. The death rate for all employes was 9.45 per thousand. The annual death rate for the total population of the Canal Zone and the cities of Panama and Colon was 15.77 per thousand. Among white employes for the month the number of deaths from all causes was 14; of these, 4 were from disease and 10 from violence, or an annual average per thousand of 4.03 from disease and 10.08 from violence. Among colored employes for the month, the total number of deaths from all causes was 23, 17 of which were due to disease and 6 from violence, or an annual average per thousand of 5.82 from disease and 2.05 from violence. Of the deaths from violence, 7 were from railroad accidents and 4 from accidental drowning.

No case of smallpox, plague or yellow fever originated on the Isthmus during the month. The last case of yellow fever developed in May, 1906, and the last case of plague in August, 1905.

Respectfully,
GEO. W. GOETHALS, *Chairman.*

Ancon Dairy Operations.

The Ancon dairy produced a total of 63,160 quarts of fresh milk for the 12 months ending April 30, 1909, or an average of 173 quarts for each day of the year. This quantity of milk was obtained from about 50 cows. The herd at the present time numbers 73 milch cows, mostly Jerseys; one Jersey bull, and one bull of mixed breed, and 11 heifer calves.

The plant has recently been considerably enlarged by the erection of a new stable containing 59 ordinary stalls, four box stalls, one stall for the bulls, and one for the calves. The building also contains a feed room, quarters for two employes, and a bath room. The old French building formerly used as a cow barn, has been put in thorough repair, and provided with 32 modern stalls. The floors of both stables are of cement. Six men are employed at the dairy, their duties consisting of milking, looking after the animals and keeping the premises in good condition. The cow tick has proved a troublesome pest and has to be continually guarded against. Mosquito oil is principally used in its extermination.

The cattle are fed on cotton seed meal, hulls and bran in proper proportions, but no hay is given. They have the run of the pasture adjoining the dairy, but although they find fairly good grazing in the rainy season, no marked increase in the yield of milk is shown, the local grasses lacking milk-producing qualities. This is evidenced by the fact that during the four principal months of the dry season when the grazing was poor, and the animals depended almost wholly on imported feed, the output was 21,737 quarts, as compared with 20,778 quarts during the four principal rainy months. Very few of the cows at Ancon dairy are fancy milkers, the daily yield per cow varying from 8 to 18 quarts, the latter amount being the maximum. The mortality in the herd since the establishment of the dairy has been light,

only seven having died. The output for the year ended April 30, 1909, operative cost, and average cost per quart, by months, is as follows:

MONTH.	No. of quarts.	Cost of operation.	Cost per quart.
May, 1908.....	4,114	\$305.23	\$0.075
June, 1908.....	5,322	329.09	0.06
July, 1908.....	6,289	412.00	0.065
August, 1908.....	5,594	448.15	0.08
September, 1908.....	4,701	397.08	0.085
October, 1908.....	5,196	393.50	0.075
November, 1908.....	5,287	381.04	0.072
December, 1908.....	5,607	393.09	0.07
January, 1909.....	5,832	342.24	0.06
February, 1909.....	4,872	326.70	0.067
March, 1909.....	5,426	357.70	0.0659
April, 1909.....	4,920	399.66	0.0812
Total.....	63,160	\$4,485.48	0.071

Garden and Landscape Work.

Operations in the Commission truck gardens for the season of 1908-09 practically came to an end with the month of May. There is still a considerable quantity of produce maturing, but no new vegetable plantings were made, and the force was almost entirely engaged in landscape work. The continuance of excessive rains caused the output to fall below expectations, the value of the May crop amounting to \$615.65. Tomatoes suffered most from the wet weather. A greater variety of vegetables, however, was produced in May than in any previous month, including twelve kinds—tomato, eggplant, collard, bean, sweet pepper, green onion, lettuce, radish, okra, cucumber, parsley and papaya. The Empire garden recently produced a papaya weighing 16 pounds.

Eggplant has not done well, due largely to the depredations of the eel worm. A request has been made on the United States Agricultural Experiment Station of the Hawaiian Islands for seed of an Eastern species cultivated there, which it is claimed, the worm will not attack. The local Chinese gardeners are fairly successful in growing eggplant, but the soil in their gardens is of a clayey nature avoided by eel worms, which prefer light, porous soils. A clayey soil in this climate is not adapted to the use of modern garden implements, and for that reason is not regarded desirable.

The work of transferring the Ancon garden has been begun, 4,000 young plants having been transplanted. The task of accomplishing this transfer will take several months.

Landscape work, involving considerable hand grading, has been begun in front of the Disbursing Office at Empire. Filling and grading are also in progress at Mount Hope storehouse. The work at these places will be completed about the middle of June.

Landscape work continues at Mount Hope cemetery. A total of 1,829 plants were set out at Ancon, Corozal, Culebra, Gatun and Cristobal.

Murder Near Culebra.

Julio Hernandez, a Colombian living in the bush near Culebra was stabbed to death by José Ayala, a Panamanian ex-convict, on Wednesday, June 2. The affair occurred on a trail about two miles northeast of Culebra, and is supposed to have been due to jealousy. Information was furnished the Zone authorities by a boy who was an eye witness of the crime. Ayala was captured by the Canal Zone police on Wednesday, June 9, near the Black Swamp. He was headed for Colon where his wife resides.

CENTRAL DIVISION.

Steam Shovel Records for May.

During the month of May, the steam shovels at work in the Central Division excavated 1,455,200 cubic yards of material from the Canal prism, and 44,746 cubic yards from the Obispo Diversion. The following hand excavation was also accomplished: 12,844 cubic yards from the prism at Bohío, and 343 cubic yards from the prism at Gatun, making a grand total of 1,513,133 cubic yards for the whole Division. The total excavation for the same month in 1908 was 1,204,983 cubic yards, an increase of 308,150 cubic yards for May, 1909. For comparison with other high monthly records the following table is given:

DATE.	Prism.	Prism and Outside.
March, 1908	1,540,497	1,615,118
October, 1908	1,551,409	1,598,981
February, 1909	1,546,008	1,644,636
March, 1909	1,966,294	2,065,827
April, 1909	1,722,442	1,798,454
May, 1909	1,468,357	1,513,133

The high record for the month was made by shovel No. 265 (90-ton) working in the Empire District, which excavated 11,888 cubic yards of earth and 32,797 cubic yards of rock, a total of 44,685 cubic yards in 25 working days, an average of 1,784 cubic yards per day.

The best record for a shovel in the 70-ton class was made by shovel No. 122, working in the Bas Obispo District, which excavated 25,935 cubic yards of earth and 6,083 cubic yards of rock, a total of 32,018 cubic yards of material in 23 working days, an average of 1,392 cubic yards per day.

Shovel No. 262 (90-ton) in the Empire District made the high record for one day by excavating 2,903 cubic yards of rock and earth on May 8.

Shovel No. 128 (70-ton) working in the Bas Obispo District excavated 2,630 cubic

yards on May 7, the high record for one day for that class of shovel.

On May 12 the 15 shovels at work in the Empire District broke all previous records for districts by excavating 25,454 cubic yards, an average of 1,697 cubic yards per shovel.

Monthly records are computed by place measurement, while the daily records are based on car measurement. The best records for the month and for one day in each construction district are as follows:

TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work
	Earth.	Rock.	Total.	
254	38,725	5,281	44,006	25
131	22,585	7,528	30,113	25
253	16,536	12,092	29,528	23

BAS OBISPO DISTRICT.

256	23,121	9,909	33,030	20
122	25,935	6,083	32,018	23
128	23,019	3,139	26,158	23

EMPIRE DISTRICT.

265	11,888	32,797	44,685	25
209 ....	.....	41,489	41,489	25
211	8,058	32,230	40,288	25

CULEBRA DISTRICT.

260 ....	.....	39,184	39,184	24
266	37,610	37,610	25
231	36,300	36,300	24

OBISPO DIVERSION.

201	2,740	24,662	27,402	25
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Shovel No.	Location.	Date.	Character of material excavated.	Cubic yds. excavated.
254	Tabernilla	May 11.	Earth	2,550
253	Tabernilla	May 4.	Earth	1,960
128	Bas Obispo	May 7.	Rock	2,630
226	Bas Obispo	May 17.	Rock	2,620
262	Empire	May 8.	Rock and earth	2,903
207	Empire	May 28.	Earth	2,540
213	Culebra	May 13.	Rock	2,520
227	Culebra	May 13.	Rock	2,440

Baseball Season Closed.

The 1908-09 baseball season in the Isthmian League ended Sunday, June 13, with games at Gorgona and Ancon. Gorgona defeated Ancon in a featureless game by the score of 12 to 3, while Empire kept up its winning streak by beating the M. P. & M., 5 to 3. The game between Gorgona and M. P. & M. on June 6 has been declared a postponed, instead of a forfeited game. Official standing of the clubs is as follows:

	Played	Won	Lost	Per cent
Empire.....	29	21	8	.724
M. P. & M	28	13	15	.464
Gorgona	29	13	16	.448
Ancon.....	30	11	19	.367

Concert by I. C. C. Baud.

CULEBRA, C. Z.,

Sunday, June 20, 1909, at 5.45 p. m.

PROGRAM.

- 1 March—*Majestic*.....Braham
- 2 Selection—*The Prima Donna*.....Herbert
- 3 Characteristic—*Kerry Mill's Barn Dance*.Mills
- 4 Overture—*Poet and Peasant*.....Suppe
- 5 Intermezzo—*Kisses*.....Hubbell
- 6 Suite de Ballet—*Antony and Cleopatra*.Gruenwald
- 7 *Simple Aven*.....Thome
- 8 Tone Poem—*In Lovers' Lane*.....Pryor
- 9 Medley Selection—*Hits of 1909*.....Remick

CHAS. E. JENNINGS, *Musical Director.*
A concert will be given at Paraiso, Sunday June 27.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., June 16, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Anderson, S. H.	Hernandez, Crucita
Andrews, Mrs. Geo. A.	Hudson, Florence A.
Bailey, C. C.	Hudson, Clara A.
Barnes, L.	Hudson, John E.
Botner, John	Humphrey, J. H.
Cian, Campbell	Jenkins, Charles
Conrad, Miss Margaret	McGill, James (3)
Cornejo, J. O.	McNamara, James
Dorr, Mrs. Henry	Miller, C. O.
Dralston, Allman B.	Parker, M. O.
Fonesca, P.	Patterson, William
Fuller, D. A.	Rankin, A. M.
Fullerton, Alexander	Sharpe, Fred
Gavino, Castiglia	Sloan, Louis
	Woodsum, C. K.

PANAMA RAILROAD COMPANY.

PASSENGER TRAIN TIME TABLE No.4—IN EFFECT JUNE 1, 1909.

SOUTHWARD.										Miles from Colon.	NORTHWARD.										
SUNDAYS AND HOLIDAYS.					WEEK DAYS						STATIONS.	WEEK DAYS.					SUNDAYS AND HOLIDAYS.				
29	27	25	23	21	7	5	3	2	4			6	8	20	22	24	26	28	30		
P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	A. M.	NOON.	P. M.	P. M.	P. M.	P. M.				
7.00	4.00	1.00	10.00	6.45	4.35	10.30	5.30	0.00	9.05	1.00	3.50	8.00	9.00	12.00	2.45	6.00	9.00	11.45			
7.01	4.01	1.01	10.01	6.46	4.37	10.33	5.31	0.42	9.03	12.57	3.47	7.57	8.57	11.58	2.43	5.58	8.58	11.43			
f 4.05				f 6.50	4.43	f 10.37	5.35	1.90	8.58	*12.53	*3.42	f 7.52	f 8.53			f 5.55					
f 4.11				f 6.56	f 4.48	f 10.43	f 5.41	4.72	f 8.50	f 12.46	f 3.35	f 7.45	f 8.46			f 5.49					
7.13	4.18	1.13	10.13	7.03	4.55	10.50	5.48	6.92	8.43	12.40	3.30	7.40	8.40	11.43	2.31	5.43	8.43	11.31			
f 4.27				f 7.12	f 5.03	f 11.00	.....	10.54	f 12.30	.....	f 7.29	f 8.29			f 5.32				
f 4.33				f 7.18	f 5.08	f 11.06	f 6.03	12.61	f 12.24	.....	f 7.22	f 8.23			f 5.26					
.....	4.40			7.25	5.15	11.13	6.10	15.39	8.20	12.17	3.05	7.15	8.15	11.21	.....	5.21	8.21	.....		
f 4.47				7.32	5.23	11.22	f 6.17	18.64	8.10	f 12.08	f 2.58	7.06	f 8.10	.....		f 5.15	.....	.....	
7.41	4.55	1.41	10.41	7.40	5.31	11.31	6.25	21.50	8.03	11.58	2.50	6.58	8.04	11.10	2.04	5.10	8.10	11.04			
.....	5.00			7.45	5.37	11.37	6.30	23.43	7.58	11.52	2.46	6.53	7.57	11.06	.....	5.06	8.06	.....		
f 5.02				f 7.47	f 5.40	f 11.40	.....	24.44	f 11.48	2.43	f 6.50	f 7.53			f 5.03			.....		
.....	5.08			7.51	5.45	11.45	6.37	25.87	7.50	11.45	2.40	6.47	7.49	11.01	.....	5.00	8.00	.....		
7.56	5.13	1.56	10.56	7.58	5.53	11.53	6.44	28.40	7.41	11.37	2.32	6.37	7.42	10.54	1.48	4.54	7.54	10.48			
.....	5.18			8.03	5.58	11.58	6.48	29.81	7.36	11.32	f 2.27	6.32	7.37	10.51	.....	4.51	7.51	.....		
f 8.03	5.22			f 11.03	8.08	6.03	12.03	31.14	7.32	11.27	2.23	6.27	7.33	10.47	.....	4.47	7.47	f 10.41		
8.08	5.28			11.08	8.15	6.09	12.09	32.75	7.26	11.20	2.17	6.21	7.26	10.40	1.37	4.40	7.40	10.37			
8.12	5.34	2.12	11.12	8.21	6.17	12.17	7.07	35.04	7.17	11.13	2.10	6.14	7.21	10.35	1.32	4.35	7.35	10.32			
8.16	5.39	2.16	11.16	8.26	6.22	12.22	7.11	36.03	7.10	11.08	2.05	6.10	7.15	10.29	1.28	4.29	7.29	10.28			
.....	f 5.47			f 8.35	6.32	12.32	7.19	39.84	6.58	10.56	1.50	5.56	f 7.06	f 10.24	.....	f 4.21	7.21	.....		
8.25	5.51	2.28	11.28	8.40	6.37	12.38	7.22	40.50	6.54	10.52	1.48	5.52	7.03	10.18	1.17	4.18	7.18	10.17			
.....	5.56			8.45	6.42	12.43	7.26	42.04	6.50	10.48	f 1.44	5.48	7.00	10.15	.....	4.15	7.15	.....		
8.37	6.04	2.37	11.37	8.51	6.50	12.50	7.31	44.44	6.43	10.40	1.38	5.40	6.53	10.08	1.07	4.08	7.08	10.07			
8.45	6.15	2.45	11.45	9.00	7.00	1.00	7.40	47.27	6.35	10.30	1.30	5.30	6.45	10.00	1.00	4.00	7.00	10.00			
P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	A. M.		A. M.	A. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.			
29	27	25	23	21	7	5	3		2	4	6	8	20	22	24	26	28	30			

*Trains Nos. 4 and 6 will stop at Mount Hope to discharge passengers.

Train No. 30 will stop at all stations to discharge passengers from Panama only

COMMISSION CLUBHOUSES

Activities of the Young Men's Christian Association.

REPORT FOR MAY, 1909.

Total membership	1,190
Total number of bowling games	4,898
Number different tournaments, billiard, pool, chess, etc.	6
Total number of tournament players	97
Total number of pool and billiard games	13,835
Total income from soda fountain	\$2,486.51
Number different men using gymnasium	106
Total attendance of men using gymnasium	605
Number enrolled in chess and checker clubs	45
Number enrolled in glee clubs	5
Number enrolled in camera clubs	80
Number enrolled in bible classes	52
Number enrolled in educational classes	18
Number of members in library	581
Total number of books withdrawn	1,474
Number of Sunday meetings	1
Attendance	150
Number of local entertainments	15
Attendance	2,950
Number of imported entertainments	3
Attendance	820
Number of functions outside association management	9
Attendance	950
Number of afternoons for women	12
Attendance	96
Number evening functions to which women were invited	29
Attendance	1,570
Different men on committees	32
Number of men called on in hospitals	180
Number of letters written at public tables	4,090
Total attendance at buildings	45,639
Average attendance per day	1,472

BOYS' DEPARTMENT (AGES 10-16).

Number of members	63
Number of afternoons open to boys	46
Total attendance	535
Attendance at gymnasium exercises	352

The return engagements of the Weeks Entertainment Company at the clubhouses proved successful. The audiences were large and enthusiastic. Under the management of the Y. M. C. A., the Company appeared in the following towns where there are no clubhouses: Las Casendas, June 2; Gatun, June 3; Camp Elliott, June 4, and on June 5, through the courtesy of the Panamanian Government, an entertainment was given for the people of Panama and Ancon at the National Theater in Panama.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, June 12, 1909:

	STATIONS					
	Vigia.	Alba-Juella.	Gatun-bou.	Bohio.	Gatun (Canal)	Gatun (W. D.)
Height of low water ab. in an sea-level, ft.	125	92	46	1	0	0
Maximum height ab. mean sea-level, feet:						
Sunday, June 6.....	125.8	93.0	49.7	4.1	1.0	0.9
Monday, June 7.....	126.0	93.1	49.3	3.4	1.1	0.9
Tuesday, June 8.....	125.9	95.7	53.1	5.1	1.0	0.9
Wed'n'sday, June 9.....	142.2	103.4	62.0	15.9	6.6	3.8
Thursday, June 10.....	129.1	95.6	55.0	16.2	7.7	6.2
Friday, June 11.....	134.6	98.6	50.1	7.9	4.6	4.0
Saturday, June 12.....	134.1	98.7	55.2	10.7	4.4	3.5

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 22, 1909 (75th meridian time):

DATE.	High.	Low.	High.	Low.	High.
June 16.....	A. M. 2:07	A. M. 8:17	P. M. 2:23	P. M. 8:45	P. M.
June 17.....	2:58	9:08	3:13	9:34	.....
June 18.....	3:48	9:57	3:59	10:20	.....
June 19.....	4:34	10:44	4:46	11:07	.....
June 20.....	5:18	11:29	5:30	11:51	.....
June 21.....	6:02	12:16	6:16	.....	.....
June 22.....	.....	12:36	6:46	1:03	6:59

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

OFFICIAL CIRCULARS.

Master Mechanic at Gorgona Shops.

CULEBRA C. Z., June 14, 1909.

Effective this date Mr. A. L. Robinson, in addition to his duties as Electrical Engineer, will perform the duties of Master Mechanic in charge of Gorgona shops and district, vice Mr. E. C. Cummings, resigned.

GEO. D. BROOKE,
Supt. M. P. and M.

Approved: GEO. W. GOETHALS,
Chairman and Chief Engineer.

Notice of Granting of Liquor Licenses.

In accordance with the resolution adopted by the Isthmian Canal Commission, the following applicants will be granted saloon licenses for the period July 1, 1909, to July 30, 1910.

Rio Grande—

- Kwong Chong.
- Yuen Lee.
- Kwong Chong Chang.
- Lee Hop.
- Wing Wo Yuen.
- Kwong Hing Jan.

Culebra—

- Pedro Colomar.
- Hip Woo.
- Wo Chan.
- Wong You Kee.
- Sing On.
- Pow Sun Chong.
- Jean Murati.
- Jas. McFarlane and Roger J. Coyne.

Empire—

- Jas. Ferguson and Jas. Johnson.
- Mezelo Gustave.
- Juan A. Martinez.
- Manuel Leonas.
- Jose Sandi.
- Hop Hing.
- Chee Hing.
- Yuen Hing Chong
- Chas. R. Cantor.
- Lai Hing.
- Thomas Powers.

Las Casandas—

- Lai Wo.
- Justino Richefort.
- Charles Bryant.
- Sam Lee.

Bas Obispo—

- Chee Chung Hing
- J. J. Speer.
- Kwong Chong Kee.
- See Lee.
- Tuck Chong.

Matachin—

- Azapito Centeno.
- Jose C. M. de la Puerta.

Gorgona—

- Antonio Guerra.
- Isaac L. Maduro, Jr.
- George Andrade.
- Jacob Kowalsky.
- John G. Kurtenacker.
- Tracy Smail.
- Alejandro Ramos.

Tabernilla—

- Lee Fung Yuen.
- Lam Hing Lung.
- Emelio Capurro.
- Chow Bing & Co.
- Henry Charles Wong.

Bohio—

- Wing Lee.
- Yee Shun.
- Hing Lee.

Gatun—

- Yee Chong.
- Pandencio San Martin.
- Lam Hing.
- Barney Duboski.
- John B. Schuetz.
- Yee Kee.

HERMAN A. GUDGER,
Acting Collector of Revenues.

Supplies for Canal Work.

The following steamers arrived at the ports of Cristobal and Colon during the week ending June 12, with supplies for the Isthmian Canal Commission:

Tactus, June 6, from New York, 6 churn drills for Central Division.

Sibilia, June 8, from New York, 3,500 barrels cement for stock.

Panama, June 8, from New York, 1,500 gallons lubricating oil for stock; 5,000 gallons dynamo oil for stock; 4,000 gallons hull paint for stock; 13 pumps for Balboa dredges; 1 garbage destructor for Empire; 48 tons material for Gatun and Miraflores handling plants; 17 tons copper wire and cable for Gatun handling plant; 10 flat cars, 3-foot gauge for Pedro Miguel locks; 23 packages, pumps and fittings for Central Division; 72 tons pipes and fittings for Central Division; 10 tons steel castings for Gorgona shops; 81 tons steel bolts and bars for Gorgona shops; 18 tons bolts for Empire and Gorgona shops; 2,000 barrels cement for Gatun Spillway; 5 tons rosin for manufacture of larvacide; and a miscellaneous cargo aggregating 11,501 packages, weighing over 1,800 tons.

Hirando, June 9, from Baltimore, 4,000 gallons linseed oil for stock; 10,000 gallons gasoline for stock; 3,000 gallons turpentine for stock; 4,000 gallons lard oil for stock; 698,000 pounds 45 per cent dynamite for stock; 320,000 pounds 60 per cent dynamite for stock; 453 tons wrought and cast iron pipe and fittings for stock; 55 tons vitrified sewer pipe and fittings for stock; 20-167 feet B. M. lumber for stock; 450 tons oats for stock; 16 tons castings for locomotive repairs, Gorgona shops, 5 tons axles, Empire and Gorgona shops; 1,000 car wheels, Gorgona shops; 59 tons castings for Mechanical Division; 19 motor cars for Gatun handling plant.

Curtaxo, June 10, from New Orleans, 333,785 feet B. M. Y. P. lumber for stock; 10,000 gallons kerosene oil for stock; 33,160 feet B. M. W. O. lumber for jack blocks for steam shovels, Central Division; 32,400 feet B. M. Y. P. lumber for Pacific Division, (sand bin, Balboa wharf); 5 tons castings for car repairs, Empire shops.

Gen. Henry W. Lawton Garrison, No. 40, Regular Army and Navy Union will hold a meeting, Tuesday night, June 22. Members are earnestly requested to be present, as matters of importance will be considered.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Alii thena	P. R. R. Saturday	June 12
Colon	P. R. R. Friday	June 18
Prinz Aug. Wilhelm	H. A. Saturday	June 19
Panama	P. R. R. Thursday	June 24
Magdalena	R. M. Saturday	June 26
Advance	P. R. R. Wednesday	June 30
Prinz Joachim	H. A. Saturday	July 3
Allianca	P. R. R. Tuesday	July 6
Orinoco	R. M. Saturday	July 10
Colon	P. R. R. Monday	July 12
Panama	P. R. R. Monday	July 19
Oruba	R. M. Saturday	July 24

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Panama	P. R. R. Monday	June 14
Magdalena	R. M. Wednesday	June 16
Advance	P. R. R. Saturday	June 19
Prinz Joachim	H. A. Tuesday	June 22
Allianca	P. R. R. Thursday	June 24
Orinoco	R. M. Wednesday	June 30
Colon	P. R. R. Wednesday	June 30
Prinz Aug. Wilhelm	H. A. Tuesday	July 6
Panama	P. R. R. Tuesday	July 6
Advance	P. R. R. Monday	July 12
Oruba	R. M. Wednesday	July 14
Allianca	P. R. R. Saturday	July 17
Prinz Joachim	H. A. Saturday	July 20
Colon	P. R. R. Friday	July 23
Tagus	R. M. Wednesday	July 28
Panama	P. R. R. Friday	July 30

NEW ORLEANS TO COLON.

Parismina	U. F. C. Saturday	June 19
Cartago	U. F. C. Saturday	June 26
Abangarez	U. F. C. Saturday	July 3
Parismina	U. F. C. Saturday	July 10
Cartago	U. F. C. Saturday	July 17
Abangarez	U. F. C. Saturday	July 24

COLON TO NEW ORLEANS.

Abangarez	U. F. C. Tuesday	June 22
Parismina	U. F. C. Tuesday	June 29
Cartago	U. F. C. Tuesday	July 6
Abangarez	U. F. C. Tuesday	July 13
Parismina	U. F. C. Tuesday	July 20
Cartago	U. F. C. Tuesday	July 27
Abangarez	U. F. C. Tuesday	Aug. 3

COLON TO BARBADOS, CALLING AT TRINIDAD.

Magdalena	R. M. Tuesday	June 22
Orinoco	R. M. Tuesday	July 6

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The steamer David of the National Navigation Company, will leave Panama, for David, province of Chiriqui, and intermediate points, on Thursday, June 17, and every alternate Thursday thereafter.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, and from Colon at 1.30 p. m., via Port Limon for New Orleans.

Proposals for Building.

Contract type-18 house. Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p. m., Monday, June 21, 1909, when they will be publicly opened, for the erection by contract of one type-18 house, Gatun, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$200 when contract is awarded, conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals.

C. NIXON,

Purchasing Agent on the Isthmus.

LOST—At Empire, a gold pin with a pearl in the middle. A reward will be given if returned to Mrs. J. E. Majott, House 163-B, Empire.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, JUNE 23, 1909.

No. 43.

The Canal Record

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Address all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Obispo Diversion Completed.

The last steam shovel work on the Obispo Diversion was finished on June 1, and on June 3 the temporary outlet of the channel into Culebra Cut opposite Las Cascadas was closed. Since that time the water has been flowing into the Chagres river through the ravine half a mile above Gamboa Bridge. This makes a new permanent bed for the Obispo river and will keep the water on the east side of Culebra Cut, north of the divide at Culebra, from flowing into the Cut, both during the period of excavation and after the Canal is completed. It is 5½ miles long, not less than 50 feet wide at any point, and drains an area of 9.8 square miles, over which there are heavy rains during eight months of the year. This area was formerly drained by the Obispo River, and a discharge of 30,427,200 cubic feet was recorded in this stream on September 21, 1894.

The diversion begins at a point on the east side of the Cut, opposite Culebra near Gold Hill, and runs along the east side of the Canal, and practically parallel to it, to a point opposite Haut Obispo, where the channel of the river crosses the line of the Canal. Here the hills lie so close to the Cut that the diversion could not be constructed between them and the Canal, and therefore, the channel was carried through a saddle behind the hills.

The construction of the diversion involved about 1,078,000 cubic yards of excavation, the driving of sheet piling along 896 feet of dike, and the driving of 1.6 miles of trestles, from which dirt was dumped to make 1½ miles of dike. The work was begun in 1906, but was not pushed until October, 1908, and from that time not less than two steam shovels were on the excavation. To carry the channel behind the hill opposite Bas Obispo to the ravine above Gamboa required some heavy cutting. One cut is 97 feet deep and 250 feet wide at the top, and some of the most difficult work done in the

Canal construction, on account of the heavy grades encountered, was done on this part of the diversion.

An article on the drainage of Culebra Cut, which was published in THE CANAL RECORD of May 5, 1909, gives additional facts about the Obispo Diversion.

Rail for Reinforcing Lock Concrete.

In the construction of the locks, rail no longer fit for use on the railroads will be used as reinforcement for the concrete. About 7,000 tons of this rail, including old French track and American rail so badly bent that it is no longer useful as track, have been collected and stored at Empire shops. Some of the rails must be straightened before they can be used, and for this purpose a furnace for heating them is in process of construction near the shops.

The furnace is of brick with fire-brick lining, and the inside dimensions are 35 feet long, 10 feet wide and 3 feet high from the bed to the crown of the arch. In the back a large stack. Oil, delivered through eight burners using about 1,500 barrels a month, will be used as fuel. Steam for atomizing the oil will be supplied from the boiler of an old French locomotive. At one end of the furnace will be a bed of rails on which the bent rails will be delivered by a crane. From this bed they will be pushed into the furnace to be drawn out at the other end and deposited on a bench made of rails. They will then be hammered straight by laborers wielding heavy sledges.

An order has been placed at Empire shops by the Pacific Division for forty rails bent to various shapes for reinforcing the concrete in the locks at Pedro Miguel. This work will be done in the shop.

Gamboa Engine House and Yard.

An engine house and yard, for the accommodation of Central Division equipment used in hauling spoil from Culebra Cut to the dumps on the relocated line of the Panama railroad north of Gamboa Bridge, have been authorized and the plans have been approved. The location is Gamboa dump, about 1,100 feet east of the center line of the Canal, and 1,000 feet in the same general direction from Gamboa bridge. The new engine house will relieve the congestion at other points.

The building at Gamboa will be 180 feet long and 54 feet wide, and capable of housing 25 locomotives. The type of construction will be similar to the engine sheds at Las Cascadas and Pedro Miguel. The total trackage will amount to 7,660 feet, and will extend over 1,876 feet of the dump. The yard will consist of two repair tracks, with 28-foot centers; four main tracks, one outside and three inside the shed, a coaling track and coal incline. The middle or pit track in the shed will be laid over a pit 180

feet long, while a cinder pit, 40 feet long, will be located under the same track 250 feet away.

The plans also provide for an oil house, 16 by 16 feet, a combined office and storehouse, 11 feet 6 inches by 15 feet 6 inches, a sand house 10 by 20 feet, and a coaling platform 100 feet long, all of wooden construction. The coaling platform will occupy a natural gravity site on the side of a bluff just south of the engine house. It will be 10 feet above the loading track, the right height for easy coaling, and 6 feet below the unloading track, which will be in the form of a switch back up the side of the hill. The sand house will be similarly located.

The water supply will be pumped from water service lines already in operation into a 50,000-gallon tank connected with a stand-pipe in the yard by a 6-inch pipe. The work of grading and filling in the site of the yard has begun, and the erection of buildings will begin shortly.

High Water in the Chagres.

A freshet in the Chagres river on June 14 and 15 delayed work in the Central Division, where several steam shovels were flooded. The progress of the freshet from the time it passed Vigia, the first point of observation, until it passed Gatun is shown in the following table:

STATION.	Elevation of water above mean sea-level at beginning of rise.	Maximum rise—Feet.	Time crest passed.
Vigia	127.5	24.1	June 14, 8 p. m.
Alhajuela.....	94.2	14.8	June 14, 9 p. m.
Gamboa.....	49.2	17.5	June 15, 5 a. m.
Bohio.....	8.0	14.9	June 15, 2.30 p. m.
Gatun.....	4.4	7.0	June 15, 9 p. m.

The first warning of the flood was given to the Central Division at 4.30 p. m. on June 14, and to the Atlantic Division two hours later.

According to the French and American records there have been 26 freshets since 1885 whose crest at Gamboa was higher than that of the freshet of June 14-15. The highest water of record is that of December 3 and 4, 1906, when the crest of the flood at Gamboa was 35.6 feet above low water. The flood of November 6 and 7, 1904, rose to 18.7 feet above low water at Gamboa, and that of November, 1906, rose to 22.3 feet at the same point. The highest water recorded at Gamboa during the French occupation was 31.8 feet above low water on December 1 and 2, 1890.

At Bas Obispo on June 14, the water flowed over the dike into Culebra Cut and put steam shovels 210, 228, 229, and 263 out of service all day June 15. All the shovels except No. 228 were at work on June 16. No. 228 resumed digging a few days later.

NOTES OF PROGRESS.

(Continued.)

The new pumps for the Cut at Bas Obispo have not been installed and the temporary pumping station has not the capacity to handle a large volume of water. It is expected that the new pumps will be in use in about three weeks.

It was expected that the water would rise above the top of the levee at the Santa Cruz cut, and as soon as the warning was received, the three 70-ton steam shovels at work there, together with the engines and cars, were moved to high ground. The water came within a foot of the top of the levee, but did not flow into the cut. The shovels will be left on high ground, however, and no further work will be done at Santa Cruz until the end of the rainy season. All the rock has been taken out and the remaining excavation is in earth, which is expensive to handle in the wet season. In the new channel at Matachin the water was 23 feet deep when the flood was at its height.

Excavation at Caimito is down to 39 feet above sea-level, and when the freshet was at its height six feet of water flowed through the cut. Four shovels were at work and all were obliged to suspend operations until the morning of June 16.

At Caño River, opposite Tabernilla, the water reached the loading tracks alongside the three shovels, and flooded the main tracks. All the shovels resumed work on the morning of the 16th.

Steamships "Cristobal" and "Ancon."

The steamship *Shawmut* has been renamed the *Ancon*, and the *Tremont* is now the *Cristobal*. The *Cristobal* will leave New York on June 23 with passengers, 25,000 barrels of cement for Gatun Locks and Spillway, and miscellaneous cargo. It is expected that the trial trip will be made in seven days.

The passenger facilities of the *Cristobal* have been rearranged and those of the *Ancon* will be. The dining room for second class passengers has been turned into accommodations for first class passengers, and the capacity has been increased to 82 berths. On the bridge deck, forward, a social hall and seven staterooms with two berths in each room are located. On the same deck amidships are the dining room, smoking room, and fourteen staterooms, with two berths each. On the shelter deck are nine staterooms, with four berths each, and two staterooms, with two berths each.

Pacific Division Sand Service.

The pile driving for the newsand dock at Balboa has been completed, with the exception of a few piles that are still lacking as supports for one of the sand bins. Two bins, each 16 feet wide, and 260 feet long, will be elevated above the floor of the dock to permit the discharge of sand, through hoppers, into cars. A traveling crane will operate on the outward side of the dock transferring the sand from barges to the bins. The ladder dredge *Gopher* will be put to work in the sand deposits at Chamé as soon as required. Six sand barges, each having a capacity of 500 cubic yards, have already been provided, and four more are expected about July 1. This service is expected to furnish four full barges of sand per day, and allow

of two being held constantly in reserve. A new tugboat for service between Chamé and Balboa has been requisitioned for. The sand deposits at Chamé have been thoroughly explored, and a practically inexhaustible supply of sand of good quality has been found.

Gatun Hotel to be Enlarged.

Plans have been prepared and approved for an addition of 20 feet to the front of the first floor of the Commission hotel at Gatun, which faces the west, and of a 17-foot addition to the hotel kitchen. The addition to the front will run the entire length of the hotel, 101 feet. The front wall of the hotel will be removed, and the entire space converted into an open dining room, inclosed by screening only. The addition will increase the dining room floor space by about one-third. Additional improvements, including a new bake oven and ice box, will be made to the kitchen. Work will begin within the next two or three weeks.

Extension to Gorgona Planing Mill.

The work of repairs to cars at the Gorgona shops has increased to such an extent that additional facilities were found necessary in getting out dressed lumber parts for repairs, such as end sills, longitudinal sills, etc. In order to handle this work, the planing mill has been extended 84 feet, which will afford protection to the employes who have heretofore been working in the sun and rain.

Canal Medal Bars.

At a meeting of the Isthmian Canal Commission held on June 10, 1909, in deference to the wish expressed by a number of employes, the following order respecting the engraving of Canal medal bars was adopted: "That Canal medal bars be numbered consecutively to show the order in which each is earned, and that the years of service represented be also indicated thereon."

Position of Pacific Division Dredges.

The ladder dredge *Marmot* on June 18 was working toward the locks about two miles above Balboa dock, cutting a channel 160 feet wide, and with a bottom depth of 25 feet below sea-level at mean tide. The ladder dredge *Badger* was at work 3,500 feet back of the *Marmot*, cutting to the line of the east side of the Canal, excavating a 33-foot face, and digging to the same depth as the *Marmot*. The dipper dredge *Cardenas* is working on the east side of the Canal 3,000 feet nearer the Balboa dock, and is accomplishing the same class of work as the ladder dredges, but making a narrower cut. The suction dredge *Culebra* is at work half a mile above the dock clearing out and completing the channel. The ladder dredge *Gopher* is excavating in the channel a mile out to sea, and will probably complete a section to a depth of 36 feet at mean tide, to Balboa dock by July 4. On June 1, the ladder dredge *Mole* was put to work two miles out, cutting off the berm on the east side of the channel, and in going over the bottom at low tide to clear off the ridges left by the *Culebra*. The dredge will then clean up the side and even up the bottom of the channel to the upper end of the dock. When this has been done, the *Culebra* will be able to begin excavating the remaining 9 feet to reach the bottom depth of the Canal. The three last miles of the channel at the

Pacific entrance are now 45 or more feet in depth, and but little dredging will have to be done in this section.

First Panama Canal Concessionaire.

A dispatch from Toulon under date of June 15 tells of the death of Lieut. Lucien Napoleon Bonaparte Wyse, the first concessionaire of the Panama Canal. After the Geographical Congress of 1876, an organization called the Société Civile Internationale du Canal Interocéanique was formed in Paris for the purpose of financing the proposed explorations and surveys for a canal across the American isthmus. Under the auspices of this Society, Lieut. Wyse and Lieut. Armand Reclus, both of the French Navy, went to the Isthmus in the latter part of 1876 or early in 1877 and for two years made extensive explorations and surveys. Besides his work in Panama, Lieut. Wyse made reconnaissances in Darien, examining the routes from the Gulf of San Blas to Rio Bayano, and from the Bay of Acanti to the Bay of San Miguel. The project for a canal at Panama at sea level, submitted by MM. Wyse and Reclus to the Congress of 1879, was for a cut through the Chagres and Rio Grande valleys, and a tunnel through the continental divide from Las Cascadas to a point near Cucuracha. This plan was not adopted, but it was the one upon which the project adopted by the Congress was based.

In 1878 M. Wyse obtained a concession for a canal from the Colombian government in the name of the Société Civile, which after the organization of the Universal Inter-oceanic Canal Company (old French Company), was transferred to that company. After the failure of the old French company, M. Wyse went to Colombia for the Liquidateur, and obtained an extension of the concession. He also prepared a project for a canal with locks.

Blasting Rock in "Patches."

Thirteen Star drills are at work preparatory to blasting the isolated patches of rock that occur in the Canal prism between Balboa, and a point one and one-half miles south of Miraflores Locks. These patches are found on both sides of the old French canal and vary in size, amounting in some places to 225,000 cubic yards. This rock varies in hardness. The French blasted through these smaller obstructions, but in the channel opposite Corozal, the limit of French dredging operations, the rock increases in quantity until it is almost a solid mass.

Empire Incinerating Plant.

The site of the incinerating plant at Empire, which is in too close proximity to the living quarters, will be moved to a point between Lirio and Cerro. In addition, the plant will be enlarged by the installation of a new incinerator recently received from the United States. This machine was manufactured by the Moss-Bulger Destructor Company, of New York City, and has a capacity of 480 cubic feet of material per day. The old machine, which had a capacity of but 60 cubic-feet per day, will be put into service at another point in the Zone.

The new commissary building at Gatun is nearing completion, and work on installing the shelves and counters has begun. Work has also been started on one of the two type-18 married quarters recently authorized.

SLUICING AND DREDGING.

The Method of Excavating Below Miraflores Locks—Rock Excavation.

Excavation in that section of the Canal from the lower end of Miraflores Locks to a point about 1½ miles south will be done by two methods. The earth will be removed by dredge pumps, and the rock by steam shovels. To carry out this plan the Rio Grande will be diverted near Corozal and made to flow east of the present channel to a point about two miles south of the Locks, and a dam will be thrown across the channel of the river about 1½ miles below the Locks to keep tide water out of the excavation.

Bids have been requested for the dredging and accessory plant and it is expected that the materials will be delivered within six months. The dredging plan involves two operations, the first, that of sluicing the material into sumps, and the second, that of pumping it out of the sumps and discharging it outside the Canal prism. About 8,000,000 cubic yards of dark loam containing 15 per cent of sand and some gravel are to be handled by this process. The surface is about 8 feet above sea-level and the average depth to be excavated is 35 feet. The bottom of the Canal in this section will be 45 feet below mean sea-level, and the channel will be 500 feet wide.

Sluicing will be done by pumping water from below the dam and delivering it through a pipe line to any point along the section to be excavated. Branch lines will be run from the main, and from these branches the water will be forced through monitors on to the earth to be excavated, whence it will flow to the sumps. For this part of the plant a steam pumping station will be installed near the dam. The capacity of the pumps will be 30,000 gallons of water per minute delivered through 3,600 feet of main pipe line and 500 feet of branch line under 130 pounds pressure per square inch. The pumps will be arranged in two units so that repairs can be made without shutting down the whole plant. The specifications call for not less than four, nor more than eight multistage centrifugal pumps, or reciprocating steam pumps of equal capacity, or a pumping plant of equal capacity to be suggested by the bidders. Four or more boilers arranged in two units will furnish steam. It is the intention to use oil as fuel, but the boilers must be adapted to use coal. Power will be supplied by compound condensing engines.

The dredging plant will consist of three centrifugal pumps adapted to continuous service with salt water and run by motors driven by electricity from Miraflores power plant. Each pump must be able to deliver 300 cubic yards of solid matter an hour, and 10,000 gallons of water a minute through 1,200 feet of pipe to a height of 60 feet, exclusive of pipe losses and a suction head of 10 feet. At the beginning of the work two of the pumps will discharge into Cocoli Dam, making a fill of about one million cubic yards. As the crest of the dam will be at 70 feet above sea-level each pump will be assisted in making the lift by a relay pump. After the fill of the dam has been completed these pumps will discharge behind dikes on both sides of the Canal, as the third pump will from the time excavation is begun. The fill made on either side of the prism will reclaim a large tract of land at Corozal that is now under

water during spring tides, or is so low that the tide water keeps it saturated.

The pumps will be moved from place to place as the progress of the excavation requires. A sump will be dug in a locality and a pump placed over it. All the earth surrounding that sump will be washed into it until the grade is so slight that the water will no longer carry a sufficient quantity of solid matter. It is expected that the material can be sluiced down to a three per cent grade. Another sump will then be made, a pump installed over it, and the sluicing and dredging will be resumed.

After the earth is dredged from this section the rock will be taken out by steam shovels.

Completion of Matachin Cut.

On Wednesday, June 9, the Chagres River was turned through the cut at Matachin, the first section of the 85-foot level of the Canal to be completed. Several hundred people had gathered on the west bank of the Canal to see the river flow into its new channel and when the first rush of the water was over, two employes of the Commission guided a native canoe through the completed section while the people on the bank cheered the event.

The cut at Matachin is only 2,700 feet long and is one of several similar cuts being made across small peninsulas formed by the Chagres as it winds between the hills north of Bas Obispo. The first steam shovel on this section began work in December 1907, and the last shovel work was done on May 25, 1909. A total of 1,775,000 cubic yards of material was removed. The channel is 500 feet wide. The bottom of the Canal at this point is below the bed of the Chagres and in order to keep the excavation free from water, dikes were built across the ends of the cut. These levees were blown up with dynamite and on June 9, a pick and shovel gang made openings to give the water a start. The river was 46 feet above sea-level and the head of 6 feet soon tore large gaps in the loosened material of the south levee and washed away the north levee, through which a small opening had been made. Within two hours the river had almost entirely left its old channel, which was not over 200 feet wide, and was flowing through the new one. The old channel offers a convenient dumping ground for excavation from the cuts through the peninsulas north

and south of Matachin and will be used for that purpose, thereby materially reducing the haul.

Fined for Recruiting Laborers.

A resident of Colon, who has been recruiting European laborers from the Canal labor force, brought the steamship *Oleri* into Colon harbor on June 16, with the intention of loading on it about 200 laborers to whom he had sold transportation to Brazil. Holding that this action was contrary to the executive decree of May 18, 1909, requiring that a license be procured for recruiting laborers, the Panamanian Government notified the agent of the ship that clearance would not be granted until the recruiting agent had complied with the law. A fine of \$500, prescribed by the decree of May 18, was levied on the agent and he was notified that before the ship could take on its passengers and depart, he must file the application and bond required by the decree. He did so and the *Oleri* sailed for Brazil on June 22.

As the laborers were men brought here by the Isthmian Canal Commission for work on the Canal, the wishes of the Commission were consulted by the Panamanian Government, and no objection was made to the departure of the laborers. The labor force at work in the Canal during April, was the greatest since the beginning of the work, although the proportion of European laborers is decreasing.

Dam and Locks in Miniature.

Gatun Dam and Locks in miniature will be on exhibition in the Administration Building in Culebra early in July. A model of plaster of paris and laminated cardboard is being made on a scale of one inch to one hundred feet, which is one twelve-hundredth of the actual size of the territory and objects represented.

Pedro Miguel Sojourner's Club.

A meeting of Master Masons was held in the I. C. C. club rooms at Pedro Miguel on Tuesday evening, June 8, at which the Pedro Miguel Sojourners' Club, was organized. After adoption of by-laws, officers were elected as follows: Chas. A. Pendry, president; John H. Kane, vice-president; Gerald D. Bliss, secretary-treasurer; Walter S. Childester, chaplain; J. R. Foley, J. E. Mansberger and F. R. Curney, board of directors.

STATEMENT OF CLASSIFIED EXPENDITURES TO APRIL 30, 1909.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1908. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Department of Civil Administration.	Department of Sanitation.	Department of Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.	\$1,446,407.73	\$4,636,630.37	\$13,410,795.01	\$4,296,732.98	\$19,345,697.87	\$43,136,263.96
Fiscal year 1908.	704,610.15	2,310,212.01	16,680,660.46	1,494,956.41	11,684,215.15	32,874,654.18
Fiscal year 1909:						
July, 1908.	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August, 1908.	77,019.80	145,870.37	1,599,556.90	60,798.76	517,046.09	2,400,291.92
September, 1908.	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
October, 1908.	59,612.51	155,676.68	1,448,614.64	67,696.17	727,544.14	2,459,144.14
November, 1908.	59,374.12	147,957.24	1,369,805.86	77,406.64	480,139.10	2,134,682.96
December, 1908.	65,526.32	166,321.70	1,500,404.77	70,936.43	893,337.24	2,696,526.46
January, 1909.	51,416.82	164,605.80	1,550,843.72	65,209.51	1,418,185.90	3,250,261.75
February, 1909.	60,782.04	139,368.18	1,453,781.43	54,105.63	596,564.67	2,304,601.95
March, 1909.	60,130.85	127,669.50	1,611,343.85	39,267.70	776,821.41	2,615,233.31
April, 1909.	66,846.14	146,515.18	1,480,566.68	56,617.86	1,072,221.29	2,822,767.15
Total.	2,806,491.66	8,468,515.50	45,195,325.37	6,428,438.46	38,759,489.18	101,688,260.17

PROOF AGAINST ACCIDENT.

Precautions That will be Taken in Panama Canal Locks.

On June 9, a vessel in the Canadian lock at Sault Ste. Marie collided with one of the lock gates. Lieut.-Col. H. F. Hodges, Assistant Chief Engineer and a member of the Isthmian Canal Commission, who was in Washington when the accident occurred, made the following statement with regard to the possibility of a similar accident in the Panama Canal:

"The accident which occurred yesterday at the Canadian lock at Sault Ste. Marie was indeed regrettable, but is not of such a nature as to impair confidence in the safety of the transportation facilities there and even less to cause doubt of the security of the locks planned for the Panama Canal. Apparently it occurred through collision with the lower lock gate by a vessel from the lower side, when the lock was full and the upper gates opened, there being at the time one vessel in the lock and another entering from above. All vessels were maneuvering under their own steam.

"Such an accident would be an impossibility at the locks of the Isthmian Canal. Vessels will not be allowed to approach the gates of these locks under their own power. Long piers are to be provided below and above the locks against which vessels will be obliged to moor before approaching within 300 feet of the lock gates. They will then be taken in charge by powerful towing appliances on the lock walls, and taken entirely through the locks without further use of their own power. Mistakes on the part of the vessel's master, or its engineer, can cause no danger in such an operation.

"In addition, above and below these gates, which are of vital importance, protecting chains are to be placed which, when in use, are stretched across the lock near the surface of the water and would receive the shock of any vessel coming too near the gates. The protective effect of these chains is calculated to be sufficient to resist the shock of a vessel weighing 10,000 tons and moving at the rate of about 3 miles per hour, and to bring that vessel to a stop before it could reach the gates.

"At the locks of the Panama Canal the gates are double at all important points, and even were it possible for a ship to ram the lower gates, as was the case at the Canadian lock yesterday, the result would be simply to damage one pair of the double gates, leaving the other pair intact and operative in holding back the water in the upper level.

"There is also to be provided above each lock an emergency dam, which can be closed in case of accidents, and will check any current which might otherwise flow through the lock.

"In connection with the accident at the Sault it should be remembered that nearly 20,000 vessels per annum pass through the canal there with safety. In the years 1890 to 1907 inclusive about 312,000 vessels passed the lock, all without serious accident. There has been a canal at the rapids for more than 50 years and this is the first accident of serious moment. With such a record in locks where the gates are unprotected and where large vessels are allowed to maneu-

ver under their own steam, there need be no fear of a repetition of the occurrence in locks where the gates are protected as they will be on the Isthmian Canal and where the movement of the vessels are under the control of the lock force. With these and the other safeguards to be installed on the Isthmus, an accident of this description is impossible."

Passengers for New Orleans.

A new arrangement for the benefit of passengers arriving at New Orleans has been put in effect by the officials of the United Fruit Company. The Company will furnish a tug to the quarantine officers, who will meet all ships of the Company some distance down the Mississippi River, so that the medical examination of the passengers may be finished by the time the vessel reaches the wharf. Baggage will be inspected under cover at the wharf instead of on the open dock as heretofore.

Beginning June 22 the steamers of this Company will sail from Colon, via Port Limon for New Orleans, every Tuesday at 3 p. m., instead of at 2 p. m. as heretofore.]

Fish for Destroying Mosquito Larvæ.

A species of fish popularly known as "millions" (*girardinus pocciloides*) indigenous to the waters of the island of Barbados in the West Indies, has been brought to the Isthmus recently in connection with the work of mosquito extermination. These fish belong to the group broadly known as top minnows, so called from always feeding at or near the surface of the water, for which the structure of their mouth and habit of swimming with a large portion of their back out of water, adapts them. This habit in connection with their small size is of especial value as it enables them to secure their food by pursuing it across plants and masses of algae over which there is only a thin film of water. They derive their name from the great schools in which they are found, are very small, never over one and one-half inches long, and are found in stagnant, sluggish and running water, either fresh or brackish.

The group to which they belong is omnivorous, but it has been discovered that if mosquito larvæ are accessible the "millions" will eat it in preference to other food, and they are said to eat the adult mosquito also. They ascend streams against a swift current and penetrate into the smallest rivulets. The species is viviparous, that is, their young are born alive and not hatched from eggs. This aids in their rapid multiplication as the young rapidly moving fish are less exposed to enemies than they would be if hatched from eggs. They are very hardy and stand transportation well, which makes them especially valuable for stocking the waters of the Isthmus.

The absence of malaria in Barbados has been attributed to the presence of these fish, by their destruction of the larvæ of malaria-carrying mosquitoes. While there is some doubt as to this, they undoubtedly play a very important part in the control of mosquito breeding on that island. While there are species of fish on the Isthmus that are voracious eaters of mosquito larvæ, it has been found impossible to depend entirely upon them for mosquito destruction under all circumstances, and it is thought the in-

roduction of "millions" will be a very efficient aid.

About 200 fish will be placed temporarily in the tank in the court of the Administration Building at Ancon. When they are acclimated and breeding is well under way they will be distributed to the streams and reservoirs where their assistance may be needed. While of great value in the extermination of anopheles mosquitoes the "millions" are useless under natural conditions against stegomyia, which breed exclusively in artificial water containers, such as cisterns, rain barrels, old cans, etc. In many cases, however, they may be placed advantageously in tubs containing water plants to prevent the multiplication of mosquitoes.

Mutilated Gold Coins.

Attention is called to the fact that a large number of gold coins that have had the edges trimmed or have been otherwise mutilated, are in circulation in the Canal Zone, and in Panama and Colon. The mutilation is usually very slight, causing a difference in value of from four to twelve cents in each coin, but the aggregate in a large number of coins is great enough to cause a serious discrepancy when the bullion is weighed at the office of the Treasurer of the Canal Zone, where mutilated money is accepted by weight only. The Treasurer has lately returned a number of 20, 10 and 5-dollar gold pieces to the Zone postmasters and tax collectors, amounting to \$480, during May, and \$760, from June 1 to June 11.

In order to warn paymasters, postmasters and tax collectors the following have been issued:

DISBURSING DEPARTMENT,
EMPIRE, C. Z., June 14, 1909.

PAYMASTER AT ANCON AND CRISTOBAL.

In view of the fact that some one is busy trimming the edges of the gold coins used on the Isthmus, in verifying funds received for my account from the bankers extraordinary care should be exercised by you to detect mutilation of any kind. Any coins which give evidence of having been "sweated" or trimmed should, as in the past, be absolutely refused and good coins demanded in their place; but, as before stated, your vigilance should be doubled to detect and refuse such coins. Aside from examining the face of each coin when counting, the stacks should be taken up and the edges carefully noted, as in this manner any trimming of the edge or edges will at once be shown.

EDWARD J. WILLIAMS,
Disbursing Officer.

DEPARTMENT OF CIVIL ADMINISTRATION,
DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., June 10, 1909.

CIRCULAR No. 53.

To all Postmasters and District Tax Collectors: The Treasurer has recently refused a number of five, ten and twenty-dollar gold pieces remitted to him by Postmasters and others who make remittances, for the reason that the pieces were not of full weight.

Postmasters are therefore directed not to accept any gold pieces tendered them that have the edges worn or filed, or that are of light weight.

HERMAN A. GUDGER,
Acting Collector of Revenues.

Dredging Modeling Clay.

The dredges excavating the Pacific entrance to the Canal frequently encounter masses of a sticky, varicolored clay, which is very difficult to handle, even for a dipper dredge. When first brought to the surface this clay is of the consistency of putty in oil, but after exposure to the air for a short time, it becomes very hard. The clay has been modeled into forms, such as paperweights, and on account of the peculiar streakings, is very attractive. In coloring, blue predominates, with red next, and yellow last. In touch, the substance feels like soapstone.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Ancon Woman's Club held the final meeting for the season on Wednesday, June 16. The educational department will continue its study course during the summer, the meeting on June 23, being held at the residence of Mrs. W. T. Dozier, Tivoli Hill. The open evenings at the clubrooms are proving an attraction. The number of visitors has increased during the past two weeks, and several new books have been donated to the library. The officers for the ensuing year are: Mrs. J. L. Storla, president; Mrs. J. Leon Webster, first vice-president; Mrs. R. W. Fenn, second vice-president; Mrs. Wesley M. Owens, recording secretary; Mrs. H. E. Bovay, corresponding secretary; Mrs. G. W. Green, librarian; Mrs. J. S. Walker, assistant librarian. The club has forty members. Regular meetings will be resumed the first Wednesday in October.

Meetings of the Gatun Woman's Club will be held on the first Friday in each month during July, August, September and October, when the club year opens. The organization realized over \$30 at the recent social held for the purpose of raising funds for the establishment of a lawn tennis court. The club is preparing another entertainment to take place in the near future.

The various social organizations in Pedro Miguel have purchased a piano which has arrived on the Isthmus and has been placed in the clubroom. An entertainment will be given shortly.

The Paraiso Social Club gave a minstrel performance followed by a dance at the clubroom on Saturday evening, June 19.

In connection with Christ Church, Colon, a Woman's Altar Guild has recently been organized. The rector, Rev. Edward J. Cooper, is honorary president, Mrs. Woolrich, president, and Mrs. Pierce T. Murphy, secretary. The Guild will have general charge of the altar and hangings for the various church seasons. The meetings will be held on the first and third Monday of each month.

The work of the Canal Zone Inmate Society has been actively going forward. During the past few weeks a number of crippled and disabled cab horses have been ordered off the street at Cristobal at the recommendation of the Society, and a marked improvement in the condition of all the horses has been apparent. The Colon authorities also have cooperated with the representatives of the organization in several cases.

Efforts are being made to raise funds for the purchase of a library for the Zone penitentiary at Culebra. At the end of May the number of inmates was 117; of this number, 60 per cent read English, 25 per cent Spanish and about 10 per cent French and French patois. The prisoners are from all sections of the Canal Zone, and the interest taken in their welfare is therefore general. The Empire section of the W. C. T. U., and the Woman's Guild, St. Luke's, Ancon, have subscribed for the purpose, and collections of books and periodicals are being made through the Gatun, Ancon, and Pedro Miguel woman's clubs. Subscriptions may be made through any of these organizations or forwarded directly to the penitentiary chaplain, Rev. S. Moss Loveridge, Culebra. Individuals wishing to send books or maga-

zines should place them in the hands of the District Quartermaster, who will send the package to the Deputy Warden, of the penitentiary at Culebra. At Gatun, Mrs. C. A. Bath is in charge of the collections, and Mrs. H. E. Bovay, at Ancon. Mrs. H. E. Weber, secretary of the woman's club, will receive donations at Pedro Miguel.

A vaudeville entertainment, the entire proceeds of which will be donated to the above purpose, will be given at the Culebra clubhouse on Friday evening, July 9. The committee on arrangements includes Rev. S. Moss Loveridge, Rev. J. Wesley Holland, Messrs. Goodman, Hostetter and Pain. Mrs. C. A. Devol is chairman of the committee on refreshments. Tickets will be sold at fifty cents for adults, children under twelve half price.

Red Cross President Honored.

The president of the Canal Zone branch of the National Red Cross has received the following letter from the President of the United States, who is also president of the American National Red Cross:

WASHINGTON, D. C., May 29, 1909.

Sir—In accordance with a resolution adopted by the Board of Incorporators of the American National Red Cross on December 8, 1908, I have the honor and pleasure of presenting to you the special medal referred to in the resolution as a token of the appreciation of the society of the very valuable services rendered by you.

Yours sincerely,

WM. H. TAFT,
President.

MAJ. C. A. DEVOL, U. S. A.,
War Department,
Washington, D. C.

The resolution referred to cites that Major Devol rendered important and unremunerated services to the Red Cross at Hattiesburg, Miss., in 1908, and that in accordance with the by-laws, the President is authorized and instructed to bestow the special medal.

Isthmian Lawn Tennis Tournament.

Arrangements for a lawn tennis tournament, in singles and doubles, on July 4 and 5 were made at a meeting held at the Hotel Tivoli on June 20. Entries, which must be made by July 1, will be received by M. A. James, Empire, and are restricted to three members from each club. The tournament will be held on the courts of the Panama Tennis Club on Central Avenue, opposite the office of the Alcalde, and will begin at 9.30 a. m., July 4. Drawings will be made July 2 to determine which contestants will be matched in the preliminary round. All final matches will be played on the afternoon of July 5. W. H. Hall of Empire, has been appointed referee. Medals have been offered by the Fourth of July Entertainment Committee for the winners in both events.

Fourth of July Celebration.

All persons who intend to subscribe to the Fourth of July celebrations this year and who have not done so, are requested to send in their subscriptions at once, to either W. M. Wood, Chairman, Finance Committee, Empire, or W. S. Perry, Chairman, Finance Committee, Cristobal, in order that the committees may know what amount can be depended upon for making the celebrations successful.

In order to increase the effectiveness of the grammar and high school courses in the Canal Zone schools, it has been decided to employ a supervisor of grammar grades and high schools for the school year beginning in September, 1909.

PERSONAL.

Lieut.-Col. D. D. Gaillard, Division Engineer of the Central Division, and family, and Mr. Tom M. Cooke, Chief of the Division of Posts, Customs and Revenues, are passengers on the *Colon* which sailed from New York on June 18, due at Cristobal on June 24.

Dr. Wu Ting Fang, Chinese Minister to the United States, Mexico, Cuba and Peru, arrived on the Isthmus on Tuesday, June 8, on his way to Peru to present his credentials to President Leguia. While here he visited various points of interest on the Canal, and sailed for Callao on June 15.

W. D. Smith, 1st. Lieut. 14th Cavalry, U.S. Army, and wife, are passengers on the *Colon*, which sailed from New York on June 18, due at Cristobal, June 24. Lieut. Smith will have charge, under the Chief Quartermaster, of all building operations, including construction and repairs, in the Quartermaster's Department. He has recently been stationed at West Point in the office of the Quartermaster and Disbursing Officer.

Mr. Claude Earl Guyant, Vice-Consul General of the United States at Panama, and Miss Estela Amy Lang of San Jose, Costa Rica, were married at Christ Church, Colon, on Tuesday, June 15, at 4 p. m., Rev. Edward S. Cooper officiating. Mrs. Guyant is a sister of Mrs. H. O. Jeffries, of Panama.

Cristobal Union Church.

In connection with the Cristobal Union Church, a ladies' aid society has been organized with Mrs. Jule Johnson as president. The society holds its meetings monthly. At the meeting held on Tuesday, June 8, a program was given consisting of papers on "The Defective Child," Mrs. Rerdell, "Troubles in Turkey," Mrs. Bennyhoff, and current topics, Miss Ferber.

On Sunday evening, June 6, the semi-annual meeting of the church was held when the following officers for the executive council were elected: Thomas E. Brown, Jr., president; H. L. Stuntz, vice-president; O. B. Riddle, secretary and treasurer; and J. A. Smith, H. P. Warren, C. Nixon and N. A. Becker, advisory committee.

Independent Order of Panamanian Kangaroos

Cristobal Court, No. 8, Independent Order of Panamanian Kangaroos, installed January 31, 1909, with a membership of 24, has initiated 31 members to date and affiliated 3, making a present membership of 58. New paraphernalia has been ordered from the States, and is expected in a short time.

A supply of cards has been placed in Colon Hospital with which to notify this court of the sickness of any Kangaroo, regardless of what court he may belong to. These cards may be procured upon application to the nurse in charge. Cristobal court meets every Friday at 8 p. m., in the I. C. C. lodge hall in Cristobal. Visiting brethren in good standing are always welcome.

Address by Judge Owen.

Judge Wesley M. Owen will deliver an address at Empire I. C. C. Chapel, Sunday evening, June 27, at 7.30 p. m. The service will be held under the auspices of the Empire W. C. T. U., and special music has been prepared. All are cordially invited to be present.

ISTHMIAN SUNDAY SCHOOLS.

Religious Instruction for White and Negro Children.

There are two classes of Sunday schools in the Canal Zone; one for negroes and one for white children, numbering in all about 50 schools. Of these, the schools for negroes are the older organizations, having been established in the beginning of Protestant Church work on the Isthmus, when the Anglican Church founded its mission in Colon for the benefit of the West Indian laborers employed in the construction of the Panama railroad. Following this the Wesleyan Methodist Church of England established its mission for negroes with a large membership. The organization of the schools for white children dates from 1905, the year following American occupation. Their membership includes representatives of all sects, creeds and classes from all over the United States, with a small percentage of aliens. Being purely an American institution, the Sunday schools for white children are conducted in accordance with the methods in use in the schools in the States, with minor differences in administration made necessary by local conditions. In the Zone stations where no regular church services are held, Sunday schools have been organized for the benefit of the white American children of the communities.

Schools for White Children.

The population from which the Sunday schools for white children draw their members numbers about 7,000. Of this number, about 4,600 are employed on the Canal and Panama railroad work, and 1,500 are women. Eliminating the number of children too young to attend school, the possible Sunday school population is less than 1,000. In the day schools for white children 722 pupils are enrolled. The total enrollment for Sunday schools for white children is 650. From these figures it is evident that about 75 per cent of the white children in the Canal Zone of age to attend, are actually enrolled in the Sunday schools.

There are 14 Sunday schools for white children in the Canal Zone, 12 of which are undenominational, one Episcopal and one Roman Catholic. The undenominational schools operate under the Isthmian Sunday School Association, a branch of the International Sunday School Association, which was established in the Zone in January, 1908, under the direction of a representative of that association for the West Indies and South America. Rev. Aquila Lucas met a number of representatives of the various schools at Culebra, January 27, at which time the Zone organization was effected. The objects of this association as stated in the constitution are:

(1) To federate the Sunday schools on the Isthmus; (2) to form a central point of contact between said schools and the International Sunday School Association; (3) to arrange for conferences, conventions and other joint action that may be desirable.

The officers are elected at regular meetings in January and July, for a period of six months. Each school is entitled to two members in the association, known as "regular" members, and the pastor, cooperating with affiliated schools, are known as honorary members. Quarterly meetings are provided for, and the Panama railroad grants free transportation to members in attendance at regular or special meetings. In every

community members of various churches and sects are found, and it is aimed to unite the forces in one central organization for the purpose of strengthening the work and maintaining interest. The expenses of the association are met by each school setting aside the offering of the first Sunday in March for that purpose.

Before the association was organized there were a number of schools for white American children doing independent work. The first four schools organized and the number of pupils enrolled at the time of organization were:

Cristobal, September, 1905, 12 members.
Gorgona, Thanksgiving Day, 1905, 8 members.
Culebra, September, 1906, 4 members.
Emoire, January, 1907, 25 members.

The system of organization in each school is practically the same. It provides for a superintendent, assistant superintendent, secretary, treasurer, or both offices combined, and a corps of teachers. The standard literature, lesson leaflets and quarterly magazines are distributed. All the schools are self-supporting, and the larger ones are able in addition to subscribe to missionary projects. Meetings are held in the Commission chapels or other suitable buildings assigned or granted by the Commission for the purpose.

The Cristobal Union Sunday School has a membership of 100 and an average attendance of 88. The school is divided into two departments; the primary, with three teachers, and the advanced, with seven teachers. In the primary classes the kindergarten method of instruction has been introduced, including the use of sand boxes for maps. One Sunday in the month the collection is devoted to some missionary enterprise designated by the officers of the school. For the purpose of promoting social life among the pupils and members it is the custom to give a picnic or other excursion about once every three months.

The next oldest school, Gorgona, was started by a few young people, there being at that time no children of school age in the town. Meetings were held in the old mess hall. The total number of children in Gorgona is now 142 and the Sunday school membership is 80, and average attendance 60. Of recent organization are two branch societies, the Baraca, for young men, and the sister class, Philathea. The object of each is to promote the growth of Sunday school interest.

The Culebra school has a membership of 95 from a total population of about 124 children. The organization of a home department and cradle roll are efforts of the past few weeks. The activity of the former consists of visiting the young pupils in their homes, advising and helping them with the lessons, and promoting interest in Sunday school work among the parents and elders. The latter, under the director of the primary department of the school, proposes to enroll infants who may later attend the school.

Organized the first Sunday in January, 1907, the Empire Sunday school has doubled its membership in one year. The meetings were held in the circuit courthouse until the present chapel was erected. The membership is 100, and average attendance 75. There are seven officers, including an organist and assistant organist, chorister and five teachers. There is also a regularly organized kinder-

garten department. The bible class is organized with a full corps of officers. A name and a motto have been adopted, and the class is carrying on a vigorous campaign in securing members and promoting Sunday school interest. Back of this organization is the Empire Christian League, which was organized in 1908. The League is undenominational.

The number of children in Gatun between the ages of three and twenty is about 100. The Sunday school has a membership of 73. The average attendance for the first quarter in the present year was about 50. The school is divided into two primary classes, two classes for girls, one for boys, and one for adults. Sessions are held in the chapel recently dedicated.

The Las Cascadas Sunday school was organized in August, 1907, and has an enrollment of 30. Special features of interest are provided in the lesson leaflets and by the judicious introduction of a system of prize-giving for regular attendance. A silver star presented after regular attendance for six months, earns for the winner a gold star at the end of a year.

The date of organization of the Bas Obispo school is September, 1908, when 21 pupils were enrolled. There is at present a membership of about 27. The Pedro Miguel school was organized with seven members in February, 1908. Since that time the membership has increased. This school was especially successful in securing its literature free for the first quarter and after that, at a nominal subscription price. Organized in September, 1908, the Paraiso school met variously in the clubroom, the schoolhouse, and at private homes until the opening of the Commission chapel. Thirty-three members are now enrolled and the average attendance is about 28. Both this and the Pedro Miguel school was organized by resident women interested in Sunday school work.

The regular organization of a Sunday school at Taberulla was effected on Easter of this year. This school is the outcome of a Sunday school which was organized by a little girl in January. The school was officered by the children, the organizer acting as superintendent, and had a membership of nine. The meetings were held at the home of the superintendent.

The first Sunday in January, 1909, a Sunday school was organized in Corozal at a meeting held in the dining room of the hotel. There are 68 children in the town, and 44 of these are enrolled on the Sunday school list. The school has no regular meeting place and holds its sessions in any available house at present.

The regular Methodist Sunday school in Panama was organized under the Isthmian Sunday School Association, its membership of 40 being drawn from the families belonging to the Methodist Church, in Panama, Balboa (La Boca) and Ancon. The school meets in the church building, Panama. A Commission wagonette meets the morning train on Sunday to convey the members from the Line to the church.

The Episcopal Sunday school in connection with St. Luke's Church, Ancon, was organized in November, 1907. There are 35 pupils. The chaplain acts as superintendent and there is a corps of three regular teachers and three substitutes. This school has a library of juvenile books, which had its begin-

DREDGING IN MAY.

Record in Atlantic and Pacific Divisions.

ning in the presentation of the books contained in their own library by two young members of the church. A gift recently made by the Church Periodical Club, raises the number of volumes in the library to 150. The work of the library, which consists of the distribution and exchange of books on Sundays after the school session, is conducted by one of the older pupils appointed by the superintendent.

The rector of the Church of the Holy Redeemer, Roman Catholic, in Culebra, has a class in catechism on Sunday mornings, and also visits Las Cascadas on Saturday afternoon to give instruction to a class of 20 young men. These meetings are held in the Red Men's lodge hall.

Schools for Negro Children.

Sunday schools for negroes are confined to three denominations: Episcopal, Wesleyan Methodist, and Baptist. The membership of these schools is drawn from a population of 3,276 West Indians, this being the total number of this class of employes occupying Commission "married" quarters. Slightly over 75 per cent of this entire number are enrolled in the Sunday schools of the Episcopal and Wesleyan missions alone.

There are twelve Sunday schools connected with the Episcopal mission, the total enrollment being 392, with a corps of 51 teachers. The largest of these schools is at Christ Church in Colon, which has a membership of 175, and St. Paul's, Panama, is second, with 151 members. The mission Sunday school at Culebra has 70 members. The pupils are taught church history and doctrine, and classes in catechism are frequently held. A large number of Sunday school members have been confirmed during the year. The mission continues its Sunday school work in parochial schools, which are maintained at several stations. These schools have a total membership of 167.

The Wesleyan mission has eight Sunday schools, a total of 550 pupils and an average attendance of 400. The beginning of the Wesleyan organization on the Isthmus was in 1882, and some of the Sunday schools have been organized since that time.

The Baptist mission has Sunday schools connected with its work in several stations on the line of the Panama railroad.

The teachers in these schools are appointed by the official heads of the missions and are selected largely from the ranks of the teachers in the Zone public schools, instructors, catechists and laymen who are considered specially qualified for the work. They are all West Indians. There are few women teachers, and those only for the primary classes.

The larger missions have Sunday school rooms connected with the church buildings, which serve as parish house and social hall for entertainments given by the schools. Some of the Line missions hold their meetings in buildings constructed for them by the French. These are still maintained by the Commission. Several of the self-supporting missions have their own buildings; others meet in hired rooms. In some of the settlements where there was no suitable building, the Commission has assigned tents with a seating capacity of about 100. Sunday school services are held in these tents.

FOUND—On train No. 6, June 18, 1909, a pocket-book containing \$20 in gold and some papers. Owner can have same on proper identification. Apply at Superintendent's office, Panama railroad, Colon.

The combined output of the dredges of the Atlantic and Pacific Divisions for May, amounted to 1,535,846 cubic yards, of which 1,095,456 cubic yards were taken from the Canal prism, and 440,390 cubic yards applied to works outside. In the Atlantic Division, 367,381 cubic yards were classified as canal excavation, and 430,030 as outside excavation. In the Pacific Division, all but 10,360 cubic yards belonged to Canal excavation. The output in the harbor and channel section of the Atlantic Division shows a considerable falling off from previous months, due largely to the fact that the suction dredge *Ancon* was used on other work. In the Pacific Division dredge operations proper fell off 39,093 cubic yards, as compared with April.

In the Colon dredging division, four dredges removed 278,886 cubic yards of earth, and 36,484 cubic yards of rock. In addition, the dredge *Ancon* removed 2,910 cubic yards of earth at dock No. 1, Colon, in preparing it for the temporary use of the steamers, *Ancon* and *Cristobal*; 158,588 cubic yards of earth from the approach channel to Cristobal harbor, and 77,122 cubic yards from the harbor itself. These items of work were done with the view of preparing a permanent channel and berth for the *Ancon* and *Cristobal*, and other deep draught vessels which may be used in carrying cement.

The total output of the dredge *Ancon* during May was 374,420 cubic yards, which is the record for this dredge. On account of the system of place measurement, the *Ancon* usually removes a considerable amount of material for which it is not given credit. The work is surveyed at the beginning of the month, and again at the close, so that the dredge is only credited with the net gain, and gets no credit for outside operations. This amount has heretofore been assumed to be at least 100,000 cubic yards. Additional data which were secured in May, shows that this amount totaled over 200,000 cubic yards.

The dipper dredge *Mindi* removed 19,132 cubic yards of earth, and 6,714 cubic yards of rock from the French canal in deepening it for the sand and stone service between Cristobal and Gatun. It also removed 15,519 cubic yards of earth at dock No. 1, Colon, and 22,240 cubic yards of earth from in front of Dock 13, Cristobal. Ladder dredge No. 5, an old French dredge, which was brought down from the Chagres River several months ago and rebuilt, was put into commission on May 24. It has been altered to permit of its digging deeper, the French ladder dredges ordinarily not having gone to a greater depth than 26 feet. Dredge No. 6 has been lowered to the limit and has done some dredging to a depth of a little more than 35 feet. Dredge No. 5, has dredged to 40 feet. The detailed statement of operations in the Atlantic Division follows:

DREDGE.	Type.	Cu. yds.
Ancon.....	Suction.....	374,420
No. 1.....	Ladder.....	143,086
No. 5.....	Ladder.....	11,535
No. 6.....	Ladder.....	24,949
Mindi.....	Dipper.....	63,605
No. 82.....	Suction.....	55,645
No. 83.....	Suction.....	72,160
No. 85.....	Suction.....	52,011
Total.....		797,411

The dredges of the Pacific Division con-

tinued work during the month in the harbor and channel section. The orange peel dredge excavated 10,360 cubic yards in the Rio Grande diversion. The *Cardenas* was laid up for repairs from the 7th to the 16th, while the *Sandpiper*, working at Miraflores Locks, was out of commission from the 1st to the 19th. The excavation statement is as follows:

DREDGE.	Type.	Cu. yds.
Marmot.....	Ladder.....	66,910
Gopher.....	Ladder.....	133,620
Badger.....	Ladder.....	81,377
Mole.....	Ladder.....	87,992
Cardenas.....	Dipper.....	63,154
Orange Peel.....	O. P.....	10,360
Culebra.....	Suction.....	287,760
Sandpiper.....	Suction.....	7,322
Total.....		738,435

Police Report for May.

The May report of the Chief of the Division of Police and Prisons shows that 607 arrests, representing 44 nationalities, were made in the Canal Zone during the month. This is an increase of 150 over April. Of this number, 575 were men and 32 were women, the offenses with which they were charged aggregating 53. The arrests were made as follows: Ancon, 32; Las Sabanas, 4; Balboa, 16; Corozal, 4; Miraflores, 59; Pedro Miguel, 19; Paraiso, 13; Culebra, 35; Empire, 55; Las Cascadas, 20; Bas Obispo, 12; Gorgona, 63; San Pablo, 10; Tabernilla, 39; Bohio, 9; Gatun, 101; Cristobal, 110, and Porto Bello, 6. The effective police force on May 31, was 173, and the pay-roll for the month amounted to \$19,717.66.

There were 50 criminal cases tried in the Circuit courts, 11 of which were dismissed, 23 continued, 14 in which convictions were secured, and 2 cases in which deportation was ordered. Of the 14 persons convicted, 7 were sentenced to the penitentiary, one to the penitentiary with addition of a fine, one received a jail sentence, 4 were fined, and one case in which sentence was suspended. Zone convicts on April 30, numbered 118; received during May, 8; discharged 9; total on May 31, 117. The number of district prisoners on the same date was 149. Prison pay-rolls for the month amounted to \$1,501.64; cost of prisoners' subsistence, \$885; clothing and other property, \$46.40; a total expense of \$2,433.04. The value of work performed by prisoners on Zone roads was \$1,707.95. Forty-three civil cases were tried during the month. The sum of \$1,735.47 was collected from executions.

There were 13 deaths by violence, requiring action by the Coroner, one of these being due to a railroad accident, 2 to dynamite explosion, and 5 to drowning. Nine persons were deported during the month.

Concert by I. C. C. Band.

PARAISO, C. Z.,
Sunday, June 27, 1909, at 2.45 p. m.

PROGRAM.

- 1 March—*Stars and Stripes Forever*.....Sousa
- 2 Selection—*The Prima Donna*.....Herbert
- 3 { *a* Characteristic—*Keyry Mill's Barn Dance*.....Mills
- 3 { *b* *a* Southern Novelty—*Moonlight in Dixie*.....Clement
- 4 Suite de Ballet—*Antony and Cleopatra*.....Gruenwald
- 5 Tone Poem—*In Lovers' Lane*.....Pryor
- 6 Medley Selection—*Hits of 1909*.....Remick
- 7 Waltz.....*Idle Hours*.....Wood
- 8 { *a* Indian Descriptive—*Trailing the Trail*.....Spaulding
- 8 { *b* Popular March—*La La La*.....Scotto
- 9 Idyl.....*The Glow Worm*.....Lincke
- 10 March.....*Old Faithful*.....Holzman

CHAS. E. JENNINGS, *Music Director*.

OFFICIAL CIRCULARS.

Applications for Family Quarters.

CULEBRA, C. Z., June 17, 1909.

CIRCULAR No. 134A.

Effective on and after this date, applications for family quarters on the No. 2 list, from employes who are transferred to another point, either after tender of assignment or occupancy of quarters, will be placed above all applications on the No. 2 list and above those applications on the No. 1 list which have been filed subsequent to date of original tender of assignment to employes transferred.

Applicants on the No. 2 list, who are offered assignments, should consider, before accepting same and bringing their families to the Isthmus, that in the event of their transfer to some station where there is a list of No. 1 applicants, quarters at the new station can only be secured in accordance with the foregoing

GEO. W. GOETHALS, Chairman.

Regulations Governing Longevity.

CULEBRA, C. Z., June 14, 1909.

CIRCULAR No. 258.

The following action of the Commission at its 153d meeting, held June 10, 1909, is published for the information and guidance of all concerned:

"Attention was called to the following provision in the Act making appropriations for Sandy Civil expenses of the Government approved March 4, 1909:

"No part of the foregoing appropriations for the Isthmian Canal shall be applied to the payment of allowances for longevity service or layover days other than such as may have accumulated under existing orders of the Commission, prior to July 1, 1909.

"It was thereupon

"Resolved, That effective July 1, 1909, the regulations governing longevity increases in pay to employes, adopted by the Commission at its 131st meeting, be rescinded, and that, effective the same date, all existing authority for the allowance of layover time to employes be revoked.

"Resolved further, That employes shall continue to draw the benefits of all increased allowances in pay for longevity service earned prior to July 1, 1909, and all layover time accumulated up to and including June 30, 1909, may be taken any time after that date on the Isthmus or added to annual vacation leave in accordance with existing rules."

GEO. W. GOETHALS, Chairman and Chief Engineer.

Holiday on July 5th.

CULEBRA, C. Z., June 21, 1909.

CIRCULAR No. 260.

As July 4, 1909, Independence Day, falls on Sunday, the following day, Monday, July 5, 1909, will be observed as a holiday in the Canal Zone, and, as far as practicable, all public business will be suspended on that day.

GEO. W. GOETHALS, Chairman and Chief Engineer.

Auction Sale.

In order to recover freight and storage charges, the Panama railroad will dispose of the accumulation of "Over" and "Unclaimed" shipments now in its possession, by public auction, Wednesday, July 14, 1909, at 9 a. m., sale to be held on Dock 11, Cristobal, C. Z.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery and merchandise in general, all of which has been held six months and over in an effort to locate owner.

H. J. SLIFER, General Manager.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending June 29, 1909 (75th meridian time):

DATE.	High.	Low.	High.	Low.	High.
	A. M.	A. M.	P. M.	P. M.	P. M.
June 23.....	1.21	7.31	1.50	7.47	
June 24.....	2.10	8.18	2.40	8.34	
June 25.....	2.57	9.05	3.32	9.23	
June 26.....	3.45	9.55	4.25	10.21	
June 27.....	4.40	10.43	5.18	11.18	
June 28.....	5.32	11.37	6.19		
June 29.....	12.15	6.24	12.26	6.59	

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, June 19, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboua.	Bohio.	Gatun (Canal).	Gatun (W. D.).
Height of low water ab. m'an sea-level, ft.	125	92	46	1	0	0
Maximum height above mean sea-level, feet:						
Sunday, June 13.....	131.1	96.5	52.6	9.4	3.9	3.2
Monday, June 14.....	151.6	109.0	63.4	11.7	5.0	4.1
Tuesday, June 15.....	145.0	107.4	67.4	22.9	11.4	9.3
Wednesday, June 16.....	137.3	100.5	57.6	16.9	11.2	9.2
Thursday, June 17.....	133.8	99.9	58.6	16.1	9.5	7.6
Friday, June 18.....	131.2	97.2	57.0	11.8	8.1	6.7
Saturday, June 19.....	135.9	99.8	58.5	15.9	9.0	7.6

Rainfall, June 1 to 19, 1909, Inclusive.

(MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Atlantic Division—</i>			
Cristobal.....	2.59	16	14.19
Brazos Brook.....	3.76	19	15.54
Gatun.....	3.36	14	13.59
Bohio.....	2.25	19	9.57
<i>Central Division—</i>			
Tabernilla.....	2.66	19	6.92
Sau Pablo.....	2.21	19	7.14
Bas Obispo.....			4.64
Gamboa.....			5.20
Empire.....	.81	18	4.26
Camacho.....	1.20	18	6.50
Calebra.....	1.07	13	4.82
<i>Pacific Division—</i>			
Rio Grande.....	1.04	13	5.12
Pedro Miguel.....	2.01	13	7.82
Balboa.....	2.11	18	6.85
Ancon.....	1.28	18	5.21
<i>Atlantic Coast—</i>			
Porto Bello, (5 p. m. June 12)....	3.04	16	15.58
Nombre de Dios, (5 p. m. June 19)....	3.34	9	8.37
<i>Upper Chagres—</i>			
El Vigia.....	2.70	18	11.86
Alhajuela.....	3.75	18	13.55

Supplies for Canal Work.

The following steamers arrived at the ports of Cristobal and Colon during the week ending June 19, with supplies for the Isthmian Canal Commission:

Advance, June 14, from New York, with 100 car axles, Gorgona shops; 100 barrels cement, Gatun Spillway; 1 clamshell bucket, Gatun Locks; 11 motor cars for electric road, Gatun handling plant; 100 tower couplers for car repairs, Gorgona; 3,000 side opening levers for car repairs, Gorgona; 1,500 tower repair locks for car repairs, Gorgona; 10 anchor winches for sand barges, Balboa; 312,500 square feet wire cloth for stock; 32,588 electric fuses for stock; 100,000 feet triple tape fuse for stock; 20,000 quintuple caps for stock; and a miscellaneous cargo aggregating 2,900 packages, weighing over 1,216 tons.

Prinz Joachim, June 14, from New York, with 5,000 gallons cylinder oil for stock.

Abangarez, June 17, from New Orleans, 3,450 cable clips for stock; 401,351 feet Y. P. lumber for buildings,

Allianca, June 18, from New York, 10 flat cars, 3-ft gauge for Pedro Miguel Locks; 1,000 barrels cement for Gatun Spillway; 1,550 gallons alcohol for hospitals; 110 tons pig lead for new water service to Balboa; 228 packages turbine piping and fittings for Gatun and Miraflores boiler plants and generating stations; 718 iron castings for repairs to clapsets, Atlantic Division; 50 tons white lead for stock; 16,000 electric fuses for stock; 30,000 pounds wool waste for stock; and a miscellaneous cargo aggregating 5,361 packages, weighing over 1,200 tons.

The following steamers have recently arrived at Balboa: June 14, *U. S. S. Albany*, from Central America; June 15, *Ecuador*, from Guayaquil, and *Guatemala*, from southern ports; June 17, *Newport*, from San Francisco; June 18, *Manavi*, from intermediate ports. Departures were: June 11, *Arica*, for Guayaquil; June 15, *Chile*, for southern ports; June 17, *Peru*, for San Francisco; June 18, *Barraconda*, for Central America; June 16, *U. S. S. Albany*, for Central America and *Chiriqui*, for intermediate ports.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Colon.....	P. R. R. Friday.....	June 18
Prinz Aug. Wilhelm.....	H. A. Saturday.....	June 19
Panama.....	P. R. R. Thursday.....	June 24
Magdalena.....	R. M. Saturday.....	June 26
Advance.....	P. R. R. Wednesday.....	June 30
Prinz Joachim.....	H. A. Saturday.....	July 3
Allianca.....	P. R. R. Tuesday.....	July 6
Orinoco.....	R. M. Saturday.....	July 10
Colon.....	P. R. R. Monday.....	July 12
Panama.....	P. R. R. Monday.....	July 19
Oruba.....	R. M. Saturday.....	July 24

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Advance.....	P. R. R. Saturday.....	June 19
Prinz Joachim.....	H. A. Tuesday.....	June 22
Allianca.....	P. R. R. Thursday.....	June 24
Orinoco.....	R. M. Wednesday.....	June 30
Colon.....	P. R. R. Wednesday.....	June 30
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	July 6
Panama.....	P. R. R. Tuesday.....	July 6
Advance.....	P. R. R. Monday.....	July 12
Oruba.....	R. M. Wednesday.....	July 14
Allianca.....	P. R. R. Saturday.....	July 17
Prinz Joachim.....	H. A. Tuesday.....	July 20
Colon.....	P. R. R. Friday.....	July 23
Tagus.....	R. M. Wednesday.....	July 28
Panama.....	P. R. R. Friday.....	July 30

NEW ORLEANS TO COLON.

Cartago.....	U. F. C. Saturday.....	June 26
Abangarez.....	U. F. C. Saturday.....	July 3
Parismina.....	U. F. C. Saturday.....	July 10
Cartago.....	U. F. C. Saturday.....	July 17
Abangarez.....	U. F. C. Saturday.....	July 24

COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Tuesday.....	June 29
Cartago.....	U. F. C. Tuesday.....	July 6
Abangarez.....	U. F. C. Tuesday.....	July 13
Parismina.....	U. F. C. Tuesday.....	July 20
Cartago.....	U. F. C. Tuesday.....	July 27
Abangarez.....	U. F. C. Tuesday.....	Aug. 3

COLON TO BARBADOS, CALLING AT TRINIDAD.

Orinoco..... R. M. Tuesday..... July 6

Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The steamer *David* of the National Navigation Company, will leave Panama, for David, province of Chiriqui, and intermediate points, on Thursday, July 1, and every alternate Thursday thereafter.

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, and from Colon at 3 p. m., via Port Limon for New Orleans.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES, ANCON, C. Z., June 23, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Arza, Manuel	McKeown, Henry J.
Baumer, H. H.	Moore, Chas. A.
Bodle, Mrs. Helen (2)	Nichols, Mrs. Jewel
Buterbaugh, F.	Perry, J. E.
Chamberlain, Dan T.	Roberts, Dr. G. J.
Cruikshank, Dr. H. S.	Rose, Joseph
Debbis, William	Stone, H. L.
Latham, F. H.	Turner, L. C. (2)
Ligon, Louis Skelton	White, David H.
Lumby, G. W.	Wilking, George S.
Mack, Walter E.	Willsher, Albert E.

Launch Service to Taboga.

The steamer *Sonhad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m. in time to make connections for the 5.30 train at Panama.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Another Dredge for Gatun.

A requisition was recently sent to the States for a 20-inch suction dredge for use at Gatun capable of dredging to a depth of 42 feet and delivering into a floating discharge pipe line. The estimated cost is \$125,000. The dimensions are as follows: Length of deck, 130 feet; breadth, 37 feet; depth, 11 feet; draft, 7½ feet. The hull will be built of steel throughout, framed transversely, and stiffened by two longitudinal and four transverse bulkheads.

The vessel will have an upper deck on the forward part of which will be the operating room. In addition to the machinery necessary for operating the vessel as a dredge, there will be a complete electric light plant for work at night. The dredge will be held in place while at work by two spuds 60 feet long and 28 inches in diameter. The main pumps will be of the side suction type and the dredge will be fitted for burning oil.

There will be two water tube boilers located in the hold where will also be placed the main pump and engine, fire, feed, and auxiliary pumps, condenser, and electric light plant. Trolleys and lifting gear will be provided capable of moving parts of the main engines, dredging pump, winding engine, and condenser heads, to a point where they can be easily placed on a barge alongside. The winding machinery will be placed on deck, the cutter engine on the ladder, and tools for minor repairs will be carried on the main deck.

Sale of Scrap Iron and Steel.

Old iron and steel left on the Isthmus by the French will be sold on competitive bid by the Isthmian Canal Commission. It is estimated that between 80,000 and 100,000 tons of this material, valuable chiefly as scrap, are lying along the line of the Canal, and about half of it in the territory that will be covered by the water of Gatun Lake. The advertisement for bids will be made far enough in advance of the date

of sale to permit a thorough inspection of the material by representatives of the bidders. The sale will be made in the near future for the threefold purpose of saving the material that lies in the lake region, furnishing ballast for the return trips of the cement ships *Cristobal* and *Ancon*, and utilizing tracks now available, that will be taken up as the construction work is finished at various points.

Passengers for Steamship *Cristobal*.

All Heads of Departments and Divisions have been notified that the steamship *Cristobal*, formerly the *Tremont*, one of the ships recently acquired for the Panama Railroad Steamship Company, sailed from New York on June 25, via Barbados, and is due to arrive at Cristobal about July 6. The date for the return trip to New York is not definitely fixed, but it is expected she will be able to sail July 14. The sailing time between Cristobal and New York has been estimated at seven days.

In order to relieve the serious congestion which prevails at the present time on the Panama railroad steamships, it is of the utmost importance that a sufficient number of leaves of absence be arranged to fill this boat on her return trip to New York. Eighty-two first cabin accommodations will be available for I. C. C. and P. R. R. employes, and their families.

All Heads of Departments and Divisions are directed to advise the office of the Chairman, at the earliest possible date, the approximate number of employes for whom they will be able to arrange leaves of absence commencing on or about July 14, and the members of their families who will accompany them to the States. Regular requests for leave of absence will be submitted for this sailing, and reservations secured in the usual way. Upon the arrival of the *Cristobal* notification will be given whether it will be necessary to change the date of sailing.

Drill Barge and Sounding Scow.

All the parts for the new drill barge to be used in connection with sub-aqueous rock excavation in the Pacific Division have arrived on the Isthmus and are being assembled in the marine shops at Balboa. The barge was furnished by the Maryland Steel Barge Company, and was shipped knocked down. The hull is 112 feet long, 36 feet wide and 8 feet deep. A complete description of the machinery, equipment, and method of operation will be found in THE CANAL RECORD of September 16, 1908. The barge will be ready for service within the next three or four months, and will be equipped with electric lights for night work.

A sounding scow, 45 feet long, for measuring and sweeping the rock area in the channel is under construction at the Balboa marine shops. It will be fitted with an iron bar suspended by two chains, to be lowered

over the sides of the scow for determining whether all rock has been removed to grade.

Cars for Pedro Miguel Handling Plant.

Delivery has been completed of the twenty cars to be used in hauling concrete from the mixers in the forebay of the Pedro Miguel Locks into the lock chambers. These cars are 12-ton flats, with double four-wheel trucks of 3-foot gauge, and are 18 feet long and 7 feet 2 inches wide. They are constructed all of metal excepting the floor, which is of creosoted white oak, three inches thick. The platform is 2 feet 4 inches above the rails. They are fitted with air and hand brakes, automatic couplers, and stake pockets.

Floods in the Chagres River.

THE CANAL RECORD:

In your issue of June 23, you state that the flood of December 3 and 4, 1906, in the Chagres River is the highest one of record. Please inform me whether there has been a greater flood than this, a fairly authentic record of which is to be found. Will you give me the height of the flood of June 14-15, 1909, above low water at Gamboa, in order that I may compare it with the floods mentioned in the third paragraph of the article referred to above?

"BAS OBISPO."

The height of low water above sea-level at the gauging stations along the Chagres is published under the heading "Stages of the Chagres," in each issue of THE CANAL RECORD. At Gamboa it is about 46 feet above sea-level. The comparison which you wish to make follows:

Date.	Height above low water.
1909, June 14-15.....	21.2 feet
1906, December 3-4.....	35.6 feet
1906, November 16-19.....	22.3 feet
1890, December 1-2.....	31.8 feet

The highest flood, of which there is any information, was that of November 18, 1879, and the records of the Isthmian Canal Commission do not go back beyond 1884. The General Superintendent of the Panama Railroad in his report for the year 1879 refers to this flood as follows:

The Chagres River rose 46 feet in three days and the freshet was without precedent on this Isthmus.* * The greatest damage done was the undermining of two of the stone piers of our long bridge over the Chagres River at Barbaacoas, necessitating the driving of a large number of piles and the erection of trestle supports 40 feet high to carry the iron spans.

In the report for 1880 this flood is again referred to:

The work for the first quarter of the year 1880, was performed under very many disadvantages, caused by the disastrous floods of November 1879, which rendered the road impassable for six weeks.

The records of a Colombian engineer, Pedro J. Sosa, give the height of the flood at Bohio as 42 feet above sea-level, which would be 41 feet above low water at that point, and at Gamboa as 49 feet above low water. Col. George M. Totten, at one time

chief engineer of the Panama Railroad, records that he marked a stage of the flood on Barboas bridge at 63.5 feet above sea-level. M. Dingler, director of works under the old French company, gives the height of this flood at Matachin, two miles below Gamboa, as \$3.5 feet above sea-level. Gen. H. L. Abbott (Problems of the Panama Canal, page 144), says that the flood of 1879 reached 36.42 feet above low water at Gamboa, with a probable error of five inches.

None of the information procurable about the flood of 1879 assumes to be authentic, but all accounts agree that it was an unusually large freshet. Before the flood of December 3-4, 1906, the river had been given a better means of flowing off rapidly by the broad and straight channel of the French canal from Bohio to Limon Bay, so that the same conditions for a congestion of the water above Bohio did not exist in 1906 as in 1879.

New Police Map.

A special map of the Canal Zone has been prepared for the use of the Division of Police and Prisons showing the territory by police districts. With the exception of Ancon, Las Sabanas and Balboa, these districts all extend east and west to the Zone boundary. The districts and their boundaries are as follows:

Ancon—North to mile post one mile south of Corozal station, east to Panama railroad, south to city limits of Panama, west to an imaginary line running nearly north and south and intersecting the junction of railroads to Balboa docks. Balboa—North to Corozal line, east to Ancon line, south to the sea, and west to Zone line. Las Sabanas—North to Corozal line, east to Zone line, south to the sea, west to the Panama railroad. Corozal—From the mile post one mile south of Corozal station to Bridge 62 north. Miraflores—From Bridge 62 to Bridge 59 north. Pedro Miguel—From Bridge 59 to a line 70 feet north of stake 1,620, on the south boundary of the administrative district of Empire. Paraiso—From the last named point to a line just south of the new blacksmith shop and sheds on west side of the Canal. Culebra—From the last named point to a point just south of Camp Lirio. Empire—From Camp Lirio to the mile post one mile south of Las Cascadas. Las Cascadas—From mile post to Bridge 52 on the south line of the administrative district of Gorgona. Bas Obispo—From Bridge 52 to Matachin. Gorgona—From Matachin to Bridge 47. San Pablo—From Bridge 47 to mile post one mile north of San Pablo. Tabernilla—From mile post to Bridge 39 on the south line of the administrative district of Cristobal. Bohio—From Bridge 39 to Bridge 27. Gitun—From Bridge 27 to Bridge 7. Cristobal—From Bridge 7 to the sea, outside the city limits of Colon.

Bohio is the largest, and Ancon the smallest, of the police districts.

Visit of New York Chamber of Commerce.

On invitation of the Chairman of the Commission, the Panama Canal Committee of the Chamber of Commerce of New York State will visit the Canal Zone in July. The members are Mr. John R. Dunlap, Mr. William L. Saunders, Mr. Cornelius A. Pugsley and Mr. Julio F. Sarzano. They will leave New York on the Colon on July 12, and will return by the same ship scheduled to leave Cristobal on July 23. Messrs. Dunlap and Saunders will be accompanied, each by a daughter, and Mr. Pugsley by a son.

FUNDS FOR CANAL WORK.

Appropriation for 1910, and Total of Appropriations for Past Years.

Provision for carrying on the Canal work during the fiscal year beginning July 1, was made by Congress in the Sundry Civil Act of March 4, 1909. The appropriation amounts to \$33,638,000 divided into the following items:

Salaries of officers and employes in the United States.....	\$150,000
Incidental expenses in the United States..	75,000
Salaries of Commission, officers, employes on the Isthmus other than skilled and unskilled labor in the departments of Construction and Engineering, Quartermaster, Subsistence, Disbursements, and Examination of Accounts, and expenses incident to conducting hearings and examining estimates for appropriations on the Isthmus.....	3,571,000
Skilled and unskilled labor on the Isthmus in the departments of Construction and Engineering, Quartermaster, Subsistence, Disbursements, and Examination of Accounts.....	12,000,000
Material, supplies, and equipment, and other expenses not in the United States for the departments of Construction and Engineering, Quartermaster Subsistence, Disbursements, and Examination of Accounts.....	10,517,000
Equipment and construction of Panama railroad.....	700,000
Miscellaneous expenditures, recruiting laborers, transporting laborers and other employes, and expenses not otherwise provided for in the Departments of Construction and Engineering, Quartermaster, Subsistence, Disbursements, and Examination of Accounts.....	1,000,000
Salaries of officers and employes other than skilled and unskilled laborers, Department of Civil Administration.....	470,000
Skilled and unskilled labor, Department of Civil Administration.....	20,000
Material, supplies, etc., and contingent expenses, Department of Civil Administration.....	140,000
Salaries of officers and employes other than skilled and unskilled laborers, Department of Sanitation.....	725,000
Skilled and unskilled labor, Department of Sanitation.....	450,000
Material, supplies, etc., and contingent expenses, Department of Sanitation.....	740,000
Relocation of Panama railroad.....	1,980,000
All expenses for continuing the extension, grading, and paving of streets, building sewers, and extending water mains in the cities of Panama and Colon.....	800,000
Total.....	\$33,638,000

The entire appropriation is available until expended; ten per cent of each item may be used interchangeably, but not more than ten per cent added to any one item, and any surplus may be used for the Department of Construction and Engineering.

The appropriation law further provides:

No part of the foregoing appropriations for the Isthmian Canal shall be applied to the payment of allowances for longevity service or layover days other than such as may have accumulated under existing orders of the Commission, prior to July 1, 1909.

The foregoing appropriations shall be available to reimburse the Panama Railroad Company for marine losses, or for losses due to destruction of or damage to its plant, equipment, or commissary supplies by fire: *Provided, however,* That the Panama Railroad Company shall carry no insurance against loss from causes covered by this appropriation.

All funds hereafter collected by the government of the Canal Zone from rentals of public lands and buildings in the Canal Zone and the cities of Panama and Colon, and from the Zone postal service, and from court fees and fines, and collected or raised by taxation in whatever form under the laws of the government of the Canal Zone, are hereby appropriated until and including June 30, 1910, as follows: The revenues derived from the postal service to the maintenance of that service; the remaining revenues, after setting aside a miscellaneous and contingent fund of \$10,000, to the maintenance of the public school system in the Zone; to the construction and maintenance of public improvements within the Zone; to

the maintenance of the administrative districts; to the maintenance of Canal Zone charity patients in the hospitals of the Isthmian Canal Commission, and to the maintenance of administrative district prisoners. A detailed and classified statement of all receipts and expenditures without the duplication of items under this paragraph shall be submitted to Congress after the close of the fiscal year 1910.

All funds realized during the fiscal year 1910, by the Isthmian Canal Commission from the performance of services by the Commission, or from rentals, or from the sale of materials and supplies under the custody and control of the Commission, are hereby reappropriated for expenditure under any of the foregoing classified appropriations for the department of construction and engineering, and a full and separate report in detail of all transactions hereunder shall be made to Congress.

A statement follows showing the appropriations by Congress for the Isthmian Canal, separated by the different Acts, and showing the total amount appropriated up to the fiscal year ending June 30, 1909:

ACT OF CONGRESS APPROVED.	Appropriation.	Deficiency.
June 28, 1902.....	\$40,000,000.00	.....
May 28, 1904.....	10,000,000.00	.....
June 28, 1902.....	10,000,000.00	.....
December 21, 1905.....	11,000,000.00	.....
February 27, 1906.....	.....	\$5,990,786
June 30, 1906.....	25,456,415.08	.....
March 4, 1907.....	27,161,367.50	.....
February 15, 1908.....	.....	12,178,900
May 27, 1908.....	29,187,000.00	.....
March 4, 1909.....	.....	5,458,000
March 4, 1909.....	33,638,000.00	.....
Total.....	\$186,442,782.58	\$23,627,686
Grand total.....	\$210,070,468.58	

*For purchase of Canal rights.

†For purchase of Canal Zone.

Commission Clubhouses.

A musical and reading will be given at the Empire Y. M. C. A., on Thursday evening July 1, by Mr. Bourke Sullivan, of Philadelphia, and Miss Mary Rebecca Slifer, assisted by Mrs. May Goolsby Shivers at the piano. The entertainment will be open to members of the association and their friends.

The local duck-pin tournament at the Gorgona Y. M. C. A., which was in progress for several weeks has been finished. Twenty-nine men participated, each rolling 81 games. The results were as follows:

Gold medal for highest pinfall, F. G. Swanson. Gold medal for highest number of games, Harvey McConaughey. Silver medal for second highest pinfall, Harvey McConaughey. Silver medal for second highest number of games, F. G. Swanson. Bronze medal for third highest pinfall, W. J. Humphrey. Bronze medal for highest three game average, Ray King.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

ANCON, C. Z., June 30, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Allen, Thos. S. S.	John-on, John W.
Arrott, W. F. (2)	Knight, Francis
Bennett, E.	Knobel, Ed.
Berry, Mrs. E. Fay	Krause, Arthur G.
Blunt, Wm. T.	Kummers, A. P.
Boyce, Miss Gayle	Liggy, A.
Bryant, E. J.	Lipsy, Thomas E. L.
Buckley, James	Lynch & Co., F. A.
Burnett, Mrs. Rose	Macfarlane, Mrs. T. W. (2)
Burt, Geo. A.	Malone, R. A.
Butler, Mrs. Effie	Mariolin, Sofoulon
Campbell, W. H.	Martin, L. D.
Carboneil, Louis	McBarron, Miss Anna
Comer, Jos. F. (2d class)	McDonald, Mrs. E.
Comfort, Wm. F. (2d class)	Milan, Harry
Cook, Robt. W. (2d class)	Moore, Bismark
Crawford, Wm.	Mussina, Lyrus
Curtis, A. S.	Nixon, W.
Denning, Ulip	Orza, Manuel (2)
Driver, Mr. and Mrs. J. B.	Owens, Elmer
Dulaicy, Tobo	Phelan, Joseph
Dunn, W. H.	Poltrino, Louis A.
Ernst, P. A. (3)	Provel, Tuman
Foster, Mrs. Frank	Quinza, L.
Frederickson, Ernest	Reichard, James H.
Gaughan, John J.	Renew, J. L.
Glover, H. S.	Reynolds, Mrs. Rene
Guild, Enos	Rowe, Mrs. Hartley
Harris, Robert J., Jr.	Schwarzbach, C. G. P.
Hemnick, T. Boyce	Sheridan, M. B.
Higgins, Mrs. H.	Smith, James E.
Hohag, Walton H.	Tunker, Ray A.
Hunter, Mrs. A.	Ulmer, Frank W.
Hunter, A.	Walsh, John
Hutchinson, O. G.	White, Mark
	Wynter Mrs. R.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Gorgona Woman's Club has taken up the study of the history of Panama which will be continued at each meeting, with the exception of those for which special programs have been arranged. Mrs. C. H. Toberer was elected president of the club in place of Mrs. Frank Morrison, resigned, and Mrs. L. Gundy, secretary, vice Mrs. Phillips resigned. The club has extended an invitation to Mrs. H. J. Slifer, fourth vice-president of the Canal Zone Federation to make an address at one of its meetings in July.

Officers of the Gorgona District, Canal Zone Red Cross, elected in May are: Mrs. Frank M. Morrison, chairman; A. L. Hackenberg, vice-chairman; T. S. Booz, secretary; H. W. Otis, treasurer. Regular meetings of the District are held at the Commission clubhouse on the first Monday evening in each month. A dance will be given July 3, the object of which is to raise funds for a street carnival to be held Friday evening, July 19, for the benefit of the general Red Cross treasury.

The Gorgona Dramatic Club has begun rehearsals of a comedy, "Captain Racket," which will be produced in August.

The Grand International Auxiliary to the Brotherhood of Locomotive Engineers, Panama Division No. 405, was organized at Las Cascadas, March 19, with forty members. Mrs. George Brown, of Pedro Miguel, is president, and Mrs. Margaret Williamson of Las Cascadas, secretary. Meetings are held in the lodge hall Las Cascadas, on the second and fourth Fridays in each month.

The Empire and Gorgona divisions of the Woman's Christian Temperance Union held a meeting at the Commission chapel, Empire, June 16, for the purpose of discussing work and stimulating united effort. A program was given, consisting of music and readings. The reports of the local secretaries were read, in which a comprehensive outline of the work was brought before the meeting. The Gorgona Union is planning for a medal contest and sewing class in connection with the junior work. Mrs. H. E. Ball of Empire, and Miss Mattie Berry of Gorgona, were appointed organizers for the Union in the Canal Zone. Mrs. Abbie B. Hillerman was elected representative of the Zone Union at the National Convention of the W. C. T. U., to be held in Omaha, Nebraska, in October.

A directors' meeting of the Canal Zone Humane Society has been called for Sunday afternoon, July 11. The meeting will be held at the residence of Archdeacon Bryan, acting general secretary, at Ancon.

Owing to the celebration of the national holiday on July 5, the regular meeting of the Woman's Guild, Ancon, will be omitted. The next meeting will be held at the home of Mrs. G. W. Greene, Ancon hospital grounds, July 19.

Special services are held in the Ancon Protestant chapel for the Brotherhood of St. Andrew, on one Sunday evening in each month. Addresses are given by laymen. The members of the chapter are in charge of the arrangements, under the direction of the chaplain.

The quarterly meeting of the Methodist Episcopal Church will be held in the church at Panama on Sunday, July 4, at 10 a. m.

All persons interested are invited to attend, and a special invitation is extended to all Methodists living along the Line.

A basket picnic for the members of the Sunday school will be held on the beach near Panama on July 5. All members of the church from out of town, as well as members of the congregation, are invited.

Personal.

Major J. P. Jervey and family of Gatun, and Judge Thos. E. Brown, Jr., and Mrs. Brown, of Cristobal, are passengers on the *Panama*, which sailed from New York on June 24, due at Cristobal, June 30.

Col. Tom M. Cooke, Chief of the Division of Posts, Customs and Revenues, and Miss Grace Frampton were married on Saturday, June 12, at Mercer Pa.

R. W. Hebard, Assistant Engineer at Gorgona, and Senorita Anna Alvarado, daughter of Don Francisco Alvarado of the city of Panama, were married at the Bishop's palace, Panama on Monday evening, June 28.

Obituary.

M. V. Debardeleben of Tuskegee, Ala., died at Ancon Hospital on June 22. He had been on the Isthmus four years, was 31 years old and unmarried. His mother, Mrs. F. J. Debardeleben lives at Tuskegee, Ala.

Examination for Stenographer.

An examination for the position of stenographer in the Federal Service in the United States will be held at Culebra on Sunday, August 1, 1909. It is possible that the number of applicants for this examination will exceed the number of papers forwarded to the Isthmus. In that event, preference will be given to those applicants whose completed applications were first received.

The Manual of Examinations, containing all necessary information, and the Application Form, may be obtained from John K. Baxter, Secretary of the Isthmian Civil Service Board, office of the Chairman, Culebra, Canal Zone.

RESOLUTIONS OF SYMPATHY.

James W. Barbour.

WHEREAS, It has pleased the Almighty God to take from our midst our friend and co-worker, James W. Barbour; be it

Resolved, That we, the representatives of the various departments of the Mechanical Division of the Panama railroad, extend our heartfelt sympathy to his relatives and friends, especially to his aged father and mother; and be it

Resolved, That he was a true friend and earnest worker, and is sincerely mourned by all with whom he came in contact; and be it further

Resolved, That a copy of these resolutions be sent to his bereaved parents, and a copy be published in THE CANAL RECORD, and *Meriden Daily Journal*.

ROBERT H. LUCE,
Chairman of Committee.

F. C. Howland.

WHEREAS, God has once more reminded us that "In the midst of life we are in death," by the removal of F. C. Howland, who was but in the morning of life, and

WHEREAS, in this the wife and child have lost a loving husband and father; therefore be it

Resolved, that we, the members of the Pedro Miguel Woman's Club, express to Mrs. Howland our keen sorrow and extend our heartfelt sympathy in her sad bereavement; and be it further

Resolved, that a copy of these resolutions be sent to the wife and a copy be published in THE CANAL RECORD.

MRS. G. E. BROWN, MRS. H. W. SHICK,
Committee.

EXECUTIVE ORDER.

Railway Safety Appliances Law.

Under authority vested in me by law, it is ordered:

Paragraph 6 of Executive Order No. 1002, dated January 6, 1909, is hereby amended as follows:

6. This order shall take effect not later than six months from the date of the promulgation thereof, except for the use of old French dump cars in use on the Panama Canal, including also the couplers of locomotives necessary to operate them, until July 1, 1910, after which date it shall likewise apply to this equipment.

WM. H. TAFT.

THE WHITE HOUSE.

June 11, 1909.

[No. 1085.]

Mutilated Gold Coins.

THE CANAL RECORD:

I have to return letter from F. G. Swanson, dated Gorgona, June 23, 1909, reading as follows:

Practically all money received by I. C. C. employes comes from the Pay Car and Disbursing Office. Will you please advise through the columns of THE CANAL RECORD, why shaved gold coins are given employes on pay day, and at the same time the Canal Zone Treasurer, the Disbursing Officer on Pay Car, and the Post-offices refuse to accept same?

I am, of course, able only to make answer for the Disbursing Office. At no time have I, as Disbursing Officer, personally or through the members of the pay force, paid out anything but good gold coins which would pass with any man having a knowledge of what constitutes a good gold coin at its par value. Further, no gold coins paid out by me have ever been refused upon presentation, and I am at all times ready to receive such coins in payment of any bills due to the Commission, or in exchange for funds in the usual course of business with the banks, so that there is no reason known to me why any money paid out by the Disbursing Office should not readily be received in the usual business on the Isthmus.

The only incident occurring on the pay car, of which I am aware, that might lead to Mr. Swanson making the statement that the Disbursing Officer on the pay car has refused to accept money paid out by him, would be that at Gorgona, where on last pay day I paid out some gold which had never been in circulation on the Isthmus since its receipt by me from the United States sub-treasury in New York and which I was later informed had been refused by the postmaster at Gorgona, and I stated that as I had no better money, nor knew of any better in existence, I failed to see what I could do in regard to it.

EDWARD J. WILLIAMS,
Disbursing Officer.

Empire, C. Z., June 25, 1909.

Independent Order of Odd Fellows.

The following installation of officers in the I. O. O. F. lodges on the Canal Zone will be made by B. F. Sisson, District Deputy Grand Sire, and suite:

Isthmian Canal Rebekah lodge, No. 1, Gorgona, Saturday evening, July 3; Isthmian Canal lodge, No. 1, Gorgona, Tuesday evening, July 6; Canal Zone lodge, No. 3, Culebra, Monday evening, July 12; Cristobal lodge, No. 2, Cristobal, Monday evening, July 19. All members of the Order in good standing are cordially invited to attend.

FOURTH OF JULY.

Programs for the Celebrations at Ancon and Cristobal on July 5.

The programs for the Fourth of July celebrations at Ancon and Cristobal are as follows:

AMATEUR ATHLETIC EVENTS—ANCON PARK.

- 100-yard dash..... a. m. 9.00
- 880-yard run..... 9.45
- Running high jump..... 9.45
- 50-yard dash, boys under 16 years..... 10.00
- 220-yard dash..... 10.15
- 1/4-mile run, boys under 16 years..... 10.30
- 440-yard run..... 10.45
- 1/2-mile relay, boys under 16, 220 yards each (only organized teams to compete)..... 11.00
- Relay race, 1 mile, four men, 1/4 mile each (only organized teams to compete)..... 11.15
- Tennis tournament, Panama tennis courts, commencing at..... 9.30

Gold, silver, and bronze medals of special design will be given for first, second and third prizes in each amateur event.

Concerts by I. C. C. Band, at Hotel Tivoli, at 1.00 and 5.30 p. m.

Pompier life saving exhibition, Ancon Fire Department, Hotel Tivoli—2.00 p. m.

CASH PRIZE EVENTS—ANCON PARK.

- Obstacle race—2.45 p. m. First prize \$10, second prize \$5.
- Wall scaling contest (Marines)—2.45 p. m. First prize \$25, second prize \$10.
- Sack race (50 yards)—3 p. m. First prize \$10, second prize \$5.
- Exhibition tug of war (Marines and Police Department)—3 p. m. Prize \$25.
- Pony race (1/2-mile, native ponies, for boys under 16 years)—3.15 p. m. First prize \$10, second prize \$5.
- Three legged race (100 yards)—3.30 p. m. First prize \$20, second prize \$10.
- Bucking contest (horses furnished contestants)—3.30 p. m. First prize \$25, second prize \$15.
- Mule race (1/2-mile)—4 p. m. First prize \$10, second prize \$5.
- Equipment race (Marines, 100 yards)—4.15 p. m. First prize \$10, second prize \$5.
- Mounted race (100 yards, two men teams)—4.30 p. m. First prize \$20, second prize \$10.

In addition to the concerts, music will be furnished by the I. C. C. Band during the day at the Ancon Athletic Park.

Fireworks—In front of Hotel Tivoli at 8. p. m.

Dance—Hotel Tivoli at 9 p. m. Music furnished

by the Tivoli orchestra. Refreshments will be served at the dance.

There will be no admission fees or other charges. The cost of the celebration, except that of the special trains, will be paid by subscription of Americans of the Isthmus and merchants of Panama. Special trains (of which a detailed schedule has been posted in railroad stations) will be run without charge, through the courtesy of the Panama Railroad Company.

The celebration will be held on Monday, the fifth, which will be observed as a holiday in the Canal Zone, and all Americans of the Isthmus and their friends are invited to be present.

Cristobal.

AQUATIC EVENTS.

- Sail boat race—8.30 a. m. Prizes \$15 and \$5.
- U. S. Navy cutter race (*Ruth* and *Mary S.*)—8.40 a. m. Prize, pennant.
- Life boat race—8.50 a. m. Prizes \$20, \$10 and \$5.
- Class 2 tugboat race (*Balboa* and *Grace*)—9.15 a. m. Prize, pennant.
- Dory race—9.30 a. m. Prizes \$15, \$10 and \$5.
- Class 1 gasoline boat race—9.40 a. m. Prize, pennant.
- Clapet race (Clapets Nos. 3, 4, 12 and 14)—10 a. m. Prize \$40.
- Class 2 gasoline boat race—2 p. m. Prizes, \$15 and \$5.
- Fat raft race (ex-varsity men; distance, not too far. Time, less than 24 hours.)—2.10 p. m. Prizes, \$10 and \$5.
- Swimming race—2.30 p. m. Prizes, \$20, \$10 and \$5.
- Rowboat race—2.40 p. m. Prizes, \$15 and \$10.
- Greased spar climbing—2.50 p. m. Prize, \$10.
- Tugboat tug-of-war (*Sully* vs. *Cristobal*)—3.15 p. m. Prize, \$40.

ATHLETIC EVENTS.

- 120-yard hurdle—10.30 a. m. Trials.
- Fat men's race—10.35 a. m. Prize, merchandise.
- 1/2-mile run—10.35 a. m. Prize, gold, silver and bronze medals.
- Boys' 50-yard dash (80-pound class)—10.50 a. m. Prizes, gold, silver and bronze medals.
- 120-yard hurdle—10.55 a. m. Finals. Prizes, gold, silver and bronze medals.
- Boys' 50-yard dash (90-pound class)—11 a. m. Prizes, gold, silver and bronze medals.
- 100-yard dash—11.05 a. m. Trials.
- Sack race—11.10 a. m. Prize, merchandise.
- 100-yard dash—11.15 a. m. Finals. Prizes, gold, silver and bronze medals.
- Three legged race—11.20 a. m. Prize, merchandise.
- 400-yard run—11.20 a. m. Prizes, gold, silver and bronze medals.
- Potato race—11.30 a. m. Prize, merchandise.
- Boys' relay race—11.30 a. m. Prizes, gold, silver and bronze medals.

Relay race—11.35 a. m. Prizes, gold, silver and bronze medals.

Shot put (12-pound)—11.35 a. m. Prizes, gold, silver and bronze medals.

Wall scaling (competing Marine Corps teams)—Prizes, \$15 and \$10.

Running high jump—11.50 a. m. Prizes, gold, silver and bronze medal.

Running broad jump—11.50 a. m. Prizes, gold, silver and bronze medals.

Hop, step and jump—11.50 a. m. Prizes, gold, silver and bronze medals.

Volunteer Fire Companies' horse races—1 p. m. Prizes, \$75, \$50 and \$25, and \$25 to non-winning competitors.

BASE BALL.

Picked team Isthmian League vs. picked team Atlantic League (nine-inning game)—3.30 p. m.

Fire Department exhibition, to consist of exhibition run to tower on Cristobal point; pompier ladder work, and life saving exhibition (non-competitive)—6.20 p. m.

Fireworks display from Cristobal Point—7.30 p. m.

Illuminated boat parade—8 p. m. Prize, \$15 for best decorated boat.

Grand ball on Pier 11 (music by Panama railroad orchestra)—9.30 p. m.

NOTE—If at any time during the day rain interferes with the events scheduled, music will be furnished by the band on Pier 11.

Acting Treasurer of Canal Zone Red Cross.

CULEBRA, June 28, 1909.

Sir—With the advice and consent of the Executive Committee of the Canal Zone Branch, American National Red Cross, I hereby appoint you as Acting Treasurer to relieve Mr. H. D. Reed, who has placed his resignation in my hands, due to the fact that he is about to leave the Canal Zone for the United States.

Respectfully,

C. A. DEVOL,
President, Canal Zone Branch,
American National Red Cross.

LIEUT.-COL. JNO. L. PHILLIPS,
Member Executive Committee,
Canal Zone Branch,
American National Red Cross,
Ancon, Canal Zone.

Lost—On Sunday June 20, the undersigned boarded passenger train No. 27 at Mamei, and in leaving the train at Gorgona left a small camera in seat. Will the gentleman with whom he was sitting please communicate with me with a view to returning the camera and receive reward. C. I. Prentiss, Gorgona, C. Z.

PANAMA RAILROAD COMPANY.

SCHEDULE OF PASSENGER TRAINS FOR JULY 5, ONLY.

SOUTHWARD.									Miles from Colon.	STATIONS.			NORTHWARD.							
135	133	131	129	127	125	123	121			120	122	124	126	128	130	132	134			
A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.	A. M.		A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.	A. M.				
1.00	10.00	7.00	4.00	1.00	10.00	6.15		0.00	8.30	9.00	12.15	2.45	6.15	9.15	12.15	3.15				
1.01	10.01	7.01	4.01	1.01	10.01	6.16		0.42	8.26		12.12	2.43	6.12	9.12	12.12	3.12				
1.05	10.05		f 4.05			6.20		1.90	8.23				f 6.09		12.09	3.09				
1.11	10.11		f 4.11			6.26		4.77	8.15				f 6.03		12.03	3.03				
1.17	10.17	7.13	4.17	1.13	10.13	6.33		7.92	8.10				5.58	8.58	11.58	2.58				
1.27	10.27		f 4.25			6.43		10.54					f 5.49		11.49	2.49				
1.35	10.35		f 4.31			6.49		12.61	7.54				f 5.43		11.43	2.43				
1.42	10.42	7.30	4.39	1.30	10.30	6.56		15.39	7.48		11.37	2.15	5.37	8.37	11.37	2.37				
1.49	10.49		f 4.46			7.05		18.64	7.38				f 5.27							
1.55	10.55	7.41	4.54	1.41	10.41	7.13		21.50	7.31		11.21	2.04	5.21	8.21	11.21	2.21				
2.00	11.00		4.58			7.18		23.43	7.26		11.15		5.15	8.15	11.15	2.15				
			f 5.00			7.20		24.44	f 7.22				f 5.13		11.13	2.13				
2.07	11.07		5.05			7.25		25.87	7.19		11.10		5.10	8.10	11.10	2.10				
2.15	11.15	7.56	5.13	1.56	10.56		7.10	23.40	7.10		11.03	1.48	5.03	8.03	11.03	2.03				
2.20	11.20		5.18					29.81	7.15		10.58		4.58	7.58	10.58	1.58				
2.24	11.24		5.22		f 11.03		7.20	31.14	7.27		10.54		4.54	7.54	10.54	1.54				
2.30	11.30	8.08	5.28	2.08	11.08		7.27	32.75	7.39		10.47	1.37	4.47	7.47	10.47	1.47				
2.36	11.36	8.12	5.35	2.12	11.12		7.33	35.04	7.31		10.42	1.32	4.42	7.42	10.42	1.42				
2.40	11.40	8.16	5.40	2.16	11.16		7.38	36.03	7.25		10.36	1.28	4.36	7.36	10.36	1.36				
2.50	11.50		f 5.49			7.50		39.84	f 7.13	f 10.24			f 4.24		10.24	1.24				
2.54	11.54	8.29	5.54	2.29	11.29		7.56	40.50	7.05	10.20	1.15	4.20	7.20	10.20	1.20	1.20				
2.58	11.58		5.58			8.00		42.04	7.03	10.18			4.18	7.18	10.18	1.18				
A. M.																				
3.05	12.05	8.37	6.05	2.37	11.37		8.09	44.44	6.55	10.10	1.07	4.10	7.10	10.10	1.10	1.10				
3.15	12.15	8.45	6.15	2.45	11.45	8.25	8.20	47.27	6.45	10.00	1.00	4.00	7.00	10.00	1.00	1.00				
A. M.	A. M.	P. M.	P. M.	P. M.	A. M.	A. M.	A. M.		A. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.	A. M.				
135	133	131	129	127	125	123	121		120	122	124	126	128	130	132	134				

Train No. 122 will not stop between Gorgona and Colon except to let off passengers from points between Panama and Gorgona.
 Train No. 123 will not stop between Gorgona and Panama except to let off passengers from points between Colon and Gorgona.
 Train No. 132 will be held at Panama and train No. 133 at Colon until after the fireworks exhibition is completed.
 Train No. 134 will be held at Panama and train No. 135 at Colon until after the dances. As these two trains are especially provided for accommodation of people attending dances, they will not handle any but first-class passengers, and the Panama Railroad reserves to itself the privilege of refusing transportation to any applicant. No form of transportation will be required on any train.

NOMBRE DE DIOS.

History of the Port Where Sand is Obtained For the Atlantic Division.

The village of Nombre de Dios, where the Commission is obtaining sand for the concrete work in the Gatun Locks, is the oldest settlement on the Isthmus, within the limits of the Republic of Panama, and one of the oldest in the New World. In 1502, when Columbus was skirting the Caribbean coast of the Isthmus he entered and explored the harbors at Nombre de Dios and Porto Bello, but made no attempt to establish colonies. Eight years later, in 1510, Diego de Nicuesa, then Governor of Hispaniola (Santo Domingo), was sent by the Spanish Crown to take possession of the newly-discovered country. He started with about 700 colonists, but toward the end of his voyage a severe storm occurred, which wrecked several of his ships and caused the loss of many of his people. He sought shelter near the mouth of the Belen River, and when the storm subsided sailed eastwardly, and anchored in the harbor of Nombre de Dios. When Nicuesa landed, he raised the Spanish flag took possession of the country in the name of God, and of his sovereign, the King of Spain, hence the origin of the name the locality now bears.

After the settlement of old Panama in 1513, land communication was established between it and Nombre de Dios, at that time the principal port on the Atlantic side of the Isthmus. Later, vessels sailed from Nombre de Dios to the mouth of the Chagres, from where the cargoes were transported up that river to Cruces and overland to old Panama. The colony at Nombre de Dios sustained severe losses from fevers, and on account of the open roadstead, the shipping was exposed to storms, which led to the abandonment of the place as a port toward the close of the sixteenth century, in favor of the sheltered haven at Porto Bello.

The harbor at Nombre de Dios from Manzanillo Point on the west, to Playa de Damas on the east, is about 6 miles wide, and extends inland a distance of $2\frac{1}{2}$ to 3 miles. The inner harbor is semi-circular and is surrounded by a flat alluvial plain extending back a mile or more before the foot hills are reached. To the southwest rises a high range of hills, which form the watershed between the Boqueron River, and other tributaries of the Chagres, and the three rivers, the Nombre de Dios, Fato, and Terraine, that empty into the bay at Nombre de Dios. The Nombre de Dios River enters the sea to the west of the village, while the Fato and Terraine now find a common entrance in the channel being made by the Commission to the sand deposits northeast of the town. The Fato and Nombre de Dios Rivers have about the same discharge, and are considerable streams, especially in the rainy season. The Fato is about 15 miles in length, and the Nombre de Dios about 20 miles. Both are subject to sudden freshets, the Fato River having been in flood recently five times within a week. This stream flows through the center of the site of the sand operations, and on this account precautions against freshets are taken.

The alluvial plain, part of which forms the sand zone acquired by the Commission, is a large deposit consisting of sand and gravel,

underlying a top soil of varying depth. The sand and gravel, as well as the earth, occur in strata throughout the deposit. The borings at some points indicated a sand and gravel formation, unmixed with earth, to a depth of 45 feet; in other places a few feet of top soil, then several feet of gravel, and successively more earth, and more gravel. Again, the borings showed an unusual depth of top soil, with gravel farther down.

According to old Spanish charts, the alluvial plain 300 years ago was much smaller than it is today, and was confined to a small strip of beach bordering the foothills, with an enlargement where the Nombre de Dios River entered the sea. The charts also show that this river did not then pursue a straight course to the bay. Instead, it made a deep curve to the east and flowed across the head of the harbor, entering it where the Fato River does now. It was a much larger stream at that time, and it is apparent that the Fato did not flow over its own bed to the bay but was a tributary of the Nombre de Dios. At the time when the village of Nombre de Dios was a port of some importance, history records that the Spanish caravels entered the river and discharged their cargoes at some distance up the stream. As evidence of the increase in the area of the alluvial deposit, there have been found, within recent years, parts of old Spanish vessels lying deeply imbedded in the mud and sand half a mile or more from the nearest navigable water, indicating that at one time this locality formed the coast line.

When the Commission took up the question of a sand supply for the concrete work at Gatun, several deposits were inspected. Samples from the deposit at Nombre de Dios were tested and proved satisfactory as to quality, and on May 3, 1908, a survey party was despatched to that point, which is 35 miles by water northeast of Colon, and 18 miles east of Porto Bello. A series of wash drill borings were made over a considerable area, with the result that a sand zone was mapped out estimated to contain about 2,700,000 cubic yards of usable material. It was further estimated that in developing the beds, it would be necessary to remove about 289,000 cubic yards of top soil. A sufficient supply of good sand having thus been located, negotiations were begun and concluded covering the purchase of 126 acres of this land. The tract is of irregular shape and includes a couple of small islands formed by the Fato and Terraine Rivers. It commences at the old mouth of the Fato, follows its channel for a considerable distance and extends inland about $1\frac{3}{4}$ miles, practically encircling the village and going as far as the Nombre de Dios River, in a westerly direction.

Actual operations began early in October, 1908, when a 16-inch suction dredge was brought from Colon to open up the place and supply sand until a double-ended clam-shell dredge, under reconstruction at Cristobal drydock, could be sent to relieve it. On November 7, 1908, a few days after the suction dredge had been put to work, a sharp squall occurred during which the dredge filled and sank about 40 feet from the shore. About the same time, a barge loaded with iron rails drifted against the sunken dredge damaging both vessels. The barge afterward went ashore and was saved, but the dredge was a total wreck, except the ma-

chinery, which has been removed from the hull.

After this occurrence, the dipper dredge *Chagres* was sent to Nombre de Dios, and work was begun by opening the channel of the Fato River, the dredge digging and dumping on both sides until the channel was made wide enough for scows to come alongside, when the material was carried out to sea. Dredging operations began 400 feet out in the harbor, and between this point and the river's mouth, a coral reef was encountered, which was blasted out. At the present time there is a channel 150 feet wide with an average depth of 22 feet, which opens into a basin, dredged by the *Chagres*, 1,000 feet long, 600 feet wide, and 20 feet deep. Up to June 20, the excavation in opening up the sand beds amounted to 163,226 cubic yards; the amount of sand dredged, to 13,085 cubic yards, and the amount of top soil removed, to 5,964 cubic yards, a grand total of 182,275 cubic yards. Most of the sand dredging to date has been done by a stiff-legged derrick erected on a small barge, and operating a 1-yard clam-shell bucket, and by a Browning locomotive crane placed on a transfer barge, also operating a clam-shell bucket. The crane has been used for this purpose only when the derrick was out of order. On June 23, an old French suction dredge was put to work in the basin and it will do the sand dredging until another clam-shell dredge, now being rehabilitated at Cristobal dry dock, is ready for service. In getting the sand, it has been necessary to remove from 4 to 6 feet of top soil and the stratum of sand and gravel thus uncovered has averaged about 5 feet in thickness. Under it is a layer of blue clay.

Considerable track has already been laid to reach the different parts of the sand zone. Starting at the channel entrance, it extends to Nombre de Dios village, where it curves to a point $\frac{3}{4}$ of a mile up the Fato River. Here it crosses the stream and continues to a point where the locomotive crane will shortly begin work stripping the top soil with an orange-peel bucket. To reach this locality, a fill has been made with top soil removed from island No. 1, inside the mouth of the river. A Belgian locomotive, and four Oliver dump cars are in use. A dock 94 feet long, has been built, with a railroad track on it for unloading heavy material from the barges and handling supplies.

The force employed at Nombre de Dios consists of 16 gold, and 81 silver employes, 46 of whom are Hindus, principally used in track building. The gold employes have been living in houseboats, one of which is tied up at the dock, and besides quarters, has furnished office room for the superintendent, and hotel and kitchen space. The other houseboat has been dismantled and set up on the beach, the space underneath being used as a storehouse for machinery parts, etc. A new type-5 house, located near the beach and a short distance away from the village, will be ready for occupancy by July 1, and will furnish accommodations for 28 gold men, and office room for the superintendent. An extension, one story high, 44 feet long, and 33 feet wide will be made to the east end of the type-5 building for hotel and kitchen purposes. The area in front of the house will be fenced in with poultry screening to keep out stray animals. Two tents are provided for the resident

nurse, one as quarters, and one as a dispensary. The West Indian laborers are assigned to a part of one of the houseboats, while the Hindus are quartered in two tents.

Water is supplied the camp from a reservoir located in a ravine a mile and a quarter distant. The dam is of concrete, 35 feet long and 12 feet high, and its crest is 37.5 feet above sea-level. The works were constructed by the resident force, and all the sand and cement used in their construction was carried in coal baskets on men's heads for a distance of half a mile over a trail which was partly under water. The reservoir is fed by a small stream known as La Gloria, and also contains a perennial spring. A 2-inch supply pipe leads through the village to an iron tank, from where it is distributed to points in the Commission camp. Water is furnished the village by three hydrants.

The village of Nombre de Dios is of the usual type of small Isthmian towns. It contains about 200 houses, mostly cane, with thatch roofs, with here and there a frame building. All of the houses are numbered after the manner of Commission buildings. A new stone church is under construction. The town borders on "Cocoanut Land," for, beginning here and extending for miles along the San Blas coast, the cocoanut is everywhere in evidence. In the vicinity of Playa de Damas, two miles from Nombre de Dios, manganese mines abound. The Caribbean Manganese Company operated a mine 11 miles inland from Playa de Damas up to 1901, but owing to the low price of the ore at that time, and to the export tax of \$1 per ton imposed by the Colombian Government, continued exploitation was unprofitable, and the mines and machinery were abandoned. Panama capitalists own a manganese mine on one of the cays from which considerable ore has been shipped. An American company has a large trading post at Playa de Damas, where trade is carried on with the San Blas Indians in cocoanuts, turtle shells, ivory nuts, rubber, and balata, the latter, the gum of the nispero tree, resembling rubber, but is more durable and commands a higher market price.

Change in Name of Vessels.

Application has been made by the Chairman of the Isthmian Canal Commission to the Commissioner of Navigation at Washington, for change in the name of the following vessels, owned by the Commission and Panama Railroad Company, that are engaged in Canal construction:

United States sea-going suction dredge *Ancon* to *Caribbean*.

Panama railroad tug *Cristobal* to *Phoenix*.

The changes are necessary by reason of the adoption of the names *Ancon* and *Cristobal* for the steamers *Shawmut* and *Tremont*.

Proposals for Buildings.

Sealed proposals will be received at the office of the Purchasing Agent on the Isthmus, Isthmian Canal Commission, Mount Hope, Canal Zone, until 2 p. m., Thursday, July 1, 1909, when they will be publicly opened, for the erection by contract of four (4) Insane Asylum buildings at A con, Canal Zone. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Purchasing Agent. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$300 conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposal as may be deemed to its interest, and to waive defects or informalities in proposals.

C. NIXON,
Purchasing Agent on the Isthmus.

OFFICIAL CIRCULARS.

Rules Governing Locomotive Engineers.

CULEBRA, C. Z., June 21, 1909.

CIRCULAR No. 259.

Effective July 1, 1909, the following rules will govern locomotive engineers in the care of their engines and will supersede those approved by me under date of October 2, 1907:

1. Keep sand p'p'es open from the sand box to the rail as far as practicable.
2. Adjust driver brake and front and back ends of main rod.
3. Engineers will see that their classification lamps and head lights are kept clean and in good order.
4. Report any defect of pump governor where the pressure of train line is more or less than 70 pounds and of the main reservoir more or less than 90 pounds.
5. Engines to be brought into round house at end of day's work with as light fires as possible. This is important.
6. Whenever necessary the front end to be sparked and ash pans cleaned while engine is in service. Engineers will be held responsible for the burning of ties.
7. Lubricators to be shut off at end of day's work.
8. Put in water gauge and lubricator glasses when necessary to complete day's work.
9. Blow out lubricators whenever required.
10. Clean tank hose and strainers.
11. See that the jacket is kept oiled in rainy weather.
12. See that the engine is kept clean.
13. Inspect engines and tenders and make out work reports for work to be done at shops, using Form MD-43-Revised.
14. Each locomotive engineer will be held responsible for delays caused by his failure to perform his work in a proper manner, or by his failure to report intelligently work to be done on his engine at the shops.
15. Engines should be ready for leaving when ordered.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Commission Carriages Curtailed.

CULEBRA, C. Z., June 23, 1909.

CIRCULAR No. 261.

Effective July 1, 1909 with the approval of the Secretary of War, the furnishing of carriages to Commissioners and other officials, except as herein noted, will be discontinued, and the Chief Quartermaster will take the necessary steps to sell all transportation and equipment on hand, not required for official purposes.

The following exceptions are authorized, with the understanding that the transportation will be used exclusively for transaction of public business:

At Ancon—One two-seat wagon, for use of Division of Public Works; one single French surrey, for use of Resident Engineer, Pacific Division; one single buggy, for use of the Assistant Engineer in charge of Municipal Improvements, Pacific Division; one Dougherty wagon, for use of the Disbursing Officer, Police Division and other purposes; one single phaeton, for use of Chief Nurse; one single surrey, for use of physician in charge of Medical Clinic.

At Cristobal—One half-platform wagon, for use of Division of Public Works; one Democrat wagon, for use of Assistant Engineer in charge of Municipal Improvements, Atlantic Division; one single surrey, for use of Depot Quartermaster; one Quarantine wagon, for use of Quarantine Officer; one side-seated wagonette, for use of hospital staff when called from Colon to Cristobal.

GEO. W. GOETHALS, Chairman.

Passenger Rates to New Orleans.

CULEBRA, C. Z., June 21, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

The United Fruit Company has notified this office that effective June 29, 1909, passenger rates on its steamers, between Colon and New Orleans, in both directions, for employes of the Isthmian Canal Commission and dependent members of their families, will be as follows:

Adults, to or from New Orleans,	One Round way trip.	\$40.00	\$75.00
Children between ages of 8 and 12 years,		20.00	37.50
Children between ages of 3 and 8 years,		12.50	25.00

Children under 3 years not occupying seat at table or berth in stateroom, free, but this applies to not more than one child in one family. If more than one child under 3 years of age, \$12.50 for each additional child.

Rates on this line for employes of the Panama Railroad Company will be the same as charged heretofore.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Revised List of Liquor Licenses Granted.

OFFICE OF COLLECTOR OF REVENUES,
ANCON, C. Z., June 24, 1909.

The following is a revised list of the applicants to whom saloon licenses will be issued for the period July 1, 1909, to June 30, 1910, in accordance with resolution of the Isthmian Canal Commission:

<i>Rio Grande:</i>	Sam Lee.
Kwong Chong.	<i>Bas Obispo:</i>
Yuen Lee.	Chee Chung Hing.
Kwong Chong Chang	J. J. Speer.
Lee Hoop.	Kwong Chong Kee.
Wing Wo Yuen.	See Lee.
Kwong Hing Jan.	Tuck Chong.
<i>Culebra:</i>	<i>Matachin:</i>
Pedro Colomar.	Agapito Centeno.
Hip Woo.	Jose C. M. de la Puerta.
Wo Chan.	<i>Gorgona:</i>
Wong You Kee.	Antonio Guerra.
Sing On.	Isaac L. Maduro, Jr.
Pow San Chong.	George Andrade.
Jean Murati.	Jacob Kowalsky.
James McFarlane and	John G. Kurtenacker.
Roger J. Coyne.	Tracy Small.
<i>Empire:</i>	Alejandro Ramos.
Jas Ferguson and Jas.	<i>Tabernilla:</i>
Johnson.	Lee Fung Yuen.
Mezele Gustave.	Lam Hing Lung.
Juan A. Martinez.	Emelio Capurro.
Manuel Leones.	Chow Bing & Co.
Jose Sandi.	Henry Charles Wong.
Hop Hing.	<i>Bohio:</i>
Chee Hing.	Wing Lee.
Yuen Hing Chong.	Yee Shun.
Chas. R. Cantor.	Hing Lee.
Lai Hing.	<i>Gatin:</i>
Thomas Powers.	Yee Chong.
H. F. Younge.	Prudencio San Martin.
<i>Las Cascadas:</i>	Lam Hing.
Lai Wo.	Barney Duboski.
Justiniano Richefort.	John B. Schuetz.
Charles Bryant.	Yee Kee.

HERMAN A. GUDGER,
Acting Collector of Revenues.

Auction Sale.

In order to recover freight and storage charges, the Panama railroad will dispose of the accumulation of "Over" and "Unclimbed" shipments now in its possession, by public auction, Wednesday, July 14, 1909, at 9 a. m., sale to be held on Dock 11, Cristobal, C. Z.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery and merchandise in general, all of which has been held six months and over in an effort to locate owner.

H. J. SLIFER,
General Manager.

Sale of Carriages and Horses.

Auction: There will be offered for sale, at Ancon corral, July 20, 1909, at 2 p. m., the following Isthmian Canal Commission property: 9 Victorias, 2 double surreys, 4 single surreys, 1 station wagon, 3 horses, and an assortment of harness pertaining to this equipment. Any of the above articles may be seen by prospective bidders at Ancon corral after July 2. Address all inquiries to District Quartermaster, Ancon.

Supplies for Canal Work.

The following steamers arrived at the ports of Cristobal and Colon during the week ending June 26, with supplies for the Isthmian Canal Commission:

Atrato, June 20, from New York, with 6 churn drills for Central Division.

Parismina, June 24, from New Orleans, with 33,000 pounds bran, Ancon dairy; 33,000 pounds cotton seed meal, Ancon dairy; 33,000 pounds hulls, Ancon dairy; 69,000 pounds hay for corrals; 7,280 feet Y. P. lumber for Atlantic Division; 19,200 feet creosoted lumber for Pacific Division; 50 creosoted piling for Pacific Division; 2,230 pieces soil pipe and fittings for stock; 36,561 pounds castings for steam shovel repairs; 2 crushers for rock crushing plant at Balboa; 264,694 pounds castings for repairs to all equipment.

Colon, June 24, from New York, with 2,500 barrels cement for Gatun Spillway; 16,550 electric fuses for stock; 72,000 feet tape fuse for stock; 40,000 detonators for stock; 18,669 pounds steel sheets for stock; 50 tons bar iron for stock; 15,000 sheets galvanized roofing for stock; 430 kegs bolts for stock; 10,000 pounds boat spikes for stock; 1-25 ton locomotive crane for Porto Bello quarry; 114 pieces steel for collapsible forms for concrete, Pacific Division; and a miscellaneous cargo aggregating 6,773 packages, weighing over 1,150 tons.

Nor, June 25, from Mobile, with 400,000 pounds pig iron for Gorgona foundry; 119,642 feet Y. P. lumber for car repairs; 250 pounds sea coal facing for Gorgona foundry; 100 kitchen sinks for stock; 1,255 pieces soil pipe and fittings for stock; 5 marine boilers for rock and sand barges, Atlantic Division; 155,656 pounds grate bar castings for dredges and chupets, Atlantic Division.

PERFORMANCE OF STEAM SHOVELS

MONTHLY RECORDS IN THE ATLANTIC, CENTRAL, AND PACIFIC DIVISIONS
The subjoined tables show the monthly records of steam shovel work in Canal excavation since American occupation.

CENTRAL DIVISION.					ATLANTIC DIVISION.						
PERIOD.	Working days.	Average number of shovels at work.	Output per shovel (cubic yards)		Rainfall (inches), Empire.	PERIOD.	Working days.	Average number of shovels at work.	Output per shovel (cubic yards.)		Rainfall (inches.) Gatun.
			Per day.	Per month.					Per day.	Per month.	
1906—					1907—						
January.....	26	12.83	363	9,430	1.28	July.....	19½	1.83	323	8,393	11.12
February.....	23	12.48	587	13,494	0.57	August.....	27	7.70	580	15,647	16.37
March.....	27	12.37	716	19,335	0.45	September.....	24	8.12	783	18,790	8.03
April.....	24	12.33	720	17,289	11.42	October.....	27	9.00	897	24,232	19.27
May.....	27	12.41	581	15,684	7.54	November.....	24	9.00	938	22,514	14.27
June.....	26	14.81	539	14,026	6.92	December.....	25	9.00	1,233	30,833	5.53
July.....	25	16.64	378	9,441	14.61	1908—					
August.....	27	16.93	536	14,461	11.84	January.....	26	10.72	1,274	33,115	3.18
September.....	24	21.33	568	13,664	7.41	February.....	24	11.76	1,235	29,628	1.29
October.....	27	22.67	532	14,373	3.97	March.....	26	13.54	1,296	33,711	2.81
November.....	24	20.46	459	10,833	21.05	April.....	25	14.00	1,260	31,492	1.47
December.....	25	22.68	491	12,267	8.15	May.....	25	12.18	1,055	26,361	17.30
1907—					1908—						
January.....	26	31.04	702	18,248	0.08	June.....	26	10.18	1,046	27,208	13.33
February.....	23	39.87	674	15,966	0.13	July.....	26	8.31	1,096	28,505	13.67
March.....	25	43.88	741	18,530	0.16	August.....	26	7.23	1,088	28,295	15.88
April.....	26	44.12	765	19,884	0.09	September.....	25	7.32	973	24,331	8.52
May.....	26	31.70	833	21,674	6.22	October.....	27	8.88	832	22,471	12.22
June.....	25	38.28	651	16,266	13.53	November.....	23	8.57	819	18,834	8.87
July.....	26	43.38	680	17,670	9.85	December.....	26	6.15	1,067	27,730	7.95
August.....	27	39.85	729	19,679	11.28	1909—					
September.....	24	39.42	815	19,563	10.86	January.....	25	7.00	765	19,124	7.17
October.....	27	39.85	792	21,383	15.44	February.....	23	5.74	949	21,826	4.12
November.....	24	44.88	772	18,541	10.40	March.....	27	6.48	888	23,971	2.99
December.....	25	48.84	923	23,066	1.47	April.....	25	6.56	827	20,678	4.03
1908—					1909—						
January.....	26	51.53	1,039	27,003	0.75	May.....	25	6.35	782	19,558	8.98
February.....	24	54.00	1,112	26,690	0.00	June.....					
March.....	26	53.66	1,152	29,947	0.41	July.....					
April.....	25	53.04	1,184	29,596	1.36	PACIFIC DIVISION.					
May.....	25	53.24	894	22,344	12.91	1908—					
June.....	26	55.15	1,011	26,294	8.21	March.....	26	4.50	686	17,819	0.00
July.....	26	52.57	1,071	27,848	11.79	April.....	25	5.50	753	18,829	0.76
August.....	26	52.58	1,122	29,184	8.11	May.....	25	6.75	525	14,116	8.65
September.....	25	49.68	1,178	29,444	9.76	June.....	26	5.30	701	18,217	4.98
October.....	27	49.55	1,177	31,766	8.87	July.....	26	5.80	824	21,441	5.66
November.....	23	50.91	1,156	26,577	4.46	August.....	26	5.91	846	21,992	7.39
December.....	26	50.73	1,209	31,421	5.09	September.....	25	6.59	818	20,455	7.56
1909—					1909—						
January.....	25	51.80	1,183	29,576	2.28	October.....	27	6.77	742	20,034	8.41
February.....	23	56.05	1,260	28,986	1.50	November.....	23	7.00	713	16,396	8.65
March.....	27	56.93	1,327	35,824	0.21	December.....	26	6.11	838	21,793	10.27
April.....	25	55.40	1,272	31,808	3.33	1909—					
May.....	25	50.64	1,149	28,736	7.73	January.....	25	6.42	840	21,512	3.08
June.....						February.....	23	7.18	650	14,950	3.26
July.....						March.....	27	7.30	710	19,161	0.59
August.....						April.....	25	7.94	748	18,697	2.32
September.....						May.....	25	10.00	377	9,419	8.50
October.....						June.....					
November.....						July.....					
December.....						August.....					

Regular Army and Navy Union.

All members of this organization and the General Henry W. Lawton Garrison No. 40, Cristobal, C. Z., are requested to send their name and address by postal to H. V. H. Monk, Acting Adjutant and Quartermaster, Gatun, C. Z., immediately, and learn something to their advantage.

Notice to Steam Fitters.

All members of the I. A. of S., H. W., and P. P. F. and H. are requested to attend the regular meeting in hall over I. C. C. hotel at Gorgona at 12 o'clock, sharp, on Saturday, July 4. Important business.

The Canal Zone public schools close for the summer vacation on June 30, to reopen on October 1.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 7, 1909 (75th meridian time):

DATE.	High.	Low.	High.	Low.	High.
	A. M.	A. M.	P. M.	P. M.	
July 1.....	1.52	8.03	2.04	8.31	
July 2.....	2.38	8.49	2.48	9.13	
July 3.....	3.26	9.34	3.43	9.58	
July 4.....	4.06	10.29	4.18	10.42	
July 5.....	4.49	11.06	5.03	11.28	
July 6.....	5.36	11.53	5.50	12.14	
July 7.....	6.22	P. M. 12.42	6.39		

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, June 26, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gatun.	Bohio.	Gatun (Canal).	Gatun (W. D.).
Height of low water ab. m. n. sea-level, ft.	125	92	4	1	0	0
Maximum height ab. m. n. sea-level, feet.						
Sunday, June 20.....	131.8	97.3	58.5	18.7	11.2	9.1
Monday, June 21.....	135.2	99.2	57.5	16.0	11.0	9.1
Tuesday, June 22.....	132.4	98.1	58.3	19.7	11.7	9.8
Wednesday, June 23.....	128.1	94.7	51.0	15.8	11.6	9.7
Thursday, June 24.....	129.6	95.5	51.5	11.3	9.0	7.7
Friday, June 25.....	128.4	95.1	51.1	10.6	7.0	5.7
Saturday, June 26.....	129.6	95.1	50.0	8.5	6.0	4.7

Rainfall, June 1 to 26, 1909, Inclusive.

(MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum in one day.	Date.	Total for period.
Cristobal.....	2.97	1	16.95
Brazos Brook.....	3.76	19	17.80
Gatun.....	3.36	14	15.98
Bohio.....	2.25	19	11.96
<i>Central Division—</i>			
Tabernilla.....	2.66	19	10.75
San Pablo.....	2.21	19	10.38
Bas Obispo.....	2.00	19	8.55
Gambou.....	2.10	18	8.15
Empire.....	1.50	21	7.16
Camacho.....	1.70	18	8.89
Culebra.....	1.18	21	7.92
<i>Pacific Division—</i>			
Rio Grande.....	1.25	21	8.15
Pedro Miguel.....	2.20	21	13.13
Balboa.....	2.43	21	11.81
Ancon.....	2.20	21	9.64
<i>Atlantic Coast—</i>			
Porto Bello.....	3.04	16	16.59
Nombre de Dios, (5 p. m. June 19).....	3.34	9	14.81
<i>Upper Chagres—</i>			
El Vigia.....	2.70	19	14.91
Alhajuela.....	3.85	21	18.81

Concert by I. C. C. Band.

GATUN, C. Z.

Sunday, July 4, 1909, at 2 p. m.

PROGRAM.

- 1 March—*Doischt*..... Weigand
- 2 Selection—*Marcelle*..... Luders
- 3 { a Characteristique—*Dixie Twelfth St.*..... Johnson
b Indian Descrptive—*Trailing the Trail*..... Spaulding
- 4 Overture—*Tancredi*..... Rossini
- 5 Cornet Solo—*Columbia Polka*..... Rollinson
Chas. E. Jennings.
- 6 Medley Selection—*Hills of 1909*..... Remick
- 7 Concertstuck—*First Heart Throbs*..... Eilenberg
- 8 Fantasia—*Tone Pictures of North and South*..... Bendix
- 9 Tone Poem—*In Lovers' Lane*..... Fryor
- 10 March—*Stars and Stripes Forever*..... Sousa

CHAS. E. JENNINGS, Musical Director.

A concert will be given at Gorgona, Sunday July 11.

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Lieut.-Col. Geo. W. Goethals, U. S. A.,
Chairman, Culebra.
Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
Lieut.-Col. D. D. Gaillard, U. S. A., Empire.
Maj. Wm. L. Sibert, U. S. A., Gatun.
Civil Engineer H. H. Rousseau, U. S. N.,
Culebra.
Mr. Jo C. S. Blackburn, Ancon.
Col. W. C. Gorgas, U. S. A., Ancon.
Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

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William Howard May, Secretary to the
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M. B. DePutron, Assistant to the Chairman.
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John K. Baxter, Assistant Chief Clerk.
H. S. Farish, Surveying Officer.
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Lieut.-Col. H. F. Hodges, Assistant Chief
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C. O. Carlson, Secretary.
Edward Schildhauer, Electrical and Mechanical
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Henry Goldmark, L. D. Cornish, H. F. Tucker
T. B. Mönliche, Edward C. Sherman, De-
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Civil Engineer H. H. Rousseau, Assistant
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J. C. Parsons, Secretary.
A. B. Nichols, Office Engineer.
P. O. Wright, Jr., Architect.

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A. S. Zinn, Resident Engineer.
Mark W. Tenny, Assistant Engineer.
R. W. Hebard, Assistant Engineer.
W. L. Thompson, Assistant Engineer.
Geo. H. Ruggles, Assistant Engineer.
Fred A. Potts, Assistant Engineer.

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Maj. Chester Harding, U. S. A., Assistant Divi-
sion Engineer.
R. M. Sands, Chief Clerk.
Maj. Edgar Judwin, U. S. A., Resident Engineer.
Maj. J. P. Jervey, U. S. A., Resident Engineer.
Capt. G. M. Hoffman, U. S. A., Assistant En-
gineer.
Capt. Horton W. Stickle, U. S. A., Assistant En-
gineer.
L. G. Thom, Assistant Engineer.
F. C. Stanton, Assistant Engineer.
R. B. Smith, Superintendent of Dredging.

Pacific Division.

Headquarters, Corozal.
S. B. Williamson, Division Engineer.
John M. G. Watt, Assistant Division Engineer.
J. C. Keller, Chief Clerk.
W. G. Comber, Resident Engineer.
A. I. Campbell, Resident Engineer.
H. O. Cole, Assistant Engineer (Office).
Wm. F. M. Acheson, Assistant Engineer.
James MacFarlane, Superintendent of Dredging.

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F. W. Doty, Chief Clerk.
Earle J. Banta, Mechanical Engineer,
A. L. Robinson, Electrical Engineer, and Mas-
ter Mechanic, Gorgona Shops.
W. O. Johnson, Master Mechanic, Empire
Shops.

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Headquarters, Cristobal.
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Officer.
Lieut. Frank O. Whitlock, U. S. A., Assistant
Subsistence Officer.
W. F. Shipley, Chief Clerk.

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Lieut. R. E. Wood, U. S. A., Assistant Chief
Quartermaster.
Lieut. Walter D. Smith, U. S. A., Constructing
Quartermaster.
C. H. Mann, Chief Clerk.
Capt. Courtland Nixon, U. S. A., Depot Quar-
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Wm. H. MacFarlane, Inspector of Construction
and Repairs.
C. L. Parker, C. C. McColley, Inspectors.

District Quartermasters.

B. C. Poole, Ancon and Balboa.
C. E. Heisey, Bas Obispo.
A. R. Bennett, Corozal.
Ira A. Giles, Cristobal.
John M. King, Culebra.
Walter G. Ross, (acting), Empire.
R. M. Camble, Gatun.
S. D. Roper (acting), Gorgona.
J. B. Jeffries, Las Cascadas.
Roy R. Watson, Pedro Miguel and Paraiso.
M. D. Smith (acting), Porto Bello.
J. T. Smith (acting), San Pablo and Tabernilla.

Civil Administration.

Headquarters, Ancon.
Jo C. S. Blackburn, Head of the Department.
H. D. Reed, Executive Secretary.
G. A. Ninas, Chief Clerk.
Tom M. Cooke, Chief, Division of Posts, Cus-
toms and Revenues, Ancon.
Herman A. Gudger, Deputy Collector, Ancon.
E. Lewis Baker, Deputy Collector, Cristobal.
George M. Shontz, Prosecuting Attorney, Ancon.
Grosvenor A. Porter, Chief of Police, Ancon.
D. E. McDonald, Chief Clerk.
C. E. Weidman, Fire Chief, Cristobal.
Geo. L. Campen, Supt. of Public Works, Ancon.
C. R. Sargent, Chief Clerk.
J. J. Reidy, Asst. Supt. Public Works, Cristobal.
H. L. Smith, Superintendent of Schools, Ancon.
Edgar P. Beck, Treasurer of Canal Zone, Empire

Canal Zone Judiciary.

Headquarters, Ancon.
Supreme Court—H. A. Gudger, Chief Justice.
Walter Emery, Clerk, Ancon.
Lorin C. Collins, Associate Justice, Cristobal.
Wesley M. Owen, Associate Justice, Empire.
Circuit Court, First Circuit—H. A. Gudger,
Judge, Ancon.
Walter Emery, Clerk.
Circuit Court, Second Circuit—Wesley M. Owen,
Judge, Empire.
Elbert M. Goolsby, Clerk.
Circuit Court, Third Circuit—Lorin C. Collins,
Judge, Cristobal.
Nelson R. Johnson, Clerk.
M. C. Rerdell, Senior District Judge, Cristobal.
S. E. Blackburn, District Judge, Ancon.
Edgar S. Garrison, District Judge, Emoire.
J. B. March, District Judge, Gorgona.
Thomas E. Brown, Jr., District Judge, Cristobal.

Law.

Headquarters, Washington, D. C.
Richard Reid Rogers, General Counsel,
Washington, D. C.
George M. Shontz, Attorney for Isthmian Canal
Commission and Panama Railroad Company,
Ancon.
George H. Bartholomew, Assistant Attorney.

Sanitation.

Headquarters, Ancon.
Col. W. C. Gorgas, Chief Sanitary Officer.
Lieut.-Col. John I. Phillips, U. S. A., Assistant
Chief Sanitary Officer.
Capt. Robert E. Noble, U. S. A., General In-
spector.
Harry E. Bovay, Chief Clerk.
H. R. Carter, Director of Hospitals, Ancon.
Maj. Charles F. Mason, U. S. A., Superin-
tendent Ancon Hospital, Ancon.
Surgeon J. P. Leys, U. S. N., Superintendent
Colon Hospital, Cristobal.
Surgeon, J. C. Perry, P. H. and M. H. S., Chief
Quarantine Officer, Ancon.
Surgeon Claude C. Pierce, P. H. and M. H. S.,
Quarantine Officer, Colon.
Dr. Fleetwood Gruver, P. H. and M. H. S., Quar-
antine Officer, Panama.
Joseph A. LePrince, Chief Sanitary Inspector,
Ancon.
Dr. J. G. Evans, Acting Health Officer, Panama.
Dr. M. E. Connor, Health Officer, Colon.
C. L. Stockelberg, Superintendent of Plumb-
ing, Culebra.

Disbursements.

Headquarters, Empire.
Edward J. Williams, Disbursing Officer.
Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.
W. W. Warwick, Examiner of Accounts.
T. L. Clear, Assistant Examiner of Accounts.

Purchasing Department.

Headquarters, Washington, D. C.
Capt. F. C. Boggs, U. S. A., General Pur-
chasing Officer.
C. E. Dole, Chief Clerk.
Capt. Courtland Nixon, Purchasing Agent on
the Isthmus.
Maj. Wendell L. Simpson, U. S. A., Purchas-
ing Agent, 24 State Street, New York City.
F. C. Nordsiek, Assistant Purchasing Agent, 24
State street, New York City.
Lieut.-Col. Geo. B. Davis, U. S. A., Assistant
Purchasing Agent, Custom House, New
Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
(New York office, 24 State Street.)
H. J. Slifer, General Manager, Colon.
G. E. Geer, Assistant to the General Manager.
R. Budd, Chief Engineer.
J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Pan-
ama Railroad Steamship Company, of the Royal Mail
Steam Packet Company, of the Hamburg-American
Line, and of the United Fruit Company's Line, the
Panama Railroad Company's dates being subject to
change:

NEW YORK TO COLON.

Advance	P. R. R. Wednesday	June 30
Prinz Joachim	H. A. Tuesday	July 3
Allianca	P. R. R. Tuesday	July 6
Orinoco	R. M. Saturday	July 10
Colon	P. R. R. Monday	July 12
Panama	P. R. R. Monday	July 19
Clyde	R. M. Saturday	July 24

Persons desiring to meet steamers at Cristobal
should apply in advance of arrival at the Customs
office, room 8, building No. 1, Cristobal, for customs
line permits, which are necessary to obtain admit-
tance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and
Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Colon	P. R. R. Wednesday	June 30
Prinz Aug. Wilhelm	H. A. Tuesday	July 6
Panama	P. R. R. Tuesday	July 6
Advance	P. R. R. Monday	July 12
Clyde	R. M. Wednesday	July 14
Allianca	P. R. R. Saturday	July 17
Prinz Joachim	H. A. Tuesday	July 20
Colon	P. R. R. Friday	July 23
Tagus	R. M. Wednesday	July 28
Panama	P. R. R. Friday	July 30

NEW ORLEANS TO COLON.

Abangarez	U. F. C. Saturday	July 3
Parismina	U. F. C. Saturday	July 10
Cartago	U. F. C. Saturday	July 17
Abangarez	U. F. C. Saturday	July 24

COLON TO NEW ORLEANS.

Cartago	U. F. C. Tuesday	July 6
Abangarez	U. F. C. Tuesday	July 13
Parismina	U. F. C. Tuesday	July 20
Cartago	U. F. C. Tuesday	July 27
Abangarez	U. F. C. Tuesday	Aug. 3

COLON TO BARBADOS, CALLING AT TRINIDAD.

Orinoco	R. M. Tuesday	July 6
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Sailings of the French line (Cie. Générale Trans-
atlantique) for Venezuelan ports, Martinique and
Guadeloupe on the 3d and 20th of each month
The steamer *David* of the National Navigation
Company, will leave Panama, for David, province of
Chiriqui, and intermediate points, on Thursday, July
1, and every alternate Thursday thereafter.

The Panama railroad steamships sail at 3 p. m.
from dock at Cristobal direct to New York.

The steamers of the United Fruit Company's line
sail from New Orleans at 10 a. m. for Colon, and from
Colon at 3 p. m. via Port Limon for New Orleans.
All Royal Mail steamers mentioned above leave
early in the morning from Colon via Kingston, Ja-
maica, for New York. All mail and passengers
should be on board early on day of sailing.

The Prinz steamers of the Hamburg-American line
sail from Colon at 1 p. m. via Kingston, Jamaica, for
New York.

The following steamers have recently arrived at
Balboa: June 25, *Linari*, from southern ports; *Arica*,
from Guayaquil, and *San Jose*, from San Francisco.
Departures were: June 20, *Guatemala*, for southern
ports; June 21, *Ecuador*, for Guayaquil; June 24, *Ma-
navi*, for intermediate ports; June 25, *Newport*, for
San Francisco.



The Canal Record

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The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Excavation at Buena Vista.

A hill and some small hummocks of land lie in the route of the Canal at Buena Vista, near Bolio, about 10 miles south of Gatun. This is in the Gatun Lake region, and it is necessary to excavate to elevation 40 feet above sea-level in order to make the channel 45 feet deep at this point. The excavation was begun last week when a 90-ton steam shovel was set at work. In all about 412,000 cubic yards must be taken out in this locality. This is the largest piece of excavation between Gatun and Tabernilla, as the total to be excavated in this region when the work was begun was only 687,800 cubic yards.

June Excavation.

The total Canal excavation during the month of June was 2,895,793 cubic yards, an average of 111,376 per working day. This total is 302 cubic yards less than the total for May. Of this total 2,895,793 cubic yards, 2,852,101 were chargeable to "Work" and 43,692 to "Plant." There were taken out by steam shovels 1,761,315, and by dredges 1,090,786, cubic yards. There were 26 working days during the month, one more than in May. The mean rainfall for the month in the territory in which excavation was in progress was 11.85 inches, as compared with 9.82 inches the previous month.

In the Atlantic Division the total excavation was 345,112 cubic yards, 177,510 less than for May. Of this total 123,708 cubic yards were removed by steam shovels and 221,404 by dredges. In addition to the latter amount the dredges in this division were excavating in the channel and approaches to the docks of the Panama Railroad Steamships Company at Cristobal, the figures for which are not yet available. There were 366,998 cubic yards of material placed in Gatun Dam and 10,668 cubic yards of concrete were laid in the floor of the Spillway during the month.

The total excavation in the Central Divi-

sion was 1,520,975 cubic yards, 7,842 more than for May. Of this total 1,241,550 cubic yards were taken from Culebra Cut and 1,351 from the Obispo Diversion, which was finished during the month.

In the Pacific Division the total excavation was 1,029,706 cubic yards, 169,366 more than for May. Of this total 160,324 were removed by steam shovels and 869,382 by dredges.

The detailed statement of excavation in the three divisions follows:

ATLANTIC DIVISION.

LOCALITY.	"Work." Excava- tion.	"Plant." Excava- tion.	Total excava- tion
	cu. yds.	cu. yds.	cu. yds.
Dry excavation— Locks, Dam and Spill- way.....	36,556	7,051	43,607
Mindi.....	80,101	.....	80,101
Total.....	116,657	7,051	123,708
Wet excavation— Atlantic entrance.....	182,575	.....	182,575
Locks, Dam and Spill- way.....	38,829	.....	38,829
Total.....	221,404	.....	221,404
Total wet and dry excavation.....	338,061	7,051	345,112

CENTRAL DIVISION.

All dry excavation— Culebra Cut.....	1,240,783	767	1,241,550
Chagres section.....	275,900	2,174	278,074
Obispo Diversion.....	1,351	.....	1,351
Total.....	1,518,034	2,941	1,520,975

PACIFIC DIVISION.

Dry excavation— Locks, Dams and Spill- way.....	112,674	33,700	146,374
Diversions.....	13,950	.....	13,950
Total.....	126,624	33,700	160,324
Wet excavation— Pacific entrance.....	844,685	.....	844,685
Miraflores Locks.....	24,697	.....	24,697
Diversions.....	.....	.....	.....
Total.....	869,382	.....	869,382
Total wet and dry excavation.....	996,006	33,700	1,029,706

TOTAL CANAL EXCAVATION.

Dry excavation.....	1,761,315	43,692	1,805,007
Wet excavation.....	1,090,786	.....	1,090,786
Total.....	2,852,101	43,692	2,895,793

Mean rainfall along Canal (twelve stations) 11.85 inches.

By "Work" Excavation is meant excavation actually made for one of the constituent parts of the Canal, such as Prism, Diversions, or Locks, etc.; that is, it represents material taken from the area to be occupied by the Canal, and constitutes excavation useful for the completed Canal.

By "Plant" Excavation is meant excavation outside of any of the constituent parts of the Canal, such as Prism, Diversions, or Locks, etc. It includes material necessary to be excavated for construction purposes only and is chargeable against the particular plant item for which it is performed, such as Prism, Diversions, Locks, etc.

Operations at Ancon Quarry.

The foundations for the No. 6 rock crusher at Ancon quarry were practically completed during the month of June. The concrete work in the columns supporting the rock bin structure, and the preparatory work for the

concrete floor of the bins, were finished. This structure will be 145 feet long, and 19.2 feet wide, outside measurement, and will have a height from base of columns to top of bins of 40 feet. The supporting concrete columns are 19 feet high, reinforced with four rails in each column tied every 2 feet with ½ inch round hubs. The concrete in the bin floors will be 20 inches thick. Ten bins are provided for, with a combined capacity of about 2,000 cubic yards. A hopper, 20 by 20 inches, located in the center of each bin, will supply material to cars.

Work was continued during the month on the rubble masonry of the retaining wall, and an additional 70-ton steam shovel was put to work at the site, making three in operation there.

Thirty Two Feet Below Sea-level.

Thirty-two feet below sea-level is the elevation at which one of the steam shovels is excavating in the Mindi Hills, between Gatun and Limon Bay. This is only nine feet above the bottom of the channel, which is to be forty-one feet below sea-level from deep water in the Caribbean to Gatun Locks. The pit in which the shovels work is kept dry by four eight-inch pumps, and ordinarily these pumps are not run at their capacity. There has been surprisingly little seepage into the excavation since the work below sea-level was begun, when it is considered that only a dike a few feet thick keeps the water in the old French canal from flowing into the trench, and that the bay of Limon is within two miles, and the Mindi River within a few hundred yards of the pit. During the latter part of June the shovel on the lowest level was obliged to suspend for a few days on account of the inability of the pumps to throw out the water that was coming in, but this proved to be only a temporary condition and the shovels are again at work.

Section of Spillway Floor Completed.

The north section of the floor of Gatun Dam Spillway was completed on June 30, when the last of 480 concrete monoliths was laid. The laying of this concrete was begun on March 17, and 74 working days were spent on it, making no allowance for the frequent rains of June. In this time about 30,000 cubic yards of concrete were laid, an average of over 400 cubic yards a day.

The Spillway at Gatun is being constructed in three sections—the entrance or opening on the south side of the dam, the concrete dam which will close the month of the channel and on which the regulating works will be constructed, and the channel below the concrete dam, through which water will waste in the Chagres River. It is the floor of this channel below the concrete dam that has been completed. The

NOTES OF PROGRESS.

(Continued.)

concrete was laid in monoliths, each 30 feet long and 20 feet wide, varying in thickness from four feet at the upstream or south end to one foot at the downstream end. To allow for shrinkage and prevent cracking, the monoliths were laid alternately, that is, each one was allowed to dry before another was laid against it. The section completed is 960 feet long and 300 feet wide.

Work on the walls has already been begun. They will rise 20 feet above the floor, into which they will be keyed by a mortise and tenon joint. They will be eight feet thick at the base and three feet at the top, the tapering being accomplished by a 1 to 10 slope on the face of the wall and by four steps at the back. Like the floor, the walls will be built in monoliths laid alternately.

Until the plans are completed for the dam and regulating works no concrete will be laid in the spillway dam. South of the dam, however, in the section referred to above as the entrance or opening, preparations are being made to lay the floor, and this work will be begun in a few days. The work in the Spillway has made better progress than was anticipated, due to the fact that the concrete mixing and handling plant has worked satisfactorily from the beginning.

Work in the Pacific Division.

Progress was made at all points in the locks and dams section of the Pacific Division during the month of June. The pile approach to the east storage trestle, north of the Pedro Miguel Locks, was completed, and the construction of the deck on the west storage trestle was about half finished. These trestles extend along each side of the forebay, paralleling the site of the handling plant. Work on the track layout in the forebay is going forward, and ten Porter locomotives, which will be used in hauling concrete to the lock site, etc., have been delivered.

The excavation in the west chamber of the Pedro Miguel Locks is completed to the floor level, and the excavation for cross culverts in this section has been begun. Excavation in the east chamber is still in progress. About 70,000 cubic yards of material, mostly hard rock, were taken from the lock site during June, leaving approximately 90,000 cubic yards yet to be removed.

The dredge *Sandpiper* began pumping material into the core of the west dam at Miraflores about the middle of the month. The dredge has been working in the old bed of the Cocoli River, and removed several pockets of gravel. Later she will work south in the Canal prism toward Balboa.

Cocoli Lake is filled. On Monday, June 21, the water reached a stage of 37.9 feet, 2.9 feet above the level of the spillway. On May 29, the stage was 21.2 feet, thus showing a rise of 16.7 feet in the interval of 23 days. The rapid rise during this period is due to heavy rains along the Cocoli River. Observations made during the latter part of May showed an average rise in the lake of a tenth of a foot per day, while between May 29 and June 21, the average rise was over seven-tenths of a foot per day. As soon as the water reached a stage of 35 feet it began flowing over the spillway, the surplus emp-

tying into the Rio Grande. A part of the area submerged by the lake was planted in fruit trees several years ago. These are now about half out of water.

Work on the Miraflores power house is progressing favorably. The boilers have all been placed within the building, one battery erected and the two other batteries are in course of erection. Brick work was started on June 30. The bases for the turbo generators have been delivered and one of them placed in position. The wiring of the basement floor has been completed and wiring of the first floor begun.

The cement shed, which provides for housing 70,000 barrels of cement, is completed, with the exception of the floors and handling cranes. The steam shovel work in the Rio Grande diversion was completed in June. Two orange peel dredges are now at work finishing up.

Conductor Barnett Discharged.

The findings of the Board of Inquiry appointed last December to investigate certain grievances reported as existing by C. C. Barnett, a conductor in the employ of the Commission, have been approved by the Secretary of War, who has commented and directed as follows:

The making of such serious charges without any justification whatever shows that Mr. Barnett is not a proper person to be employed there. Such charges tend to destroy discipline, create distrust, and bring the management into disrepute. Mr. Barnett had a perfect right to make charges in good faith, but good faith is negated in respect to these charges by the entire absence of proof. The findings in regard to them were made by the entire Board. Therefore, you are directed to discharge Mr. Barnett from the service.

Commission Clubhouse at Gatun.

A Commission clubhouse to be located at Gatun has been authorized, and construction will be begun as soon as the Quartermaster's Department can let the contract. Like the four other Commission clubhouses it will be under the direction of the Y. M. C. A. It will cost about \$25,000. The arrangement of the rooms in the new building will be different from that in the clubhouses already in use, and provides for a larger assembly or ball room on the second floor, four instead of two bowling alleys on the ground floor, a lobby from the end of which, instead of at one side, stairs will lead to the second floor, and a reading room opening directly into the lobby. There will be no posts in the center of the billiard room as in the present buildings, the ceiling being carried on two trusses.

The preliminary plans call for a building 133 feet long and 97 feet from front to rear, with screened verandas. The ground floor will be built around an open court which will divide the building into front and rear sections. The front section will be two stories high and the rear will be only one story. The front doors will open into a lobby, 19 feet 6 inches wide, which will run from the vestibule to the court, with stairs to the second story running up from the end of the lobby. On the right of the lobby will be the reading room, 36 feet 9 inches long and 28 feet wide, and opening from the reading room on the right will be a game room 11 feet 6 inches by 28 feet. On the left of the lobby a section enclosed by a railing will be used as an office, and to the left of this will be the billiard room, 41 feet 6 inches long and 28 feet wide. Refreshments will be served in a room opening onto the

court, and back of the refreshment room there will be a kitchen and pantry. Opposite the refreshment room on the left of the court will be a barber shop and storeroom. Back of the open court will be the four bowling alleys, with seats for spectators, toilet, bath and locker rooms, and a dark room.

The second floor will be divided into an assembly hall 103 feet 6 inches long and 28 feet wide, with a stage, and ladies' toilet and dressing room. The screened balcony will run entirely around the second story.

Transportation from Cristobal to New York. THE CANAL RECORD:

Please inform the undersigned whether the Isthmian Canal Commission will furnish free transportation to employes having served four years, continuous service, to either New York, New Orleans, or San Francisco.

J. B. C.

Cristobal, C. Z., June 27, 1909.

Circular No. 175A, published in THE CANAL RECORD of January 27, 1909, is as follows:

Transportation from Cristobal to New York on steamers of the Panama Railroad Company will be granted hereafter to employes upon the termination of their service, as follows:

FREE TRANSPORTATION.

To employes appointed in the United States who resign or are discharged after two years' continuous service; to employes appointed in the United States whose employment is terminated by the Commission after less than two years' service for any reason other than inefficiency or misconduct; and to American employes appointed on the Isthmus who are discharged at the recommendation of a medical examining board.

TWENTY-DOLLAR RATE.

To employes appointed in the United States prior to January 1, 1909, who resign after serving more than six months but less than two years, and to employes appointed on the Isthmus prior to January 1, 1909, who resign or are discharged after two years' continuous service, or whose services are terminated by the Commission after less than two years' service for any reason other than inefficiency or misconduct.

THIRTY-DOLLAR RATE.

To employes appointed after December 31, 1908, separated from the service under circumstances identical with those described in the preceding paragraph.

FORTY-FIVE-DOLLAR RATE.

To employes appointed on the Isthmus who resign or are discharged after serving more than six months but less than two years.

TEN-DOLLAR STEERAGE RATE.

To all employes who may apply for it.

Employes entitled to free transportation to New York may be granted instead free transportation to New Orleans, if they so desire, or free transportation to San Francisco, provided they originally sailed from that port.

Employes originally appointed in the United States who resign or are discharged and are subsequently re-employed on the Isthmus will be granted no transportation privileges other than those accorded employes originally appointed on the Isthmus.

No special rates will be granted employes who fail to apply for transportation within thirty days after the termination of their employment.

Rest-house for Negro Employes.

The construction of a rest-house at Culebra for negro employes has been authorized, at a cost of not over \$2,400, with \$200 added for furniture.

The committee from the New York Chamber of Commerce, which was to have visited the Isthmus from July 18, to July 23, has postponed its visit until September.

On the Canal medals only the initials of the holder's Christian name or names will appear, with the surname in full. The service bars will be numbered consecutively to show the order in which each has been earned.

BUILDING CONSTRUCTION.

Amounts Necessary for Coming Year for Building Construction and Repair.

The construction and repair of Commission buildings were taken over by the Quartermaster's Department on July 1. New construction work will, in general, be done by contract, and repairing by the Commission forces. The supervisory force will consist of a construction quartermaster and an inspector of construction and repairs. The position of architect will be abolished, and alterations in type plans will be made by the chief draughtsman of the Quartermaster's Department.

The period of new construction for the Canal work is practically over, the time when uncertainty in the delivery of materials and an insufficient supply of artisans characterized the erection of buildings has entirely passed, and from this time until the completion of the Canal, most of the building work will be in making repairs to the plant that is scattered along the line of the Canal, from Cristobal to Balboa. In this plant there are about 3,300 buildings, over half of which were left by the French and repaired, while about 1,500 larger buildings were erected by the Americans. There are 966 buildings used as quarters for gold employes, and the remainder as labor barracks, offices, shops, warehouses, and for miscellaneous purposes. The value of the buildings is estimated at \$10,000,000.

The Canal Zone is a construction camp, and on that account few of the buildings necessary for carrying on the work were put up with the idea of permanency; in fact, most of them will have passed the stage where it would be economical to repair them by the time the Canal is completed. Deterioration of light woods is rapid in this climate. Some of the beams in the floor of the hotel built at Culebra four years ago have entirely rotted away and have been replaced by new stringers. Wood ants, continued moisture, and light construction are the chief causes of rapid decay.

During the period of greatest activity in building, the delivery of lumber and other supplies on the Isthmus was uncertain, and no contractor would have made a bid for the work. Now, however, deliveries of materials and supplies are reasonably prompt, and the stock on hand is always sufficient to permit of constant work on the small amount of building being done. The method of letting a contract for a new building is to advertise for bids on the condition that "the Commission will furnish all materials at the site of the work and the contractor is required to provide all labor." There are at present under construction in the Canal Zone, under the contract system, three type-18, three type-14, and two type-27 houses at Gatun; one type-17, one type-10, three type-27 houses, and a corral at Ancon; a type-18 house at Cristobal; and a type-21 house at Corozal.

A comparison of the cost of buildings constructed by Commission employes and those constructed by contract shows that the contract system is the more economical. This comparison has been applied to three types of buildings—married quarters, bachelor quarters, and buildings for miscellaneous purposes. The majority of American families are quartered in type-14 and type-17

houses, and of bachelors in type-5 and type-18 quarters. Of the 577 type houses on the Canal Zone on June 1, 1909, there were 453 used as family quarters, and of this number 176 were type-14 houses. Of the 124 bachelor houses, 50 are type-18 buildings.

The type-14 house is a four family flat, each apartment of which consists of a screened veranda, front and rear, four living rooms, toilet and shower bath. The average cost of twelve of these houses constructed by Commission employes in 1908 and 1909, was \$5,106.81 for direct labor and material, and \$670.86 for indirect charges, such as superintendence, clerical work, stationery, vacation and sick leave, and transit time. The average cost of nine type-14 houses constructed by contract was \$4,987.71, as compared with \$5,777.67, the average cost of the twelve houses already referred to. The type-14 quarters have been constructed 13 per cent cheaper by contract than by Commission employes. The contract cost runs a little less than the direct material and labor charges, when the buildings are constructed by day labor.

For type-18 bachelor quarters a comparison has been made with only one building erected by contract, and this shows that the cost by contract exceeded that by Commission employes by about 8 per cent. One type-18 building erected by contract cost \$7,874.27, while four buildings of this type were erected by the Commission at an average cost of \$7,299.94, of which the direct charges were \$6,548.49, and all indirect charges \$751.45. This type of building is two stories high, and contains 12 rooms, each 12 feet 6 inches square, screened veranda, front and rear, and toilet and bath rooms on each floor.

In the comparison of the cost of miscellaneous buildings two type-A jails constructed by the Commission were contrasted with two type-A jails put up by contractors. The Commission buildings cost \$2,962.39 for all charges, and the contract buildings cost \$3,043.55.

All the buildings constructed by the Commission forces, used as a basis for the above comparison, were built in direct competition with buildings put up by contract, and the cost was considerably less than that of previous buildings of these types erected by the Commission forces without the stimulus of competition. The average cost of 167 type-14 houses built up to January 1, 1909, was \$8,000; of 46 type-18 houses, \$10,000.

It is estimated that \$375,000 will be required for repairs during the coming fiscal year, and this amount has been divided into \$200,000 for carpenter work, including \$50,000 for screening; \$125,000 for painting, and \$50,000 for plumbing. The allotment for plumbing covers repairs to stoves and roofs, both of which are handled by the plumbers.

The value of the various classes of buildings (excepting a number that are not occu-

ped and will not be repaired), and the percentage of the value of each class that has been allotted for repairs are shown in the following statement:

CLASS OF BUILDING.	Cost.	*Percentage of value allotted for repairs.
Office buildings.....	\$422,886.18	
Hotels.....	184,274.26	6
Quarters, gold employes.....	3,213,561.49	6
Kitchens, silver employes.....	106,089.40	2
Quarters, silver employes.....	460,745.77	2
Commissaries.....	75,609.06	3
Hospitals.....	546,788.81	6
Baths, closets, etc.....	95,234.44	2
Shops.....	443,970.08	3
Storehouses.....	243,658.16	3
Courthouses and jails.....	128,944.72	3
Clubhouses (Y. M. C. A.).....	124,683.70	3
Lodge halls.....	54,277.02	3
Miscellaneous.....	420,821.41	2
Old French.....	12,667,893.24	2

*No percentages are given for the items "Repairs and alterations to new buildings," or for miscellaneous charges.

†The value of the Hotel Tivoli at Ancon, \$379,265 is subtracted from the value of the hotels, and repairs to that building are made under a special allotment to the Subsistence Department.

‡Amount expended in repairs and alterations.

Recreation Hall at Porto Bello.

A recreation hall is to be constructed at Porto Bello at a cost of about \$5,000. The hall will be under the direction of a Y. M. C. A. secretary, and will include a game room, bowling alleys, a refreshment counter, reading room, and assembly hall.

Rules Governing Shop Employes.

Attention is directed to Circular No. 262, and Rules Governing Shop Employes published elsewhere in this issue of THE CANAL RECORD.

June Rainfall for Three Years.

STATION.	1907.	1908.	1909.	Years of record.	Average.*	No. rainy days—1909.
<i>Atlantic Division</i>						
Nombre de Dios.....			18.02	0	.....	22
Porto Bello.....		16.99	17.70	1	.....	21
Cristobal.....	16.89	10.53	17.49	38	13.11	23
Brazos Brook.....	14.81	14.81	18.63	2	14.81	26
Gatun.....	15.37	13.33	16.35	3	13.05	27
Gatunillo.....		14.48	12.36	1	.....	22
Trinidad.....		8.86	14.86	1	.....	24
Bohio.....	15.16	20.02	12.31	14	12.52	25
<i>Central Division</i>						
Tabernilla.....		10.41	11.16	1	.....	24
San Pablo.....	11.55	9.95	10.80	2	10.75	26
Gamboia.....	9.68	6.15	9.55	27	9.64	24
Bas Obispo.....	8.67	6.55	11.71	13	10.97	25
Empire.....	13.24	8.21	7.84	5	8.40	27
Camacho.....	12.79	12.87	10.52	2	12.53	27
Culebra.....	14.90	8.86	9.44	17	9.03	25
Rio Grande.....	15.28	11.08	9.27	4	10.78	26
<i>Pacific Division</i>						
Pedro Miguel.....		7.71	14.19	1	.....	25
Balboa.....	11.85	4.98	12.06	12	7.88	25
Ancon.....	12.64	4.28	9.90	11	8.57	25
<i>Upper Chagres</i>						
El Vigia.....			16.93	0	.....	25
Alhajuella.....	13.68	11.06	19.73	9	12.34	26

*Since station established, 1909 not included.

WEATHER CONDITIONS, CANAL ZONE, JUNE, 1909.

Stations.	Pressure (reduced to mean of 24 hours.)	Temperature.				Mean relative humidity.	Precipitation.			Wind.			Date.		
		Mean.	Maximum.	Date.	Minimum.		Total inches.	Station average per month.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)		Direction.	
															Date.
Cristobal.....	29.858	78.7	92	3	70	17	91	17.49	13.11	23	4.082	S. E.	33	S. E.	1
Culebra.....	29.862	78.4	91	12	68	5	94	9.44	9.03	25	3.484	N. W.	25	N. E.	5
Ancon.....	29.854	78.8	89	25	70	5	92	9.90	8.57	25	4.089	N. W.	24	S. E.	21

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION. MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STREAM SHOVELS.

Table with columns for Months (1907* to 1909) and sub-columns for Canal and Prism measurements. Includes monthly data and a Totals row.

Total to July 1, 1909—1,452,105 cubic yards. *No work done outside of Canal Prism

COLON—DREDGES.

Table with columns for Months (1907 to 1909) and sub-columns for Canal and Prism measurements. Includes monthly data and a Totals row.

Total to July 1, 1909—13,188,123 cubic yards. In this total are included 399,820 cubic yards excavated in 1905, and 407,645 cubic yards in 1906. There were also 38,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STEAM SHOVELS.

Table with columns for Months (1907 to 1909) and sub-columns for Canal and Prism measurements. Includes monthly data and a Totals row.

Total to July 1, 1909—4,588,491 cubic yards. In this total are included 26,625 cubic yards excavated from the Canal prism October to December, 1906. In addition there were 488,533 cubic yards removed by dredges from Gatun locks in December, 1908, January, February, March, April, May and June, 1909.

CENTRAL DIVISION.

CULEBRA SECTION—STEAM SHOVELS.

Table with columns for Months (1904 to 1909) and sub-columns for Canal and Prism measurements. Includes monthly data and a Totals row.

Total to July 1, 1909—34,467,341 cubic yards.

CHAGRES SECTION—STEAM SHOVELS.

Table with columns for Months (1907* to 1909) and sub-columns for Canal and Prism measurements. Includes monthly data and a Totals row.

Total to July 1, 1909—6,516,025 cubic yards. *No work done outside Canal prism.

CANAL EXCAVATION TO DATE.

Summary table for Canal Excavation to Date, showing totals for Steam Shovels and Dredges.

By French Companies..... 81,548,000 C.Ys. By American Steam Shovels..... 48,827,057 Dredges..... 30,077,844 Total..... 160,452,901

EXCAVATION IN TERRITORY OF PRESENT DIVISIONS

Table showing excavation amounts for Atlantic, Pacific, and Central divisions, including estimated amounts yet to be excavated.

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STEAM SHOVELS.

Table with columns for Months (1908 to 1909) and sub-columns for Canal and Prism measurements. Includes monthly data and a Totals row.

Total to July 1, 1909—734,231 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY—STEAM SHOVELS

Table with columns for Months (1908 to 1909) and sub-columns for Canal and Prism measurements. Includes monthly data and a Totals row.

Total to July 1, 1909—1,176,529 cubic yards.

There were also 78,233 cubic yards removed by steam shovels at Balboa locks and dams in 1908, 139,298 cubic yards at Cardenas Hill March to December, 1908, and 167,808 cubic yards by dredges at Miraflores locks in January, February, March, April, May and June, 1909.

BALBOA—DREDGES

Table with columns for Months (1905 to 1909) and sub-columns for Canal and Prism measurements. Includes monthly data and a Totals row.

Total to July 1, 1909—16,180,107 cubic yards. There were also 172 cubic yards removed by steam shovels outside of the prism during October, 1908.

CANAL ZONE SCHOOLS.

Work of Past Year and Plans for Next Year.

The public schools of the Canal Zone closed on June 30, to reopen October 1. Thirty schools were maintained during the year, 13 for white children and 17 for negroes. In the schools for white children the highest enrollment was in the month of February, when 64 pupils were in attendance; and the lowest in June, when 564 were enrolled. The enrollment in the negro schools was highest in March, when 2,421 pupils were in attendance, and it was lowest in October, with 1,073. Thirty-two teachers were employed in the schools for white children, eight of whom were added to the force during the year. Twenty-one teachers were employed in the schools for negro children, three of whom were added to the force during the year.

Additions to the school equipment since October 1, 1908, include a one-story two-room building at Corozal, opened on February 15; a one-room building at Tabernilla, opened on April 12; and a one-story four-room building at Gatun, opened on April 13. All these buildings are used by white children. A two-room addition to the school for white children at Gorgona has been authorized, and when it is completed the rooms now occupied over the quartermaster's office will consist of only two rooms, but it will so relieve the congestion in Gorgona school that the children who now go from Bas Obispo to the school at Cristobal will be sent to Gorgona.

The development in the school system during the year just closed has been largely along lines of improving the instruction, and inquiring into the health of the children. The work of providing buildings and organizing a teaching force, which had been the main concern of previous years, was practically completed in the fiscal year 1908. In the schools for white children the accommodations will be ample, when the additions already mentioned have been made, and it is no longer difficult to procure good teachers.

Inquiries into the health of the children took the form of medical care, and of physical culture. An epidemic of follicular conjunctivitis among the white children engaged attention in December, 1908. The eye, ear, and nose specialists of the Commission and the district physicians worked to such good effect that the disease is now under control and practically eradicated. Out of the 580 children examined 120 were treated for follicular conjunctivitis and 43 operations were performed. Skin diseases and diseases of the nose and ear were also treated.

In order to prevent a recurrence of the epidemic and to anticipate other diseases, an inspection of all school children is made once a month by the district physician; and as often in addition as the principal of any school may request. At the opening of school in October a thorough examination will be made, and any children with contagious diseases will be quarantined and placed under treatment. At present five cases of follicular conjunctivitis are yielding slowly to treatment, and the remainder are practically cured.

In the schools for white children at Cris-

tobal 48 boys were given a thorough physical examination, and only one of them was found normal. Forty-three boys had drooping shoulders, 19 had spinal curvature and 19 had flat feet. Exercises were devised to correct these defects as far as possible. The examinations will be carried into other schools next year and the proper exercises to correct defects will be taken up.

A big increase in the attendance on the high school classes at Culebra and Cristobal was one of the unexpected developments of the school year. In October, 1907, there were five pupils in these classes and in October, 1908, there were 20. A course was decided upon for the Culebra high school work as follows: First year—Algebra, botany, English, German, Latin, Spanish, physical geography. Second year—Geometry and general history, and languages as in first year. Third year—Languages as in first year with French added. In Cristobal high school the first-year class was offered algebra, English, history, Latin, and Spanish; and the second-year class the same languages, with geometry in place of algebra. In both schools the subjects were necessarily limited by the preparation of the teachers to instruct in them. The great predominance of languages in the course is due to the fact that some of the pupils wish to continue the Spanish begun in the primary schools; the desire of a few to take Latin because it is required for the college work they expect to take up later; and because there were no Latin text books in the Zone at the beginning of the year and some children who would have taken Latin, took up German rather than wait for the arrival of the Latin books. Next year the high school work will be strengthened by a supervisor of high school grades, a man of experience, who will direct the teachers and will also assist in teaching.

The organizing of the course of study, and the grading of the pupils were the main pedagogic problems of the year. Uniform examinations were given by the superintendent and sent out from his office, and the results of the examinations, together with the teachers' report on the work of each child were made the basis of regrading. It is believed that the children are now so classified that each one is doing as much work as it is good for him to do, or at least is in a class where he is capable of doing the work without overstudy. As the grading in each school was in progress the method of instruction graduated from the individual instruction of previous years to class instruction.

Along with the work of regrading was carried on the work of systematizing the course of study. During the second half of the year the children in a given grade in any school were doing practically the same grade of work as those in any other school. Transfers from one school to another are unusually frequent on account of the number of men on the Canal work who are obliged to change their residence according as the work progresses. One result of the systematizing of the course of study and grading of the pupils is that a child may now leave one school and enter another without any serious break in the continuity of his study.

Supervision of the instruction was extended, and yet even with the present force it is less than in the average school system

in the States. The problem was greater than in the States, as the schools are scattered along a line 50 miles in extent, and the teachers and children had no common ideas of instruction. A supervisor of primary grades was engaged in January, 1909. The less experienced teachers were given an opportunity to observe the work of other teachers, and were also given individual assistance. Teachers' meetings were held each month and the chief topics discussed were the grading of pupils and the course of study. During the coming year the supervisory force will consist of three persons, the superintendent, supervisor of high and grammar school work, and the supervisor of primary work. Among the new teachers already engaged for next year are one who can instruct in music, and one who can give lessons in drawing.

An effort to increase the standard of instruction in the school for colored children met with less success, because the problem there is entirely different. Whereas the home influences of the white children are such as to promote regular attendance at school, those of the negro children are either neutral or averse to regularity. The great problem in the negro schools in the Canal Zone is to get the children to attend school more than two days a week. It is a home rather than a school problem, and so long as the labor population is shifting and the location of the home uncertain, the problem will remain unsolved. Conditions may be bettered, however, and to this end the teachers (all negro men and chiefly from the West Indies) have been given examinations, on the result of which they must base their claims for reappointment. This does not mean that the intellectual test is the only one, but merely that a man who cannot make a certain mark on an examination will be disqualified. Most of the teachers have qualified and will be reappointed.

Two new school buildings have been authorized for negro children. One of them will be built at New Gatun and the other in Culebra. They will be of the type of the Empire school house, that is, one story frame structures with four rooms, each 25 feet by 36 feet. An addition of two rooms has also been authorized for the negro school at Cristobal, where only two rooms are now occupied.

Sojourners' Lodge.

Sojourners' lodge, No. 874, A. F. and A. M., holding of the grand lodge of Scotland, celebrated the anniversary of St. John the Baptist at the lodge rooms in Colon on the night of June 26, by conferring the third degree on four candidates in the presence of eighty members. After the degree work a social session was held. This lodge meets the first Saturday after the full moon in each month, but informal sessions are held at the lodge rooms every Saturday night. Ninety per cent of the members are Americans and ninety-five per cent of these are employes of the Commission and the Panama railroad.

Members, Phi Delta Theta Fraternity.

All members of Phi Delta Theta Fraternity residing on the Isthmus are requested to communicate their names, class, chapter and Isthmian address to S. M. Vance, San Pablo, Canal Zone.

LOST—Either in vicinity of Gatun, or between Gatun and Colon, a carved silver watch, and brass check No. 41351, attached to leather fob. Finder is requested to return to District Quartermaster at Gatun and receive reward.

THE SALVATION ARMY.

Work Carried on With the Assistance of the Commission.

The work of the Salvation Army on the Isthmus is confined almost entirely to West Indian negroes brought here for the Canal labor force. It is divided into the institutional work at the rest-house in Colon, and evangelistic work in the city of Panama and Canal Zone villages.

The efforts of the Salvation Army in behalf of the laborers date from May 19, 1904, when a representative of the organization came here from Jamaica and submitted a plan of work to the Governor of the Canal Zone. On November 29 of that year a building in Cristobal, formerly occupied as a barrack by Colombian soldiers, was turned over to an officer of the organization, and evangelistic services were conducted there until the building was torn down some months later.

At a meeting of the Isthmian Canal Commission on February 14, 1905, a rest-house at Cristobal was authorized and \$3,250 were appropriated for a building and furniture. The building was erected two years later, and was opened in June, 1907. It was a one-story structure up to a few months ago when a second story was added. On the first floor are a restaurant, a kitchen, reading-room, dormitory, bath and toilet, and a large packing or trunk-room, where the lodgers may keep their clothing under lock and key. The second story contains the office and living apartments for its commander and his family, and such members of the local staff as are entitled to residence at headquarters. Electric light and janitor service are furnished by the Commission, as in the case of the various chapels and clubhouses in villages along the line of the Canal. The dormitory linen is laundered free. In short it is a Commission building, and the Salvation Army is merely allowed to conduct the work. In all \$6,650 have been spent on this rest-house.

The aim of the Salvation Army and of the Commission is to afford a place of shelter for negro and other laborers who come from other ports in search of work, men who have been disappointed in not finding work here, those who have dissipated their money, and those who, through fault of their own, have been discharged or have left the Commission service. During one week in May there were registered, Americans, English, Scotch, Welsh, Scandinavians, Russians, Bohemians, Jamaicans, Barbadians, Trinidadians, Chilians, Peruvians, and Demerarians. The length of the stay varies from one night to several months. In every case the men are made to understand that the help given them is in the nature of a loan, and those who receive assistance in money, food or lodging, are expected to pay when they are able. More than fifty per cent of the men who came to the home penniless, paid every cent they owed before leaving the Isthmus. For the past year the home has been virtually self-supporting.

No regular meals are prepared in the kitchen, but tea, coffee, bread and butter, eggs and canned meats are served at nominal cost. A lodging costs 25 cents a night. Some who apply for shelter are not able to pay even the small prices asked, and during the past year, 550 meals have been given, and

147 beds occupied free. Twenty-two meals a day are paid for on an average, and during the past year, 3,220 lodgings were paid for. About 100 men a week make use of the free reading-room. The home has no accommodations for women, although occasionally applicants have been sheltered for a short time.

All the work is directed from the headquarters in the rest-house at Colon, where the resident commander, Adjutant H. Filmer Watson and his wife make their home. Such work as is done at Montt Hope and Gatun is conducted by officers sent out from Colon, but on account of the rapid growth of Gatun, an independent post is projected for that place. Outposts are maintained at Gorgona, Empire and Panama, and two female officers are stationed at each place. Their duties are to spend 18 hours a week visiting, hold eleven open air meetings, and six indoor services with preaching, including three Sunday services. The lieutenant in charge of each post receives four dollars a week salary, and her assistant receives less. In March, 40 recruits were added to the Army, although not necessarily for active service.

The Gorgona outpost occupies a large hall for which a rental of \$24 a month is paid. Quarters for the station officers are partitioned off.

At Empire the building used was erected by the Army at a cost of \$600. The hall has a seating capacity of 200, and there are also rooms for the officers.

In Panama one large hall is rented for the meetings, near the Panama railroad, but the greater portion of the work is done in the open air meetings, and by officers in going about the streets.

In addition to the evangelistic and institutional work the Army acts as an employment bureau. Men who cannot work to advantage on the Isthmus are induced to save their earnings until they have enough money to pay their way to a country where there is a more favorable climate, or class of work.

PERSONAL.

Mr. William V. Alford, Chief Engineer of the Amazon and Pacific Railway, a Peruvian enterprise, has been on the Isthmus for a short time on his way back to South America, from the United States. In 1901, Mr. Alford was in charge of one of the Isthmian Canal Commission field parties that surveyed the region north of the Gulf of San Blas, and subsequently was with the same Commission in Nicaragua. The Amazon and Pacific railway, with which Mr. Alford is now connected, is being built by an American syndicate, and extends from the port of Ancud, Peru, on the Pacific coast, to the Ucayali River, one of the chief tributaries of the Amazon.

Lieut.-Col. George B. Davis, U. S. A., deputy commissary general of the subsistence department of the United States Army, and assistant purchasing officer of the Commission at New Orleans, was a passenger on the United Fruit Company's steamship *Turrialba*, which arrived at Colon on Thursday, July 1.

A concert will be given by the I. C. C. band at Gorgona, on Sunday, July 11,* at 6 p. m.

SOCIAL LIFE OF THE ZONE.

Empire Christian League Elects Officers.

The Empire Christian League held its semiannual election of officers in the Commission chapel on Friday evening, June 11. George R. Gobrecht was elected president, J. C. Foreman first vice-president, J. W. Conner second vice-president, Mr. Anderson corresponding secretary, and Mr. Windes, financial secretary and treasurer.

The League was organized January 30, 1908, to promote religious work in the district of Empire, and on the Isthmus of Panama. All religious services held under the organization are, as far as possible, undenominational; the form, as well as the character of the doctrine taught, is left to the judgment of the minister conducting any particular service. Special ordinances in connection with the denomination which the minister represents may be administered at the close of the service. The resident chaplain has the privilege of choice of any one of the services conducted by the League on each Sunday. The Sunday school and Young People's Christian Union are under the supervision of the League, and the literature in circulation in both is, as far as is practicable, nondenominational.

The officers constitute a board of trustees to whom all legal and other transactions of the League are referred. In addition, there are four standing committees, visiting, sick, music and membership, and such others, specially appointed, as are required from time to time. The present membership is 60. Dues are \$3 annually or 25 cents a month.

The Bible class of the Empire Sunday school gave a social in honor of the retiring teacher, at the Commission chapel on Tuesday evening, June 29. There were 35 present. The class numbers 28. Mr. G. R. Gobrecht has been selected class president.

Sunday evening, June 27, a service was held in the chapel at Empire under the auspices of the Woman's Christian Temperance Union. Addresses were made by Judge Wesley M. Owen on the legal aspect of the temperance movement, the Rev. J. B. Sobey on the moral phases, and Mrs. A. B. Hillerman on the general work of the Union. A special program of music was given under the choir director of the Empire Christian League.

A complimentary entertainment was given at the Empire clubhouse on Thursday evening, July 1, when a program consisting of readings by Miss Mary Slifer and songs by Mr. Bonrke Sullivan was given. Mrs. Goolsby Shivers was accompanist.

Regular dances are held at the clubhouse by the Wizards on the first Saturday and the Empire Dancing Club on the fourth Saturday in each month.

The Gorgona W. T. C. U. held a social meeting on Thursday, June 30.

The Cristobal Camera Club will hold its first exhibit at the Commission clubhouse on July 22, 23, 24. The club was organized in January, 1909, and has a membership of 75. Mr. J. W. Debrill is secretary. Several excursions have been made, including visits to Fort Lorenzo, Porto Bello, and Old Panama. An excursion to Taboga has been arranged for Sunday, July 11. The exhibit will be held in the entertainment hall which will be open to the public during the three days. Mr. Frank E. Read has charge of the arrangements.

OFFICIAL CIRCULARS.

Sixty-Trip Tickets.

CULEBRA, C. Z., June 30, 1909.

CIRCULAR No. 150-A:

The impression seems to prevail in several departments and divisions that requests for new sixty-trip tickets must be accompanied by the tickets remaining in the book previously issued to an employe. This causes considerable inconvenience to employes whose duties compel them to travel frequently, and is not in accordance with Circular No. 150, issued December 23, 1907, paragraph 5 of which reads as follows:

"No employe should have more than one ticket in his possession, and the cover or partially used ticket previously issued should be returned to this office immediately upon receipt of new ticket."

Requests for sixty-trip tickets should be submitted by heads of departments or divisions several days before the employe's old ticket will be exhausted, but the new ticket should not be turned over to him until the old ticket is surrendered, which should be forwarded to this office for cancellation.

GEO. W. GOETHALS, *Chairman.*

Requests for Work.

CULEBRA, C. Z., June 30, 1909.

CIRCULAR No. 197-C:

1. Effective July 1, 1909, or as soon thereafter as the new blank can be obtained from the Depot Quartermaster, Mt. Hope, Form 159 C. E. Revised shall be used in lieu of old Form 159 C. E., and requests for work made between departments or divisions of the Isthmian Canal Commission, or between the Isthmian Canal Commission and the Panama Railroad Company, covering manufacture, repairs, alterations and special services which cannot conveniently be executed by the department making the request, or which are the special function of the department on which the request is made, will be submitted on the new form, a copy of which is attached hereto, except as hereinafter noted. The old form, subject to the following requirements may be used until the new form is obtainable.

2. This form is intended to obviate requests or recommendations being made by letter covering work to be performed by another department or division, but in addition it will take the place of requests for special authority when the work is to be performed by the department or division making the request.

3. When the estimated cost of the work does not exceed \$50 the request may be made direct without the approval of the Chairman and Chief Engineer, in which case two copies of Form 159 C. E. Revised will be sent direct to the department or division performing the work, and two copies to this office. This shall not be construed, however, as giving authority to divide up work that would otherwise fall naturally under paragraph 4 of this circular into separate items, or to divide items themselves so that each one, amounting to less than \$50, may be forwarded direct.

4. When the estimated cost exceeds \$50, work must be authorized by the Chairman and Chief Engineer whether it is to be performed by the department or division making the request, or by another division. In this case five copies of the requisition will be forwarded to this office. For requests on the Panama Railroad Company forward nine copies.

5. Estimates will be prepared and charges rendered in accordance with directions contained in Circular No. 169 covering percentages of surcharges, or as it may be modified from time to time.

6. These requests must be numbered consecutively beginning with 1, in the upper right-hand corner, at the beginning of each fiscal year, and the following prefixes should be used to distinguish the departments and divisions indicated:

Chairman and Chief Engineer's Office, CE-1, CE-2, etc.	
Atlantic Division.....	A-1
Central Division.....	C-1
Pacific Division.....	P-1
Motive Power and Machinery.....	M-1
Civil Administration.....	CA-1
Sanitary Department.....	SAN-1
Quartermaster's Department.....	Q-1
Subsistence Department.....	SUB-1
Disbursing Officer.....	DO-1
Examiner of Accounts.....	EX-1
Law Department.....	L-1

Correspondence relating to any particular requisition should give the number and date of same.

7. All the requirements indicated on the form must be complied with when practicable.

8. Requisition should be made on the Depot Quartermaster, Mount Hope, for the necessary supply of forms.

9. The heads of the four respective divisions of the

office of the Chairman and Chief Engineer will sign, by my authority, such requests as may be referred to them for action by me.

10. Included in work which must receive my approval in advance of its performance, and covered by Form 159 C. E. Revised, are the following:

(a) *All New Building Construction*—This includes all work involving expenditures chargeable to the new classified subaccounts for "Construction of Buildings" for the Department of Civil Administration, for the Department of Sanitation, for the Department of Construction and Engineering (including buildings for the use of the Quartermaster's Department); all work charged by the three construction divisions of the Department of Construction and Engineering against "Division Structures," and all buildings paid for from appropriations—"Reconstruction and Reequipment, Panama Railroad" and "Relocation, Panama Railroad."

(b) *All Improvements and Alterations to Buildings*—This includes all Commission buildings as covered by Circular 253, of May 21, 1909, Division structures; and also, work under this head paid from appropriations—"Relocation, Panama Railroad" and "Reconstruction and Reequipment, Panama Railroad" are included in this requirement. Ordinary repairs to the plumbing, painting, metal and wood work of buildings may be made without work request on Form 159 C. E. Revised, except when the estimated cost of the work is over \$500, when authority shall be obtained in the usual manner. For all ordinary repairs not covered by Form 159 C. E. Revised, a monthly statement shall be submitted to me for approval, showing each building repaired during the month, the nature of the repairs and the total cost for each building separately.

(c) *All New Construction for Zone Water Works, Sewers and Roads*—This includes all work involving expenditures chargeable to the following new classified subaccounts:

418-A—"New Construction Zone Water Works and Sewers."
421-A—"New Construction Zone Roadways and Walks."

421-C—"Miscellaneous Grading and other Municipal Work, Zone Roadways and Walks."

Ordinary maintenance and repairs to Zone water works, sewers, and roads may be made without request on Form 159 C. E. Revised, except when the estimated cost for any piece of work is over \$500, when authority shall be obtained in the usual manner. For all maintenance and repair work not thus covered, a monthly statement shall be submitted to me for approval showing the purpose and necessity of the expenditures.

(d) *All New Construction in Panama and Colon for Water Works, Sewers and Pavements*—This includes all work involving expenditures chargeable to the following new classified subaccounts:

416—Construction of Water Works and Sewers, Panama.
417—Construction of Water Works and Sewers, Colon.
419—Paving, Panama.
420—Paving, Colon.

This work is payable from a special appropriation, which can be used for no other purpose.

(e) All work at present covered by old Form 159 will likewise continue to be authorized in advance by new Form 159.

12. One copy of all approved work requests will be forwarded from this office to the Examiner of Accounts, who will be given additional duties in connection with handling same in separate letter.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

CULEBRA, C. Z., July 1, 1909.

CIRCULAR No. 197-D.

Effective July 1, 1909, monthly "blanket orders" or work requests, issued on Form 159 C. E., covering services, small repairs and manufacturing work of a minor nature and which are not required to be made separately by Circular 197-C., will be allowed to run for the entire fiscal year instead of for only one month as in the past, subject, of course, to termination or modification at any time on the part of the division or department making the work request.

Departments and divisions receiving these "blanket order" work requests for July will give them sub-numbers running consecutively through the year as follows:

Request No. 426, for example, for July, will be numbered 426-1; August, 426-2; September, 426-3, etc. In this way orders and bills for each month can be classified separately, and the necessity of making a separate work request each month will be obviated.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Monthly Abstract of Expenditures.

CULEBRA, C. Z., June 30, 1909.

CIRCULAR No. 263.

Effective July 1, 1909, the monthly abstracts of expenditures, referred to on page 19 of Circular No. 1,

Office of the Chief Quartermaster, will be made on Form 132 C. E., Revised, one copy of which will be forwarded monthly to the Examiner of Accounts, and one copy to this office.

A supply of this form may be obtained by requisition on the Depot Quartermaster, Mount Hope.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Rules Governing Shop Employes.

CULEBRA, C. Z., July 1, 1909.

CIRCULAR No. 262.

The enclosed rules governing shop employes are adopted, effective this date, for the Isthmian Canal Commission and Panama Railroad Company.

Copies of these rules, printed on cardboad, should be posted conspicuously in each shop where all employes will have an opportunity to see them.

The required number of printed copies may be obtained by requisition on the Depot Quartermaster, Mount Hope, Canal Zone.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

1. *Working Hours*—Regular working hours are: 7 a. m. to 11 a. m., 1 p. m. to 5 p. m.

Employes will assemble at their various places of work and be ready to start work on the signal.

All not otherwise assigned are expected to be on duty and work these hours regularly.

Employes will not be permitted to wash up or change their clothes during working hours of the shops, or prior to the signal to stop work.

2. *Manner of Checking In and Out*—Upon reporting for duty before time for commencing work at 7 a. m. or 1 p. m., each employe will regularly call for and obtain a work check from the timekeeper's check window.

Each one will deposit same where receipt is provided for within ten minutes after the completion of each work period.

Those coming in after signal to commence work will not be permitted to commence until 8 a. m. or 2 p. m., and not then until after reporting to the timekeeper in the Master Mechanic's office and obtaining with their work check a written notice which they will present to their foreman, advising him of their having been checked in late.

Those who for any cause quit prior to regular quitting time must obtain, in each case, from their foreman a written notice, which they will present to the timekeeper in the Master Mechanic's office with work check before leaving the shops.

3. *Penalty for Failure to Properly Check In and Out*—Employes calling for or depositing checks of any other employes, or any who fail to draw or deposit checks as provided in Rule 2, will be disciplined as follows: For the first offense the discipline will consist of a warning letter as a matter of record, and suspension of one day without pay. For the second and subsequent offenses the discipline will consist of suspension of five to ten days, or dismissal, as the governing circumstances may warrant.

All suspensions and warnings will be made a matter of record, and in applying discipline all circumstances in connection with employe's efficiency and past conduct and previous observance or disregard of rules will be taken into consideration.

4. *Absence Without Permission*—For absence of less than two days in succession without permission and not covered by a medical certificate of disability, discipline will be applied as outlined in Rule 3.

Absence of two or more days in succession without permission and not covered by a medical certificate of disability may result in dismissal, as provided by circular of the Chairman and Chief Engineer.

5. *Hotel and Commissary Coupon Books*—The issue of hotel and commissary coupon books will be in accordance with current instructions as now set forth in the Chairman's circular No. 256.

Employes desiring coupon books will place their orders with the coupon book clerk, foreman or assistant to foreman, as arranged locally in each shop.

Books ordered will be prepared and delivered as promptly as possible, usually within two days.

5a. Special attention of all concerned is directed to the necessity of complying with contract and instructions on inside of the covers of hotel and commissary coupon books, and also to the orders regarding use of 24-trip books and half rates, for the reason that violation of these contracts or instructions will result in financial loss or dismissal from the service.

6. *Personal Injuries to be Reported Promptly*—Employes injured in line of duty, unless too seriously injured to be able to do so, must report to their foreman before leaving the shop, in order that reports may be made of same properly, as required by law governing pay for time lost on account of injury.

7. *Employes Responsible for Tools and Material in Their Possession*—All employes are responsible for

tools or material issued to or used by them and will be required to pay, by deductions which will be entered against their wages on pay rolls, for any loss or damage to same through willful neglect or carelessness.

8. *Complaints and Requests*—Complaints or requests should be taken up through employe's immediate foreman for decision, and appeal, if made, must be in regular order through the general foreman and Master Mechanic before being carried to the Head of Division or Department or higher authority.

9. *Quality and Quantity of Work Performed to be Satisfactory to Foreman and Master Mechanic*—Each employe will be required to turn out a full day's work each day. An employe whose workmanship is not up to the standard, as regards quality or quantity, or both, will be warned verbally by his foreman. If there is no improvement within a reasonable time he will be so notified by a warning letter from the Master Mechanic, after which, if there is still no improvement, employe will be reduced to the grade and rate of pay called for by the quality or quantity of work he is turning out.

Overtime—Eight hours will constitute a day's work for American shop employes whether on day or on night duty. No time will be allowed shop employes except for services rendered at shops, unless they may be specifically detailed for temporary duty elsewhere. No allowance of pay is permitted to cover time going to or from work at place of regular employment either for day or night duty.

Overtime work will be permitted to cover only actual emergencies and pay for same will be in strict accordance with Circular No. 11, addressed to all Timekeepers by the Acting Examiner of Accounts.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Manufacturing Account.

CULEBRA, C. Z., July 3, 1909.

CIRCULAR No. 264.

I have approved the recent report of the Committee appointed to outline a uniform plan of reporting the operations of all manufacturing units included in General Account No. 2—Manufacturing Account, and same will be effective July 1, 1909.

A copy of this report has been furnished all departments and divisions having in their charge plant engaged in manufacturing or repairs.

Blanks for the reports, as outlined therein, have been ordered and will be available, subject to requisition on the Stationer and Printer, in ample time for the July reports.

These monthly reports should be made to the Chairman and Chief Engineer promptly at the close of each month's accounts, a copy being also sent to the Examiner of Accounts, who will furnish any information desired relative to the reports where not fully understood.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Superintendent of Public Works.

ANCON, C. Z., June 30, 1909.

CIRCULAR No. 87.

Mr. J. J. Reidy, Assistant Superintendent of Public Works, is designated as Acting Superintendent of Public Works, effective July 1, 1909, to continue during the absence on leave of Mr. George I. Campen.

JO C. S. BLACKBURN,
Head of Department of Civil Administration.

Acting Master Mechanic, Empire Shops.

CULEBRA, C. Z., July 6, 1909.

HEADS OF DEPARTMENTS AND DIVISIONS:

Effective to-day, July 6, 1909, Mr. H. J. Moriarty will act as Master Mechanic at Empire shops during the absence on leave of Mr. W. O. Johnson.

GEO. D. BROOKE, Superintendent M. P. & M.

Auction Sale.

In order to recover freight and storage charges, the Panama railroad will dispose of the accumulation of "Over" and "Unclaimed" shipments now in its possession, by public auction, Wednesday, July 14, 1909, at 9 a. m., sale to be held on Dock 11, Cristobal, C. Z.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery and merchandise in general, all of which has been held six months and over in an effort to locate owner.

H. J. SLIFER,
General Manager.

Sale of Carriages and Horses.

Auction: There will be offered for sale, at Ancon corral, July 20, 1909, at 2 p. m., the following Isthmian Canal Commission property: 9 Victorias, 2 double surreys, 4 single surreys, 1 station wagon, 3 horses, and an assortment of harness pertaining to this equipment. Any of the above articles may be seen by prospective bidders at Ancon corral after July 2. Address all inquiries to District Quartermaster, Ancon.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 14, 1909 (75th meridian time):

DATE.	High.		Low.		High.
	A. M.	P. M.	A. M.	P. M.	
July 8.....	1:03	7:10	1:33	7:31	
July 9.....	1:53	8:03	2:23	8:24	
July 10.....	2:47	8:57	3:23	9:24	
July 11.....	3:46	9:56	4:24	10:29	
July 12.....	4:49	10:58	5:28	11:39	
			P. M.		
July 13.....	5:54	12:04	6:32		
July 14.....	12:49	6:58	1:08	7:35	

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Rainfall, June 1 to 30, 1909, Inclusive.
(MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Atlantic Division—</i>			
Cristobal.....	2.97	1	17.49
Brazos Brook.....	3.76	19	18.63
Gatun.....	3.36	14	16.35
Bohio.....	2.25	19	12.31
<i>Central Division—</i>			
Tabernilla.....	2.66	19	11.16
San Pablo.....	2.21	19	10.80
Bas Obispo.....	2.00	19	11.71
Gamboa.....	2.10	18	9.55
Empire.....	1.10	21	7.84
Camacho.....	1.20	18	10.52
Culebra.....	1.18	21	9.44
<i>Pacific Division—</i>			
Rio Grande.....	1.25	21	9.27
Pedro Miguel.....	2.20	21	14.19
Balboa.....	2.43	21	12.06
Ancon.....	2.20	21	9.90
<i>Atlantic Coast—</i>			
Porto Bello.....	3.04	16	17.70
Nombre de Dios.....	3.34	9	18.02
<i>Upper Chagres—</i>			
El Vigia.....	2.70	19	16.93
Alhajuella.....	3.85	21	19.73

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, July 3, 1909:

	STATIONS.					
	Vigia.	Alhajuella.	Gambob.	Bohio.	Gatun (Canal).	Gatun (W.D.).
Height of low water ab. m'an sea-level, ft.	125	92	46	1	0	0
Maximum height ab. mean sea-level, feet:						
Sunday, June 27.....	129.6	95.5	51.6	9.2	5.0	3.7
Monday, June 28.....	127.2	94.0	50.5	8.8	4.8	3.6
Tuesday, June 29.....	127.8	94.4	49.5	6.4	3.0	2.4
Wednesday, June 30.....	127.6	94.2	49.7	6.2	2.4	1.9
Thursday, July 1.....	127.4	94.1	49.7	6.9	2.4	1.9
Friday, July 2.....	131.4	96.7	53.0	6.6	2.0	1.6
Saturday, July 3.....	128.6	95.3	52.8	9.9	3.4	2.7

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., July 7, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- Beach, Frank A. Lowman, Miss Alice.
- Brahler, Mrs. Maud M. Mayott, Joe.
- Brewster, Tom E. McCartney, James.
- Brickerhoff, Frederick. McDonald, Mrs. Ella.
- Cain, Campbell. Milan, Harry.
- Callender, Mrs. Kate. Morrison, Wm. G.
- Campbell, Charles R. Murray, William (2).
- Chase, Harry. Riddick, W. M.
- Cowes, Willie. Sedwick, Harry F.
- Fitzpatrick, C. C. Velebit, Stojan.
- Gordon, Charles T. Walsh, James A.
- Grisson, J. T. Weatherford, W. T.
- Harwood, Mrs. Robt. Winkwist, Virginia.
- Kohrn, Ed.

LOST—On last train out of Panama on the night of July 5, a small valise. Finder will kindly return same to baggage room, Cristobal, C. Z.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Allianca.....	P. R. R. Tuesday.....	July 6
Orinoco.....	R-M.....	Saturday..... July 10
Colon.....	P. R. R. Monday.....	July 12
Panama.....	P. R. R. Monday.....	July 19
Clyde.....	R-M.....	Saturday..... July 24

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Panama.....	P. R. R. Tuesday.....	July 6
Advance.....	P. R. R. Monday.....	July 12
Clyde.....	R-M.....	Wednesday..... July 14
Allianca.....	P. R. R. Saturday.....	July 17
Prinz Joachim.....	H-A.....	Tuesday..... July 20
Colon.....	P. R. R. Friday.....	July 23
Tagus.....	R-M.....	Wednesday..... July 28
Panama.....	P. R. R. Friday.....	July 30

NEW ORLEANS TO COLON.

Parismina.....	U.F.C. Saturday.....	July 10
Cartago.....	U.F.C. Saturday.....	July 17
Ahangarez.....	U.F.C. Saturday.....	July 24

COLON TO NEW ORLEANS.

Cartago.....	U.F.C. Tuesday.....	July 13
Ahangarez.....	U.F.C. Tuesday.....	July 16
Parismina.....	U.F.C. Tuesday.....	July 20
Cartago.....	U.F.C. Tuesday.....	July 27
Ahangarez.....	U.F.C. Tuesday.....	Aug. 3

COLON TO BARBADOS, CALLING AT TRINIDAD.

Orinoco.....	R-M.....	Tuesday..... July 20
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Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The steamer David of the National Navigation Company, will leave Panama, for David, province of Chiriqui, and intermediate points, on Thursday, July 8.

The Panama railroad steamships sail at 3 p. m. from dock at Cristobal direct to New York.

The steamers of the United Fruit Company's line sail from New Orleans at 10 a. m. for Colon, and from Colon at 3 p. m., via Port Limon for New Orleans.

All Royal Mail steamers mentioned above leave early in the morning from Colon via Kingston, Jamaica, for New York. All mail and passengers should be on board early on day of sailing.

The Prinz steamers of the Hamburg-American line sail from Colon at 1 p. m. via Kingston, Jamaica, for New York.

Supplies for Canal Work.

The following steamers arrived at the ports of Cristobal and Colon during the week ending July 3, with supplies for the Isthmian Canal Commission:

Prinz Aug. Wilhelm, June 28, from New York, with 6 tons putty, 4 tons chloride lime for stock.

Panama, June 30, from New York, with 31 tons drift holts for stock; 36,000 feet tape fuse for stock; 3,000 gallons lard oil for stock; 20,000 quintuple caps for stock; 24,000 electric fuses for stock; 20,000 pounds concentrated lye for stock; 30 tons sheet steel for stock; 23 tons bar steel for stock; 6 tons caustic soda for stock. And a miscellaneous cargo aggregating 3,200 packages, weighing 370 tons.

Torralba, July 1, from New Orleans, with 190,000 pounds hay for corrals; 5 1/2-yard dippers for 70-ton Bucyrus shovels for Porto Bello; 2 swing circles for 70-ton Bucyrus shovels for Central Division; 16 tons cast iron washers for stock; 113,312 feet B. M. Y. P. lumber for Gatun; 542,253 feet B. M. Y. P. lumber for buildings; 5 tons black lubricating grease for stock.

AT PORT OF BALBOA—Sebara, July 1, from Everett, Wash., with 325,959 feet B. M. Douglas fir lumber for Gatun and Porto Bello.

Arrivals and departures of vessels at Balboa during the week ending July 2, were as follows:

Arrivals—June 26, Chiriqui, from intermediate ports; June 26, City of Panama, from Central America; June 28, Loa, from South ports; June 30, Sebara, Kosmas I line, lumber, I. C. C., from North.

Departures—June 29, Limari, to South ports; July 1, Arica, to Guayaquil.

LOST—A gold medal watch fob on June 29, between nurses' quarters and post-office, Ancon. On the front of the medal was engraved O. J. Ruch, Empire Y. M. C. A.; on the back, member of the first basket ball championship team of the Isthmus. Finder please return to Commission Clubhouse at Empire and receive reward.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, JULY 14, 1909.

No. 46.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Vacations in Boquete.

On recommendation of the Acting Chief Sanitary Officer, the Chairman of the Isthmian Canal Commission has decided that Boquete, in the Province of Chiriqui, Republic of Panama, is to be included in the list of places where employes may take their annual leave. This locality is above the altitude of 4,000 feet, and will afford the necessary change of climate required by Commission regulations.

Correct Designations of Rivers.

The Chairman of the Commission in a letter dated June 4, 1909, calls attention to a misapplication of the names Rio Gatun, and Rio Gatuncillo, the Frijol, Frijol Grande and Frijolito rivers, and sets forth how they shall be considered in future. The letter is as follows:

"The Harrison-Arosemena map of 1862 calls the upper portion of the Rio Gatun, Rio Gatuncillo. This is in error, and all maps and plans now in use by the Commission, and all land records, will, as far as practicable, be changed to show the entire length of this stream as the Rio Gatun. The Rio Gatuncillo is a distinct river that heads somewhere near the Rio Agua Sucia, and is tributary to the Chagres River near Allajuela.

"As for the other three rivers mentioned above, the Harrison-Arosemena map of 1862 calls the lowest and smallest river, Rio Frijolito; the upper and largest, Rio Frijol, and the one between these two, Rio Frijol Grande. These are three distinct rivers and should be so maintained, with the designations shown on the map above referred to."

Lidgerwood Unloaders in June.

The twelve Lidgerwood unloaders in the Central Division during the month of June unloaded 2,950 trains, aggregating 51,873 cars. Of this number 1,427 trains, composed of a total of 24,259 cars, were unloaded by the five unloaders at Taberulla; 661 trains, composed of 12,098 cars, were unloaded by

four unloaders at the Miraflores dumps, and 862 trains, composed of 15,516 cars, were unloaded by three unloaders at Balboa. As all the cars were of 20-yard capacity the material unloaded represented about 1,037,460 cubic yards.

Relay Pumps for Gatun Dam Fill.

A relay pumping plant to assist the hydraulic dredges in making the fill of Gatun Dam has been ordered and will be delivered on the Isthmus before October 15. The contract was let on competitive bid to Manning, Maxwell and Moore.

The plant will be in three units, one for each of the three 20-inch suction dredges now pumping into the Dam. Each unit will consist of a 20-inch horizontal centrifugal single suction pump with bottom horizontal discharge, an induction motor of not less than 550-horsepower, and a hand-operated traveling crane. The pump and motor will be mounted on a gray cast iron frame, and the crane will travel parallel with the pumping outfit and will be capable of handling the heaviest part of it. Each pump will receive the discharge of one dredge at a distance not greater than 3,000 feet from the dredge and at an elevation not greater than 30 feet above the level of the water. About five hundred feet of the 20-inch pipe on the suction end of the relay pump will be air tight so that the pump will operate with a suction as well as a discharge effect. Electricity will be supplied from the Gatun power plant.

Recruiting Laborers in Barbados.

Eight hundred and fifteen negroes from Barbados for the Canal labor force were brought to the Isthmus by the *Cristobal*, which arrived at Colon on July 7, after a voyage of four days. The number of Barbadians recruited up to July 7, was 17,949, out of a total of 27,500 West Indians recruited for the Canal work.

A representative of the Quartermaster's Department recently visited Barbados to investigate the conditions of the recruiting service in that island. He found that the charges made against the local medical examiner of taking fees from laborers who wished to come to the Isthmus were well founded, and arrangements were made to prevent such extortions in the future. A contract will be made with a resident of Barbados whereby the Commission will pay him \$2 for every laborer shipped to the Isthmus on requisition by the Quartermaster's Department. Under the system of recruiting maintained up to July 1, the price per laborer was about \$6, so that the initial cost of recruiting will be reduced \$4 per man. Barbados is an island about 200 square miles in area, and has a population of about 1,000 persons to the square mile; most of these people being in agricultural communities. So far as the probable demands for Canal

work are concerned Barbados alone can supply all the new laborers necessary to keep the labor force full. The attitude of the government of the island and of the people is favorable to recruiting, on account of the density of the population, the fact that there are more laborers in the island than can comfortably be supported there, and because the laborers who come to the Isthmus send home a large amount of money.

Trial Orders for Native Lumber.

The Quartermaster's Department has placed two trial orders for native lumber with the Bayano River Lumber Company. The first order calls for 6,000 feet B. M., and the second for 142,043 feet B. M., delivery to be made at the Balboa dock. The price agreed upon was \$40 per 1,000 feet B. M., making the aggregate value of the two orders, \$5,921.72. The lumber is to be used principally for car and locomotive repairs at the Empire and Gorgoua shops, but the lot also includes a number of samples for testing purposes, it being the desire of the Division of Motive Power and Machinery to ascertain the kind of native woods best suited for its purposes. The orders given the Bayano River Company include thirteen varieties, the name and number of feet called for being as follows:

	Feet B. M.
Alcovius Colorvie.....	72
Alfajilla.....	10,516
A. Nariay.....	26,651
Cedar.....	6,072
Cocoquito.....	2,072
Espave.....	6,072
Espinosa.....	72
Guaso Colorvie.....	72
Madronia.....	148
Pali Coloron.....	2,148
Quilae Colorvie.....	94,004
Robles.....	72
Santa Maria.....	72
Total.....	148,043

The Alcovius Colorvie, Espinosa, Guaso Colorvie, Madronia, Roble or Isthmian oak, and Santa Maria varieties are to be used as samples in testing the quality of the timber. The Alfajilla will be used for car draft timbers and car deadwood; the A. Nariay for front and back end bumpers and front end tender bumpers for 301 class locomotives; also for front and back end bumpers for 201 class locomotives, tender back bumpers for 201 and 601 class locomotives, and car cross tie timbers; the Cedar and Espave for car flooring, and the Quilae Colorvie for front and back bumpers, car end sills, car extension side boards, and car side boards.

About 10,000 feet B. M. on the two orders was to have been shipped on June 15, and an additional shipment of 26,000 feet B. M. on July 1, but up to date no lumber has been received. The first shipment was to have been made by schooner, but owing to a delay in the delivery of the Company's logging equipment, and to a freshet in the Bayano River which damaged the plant operations were seriously impeded. A tug boat ordered from Seattle some time ago is expected daily at Panama, and shipment will begin as soon as it is put into service.

FIRST WORK IN CULEBRA CUT.

Excavation was Begun on January 20, 1882.

The *Bulletin du Canal Interocéanique* of February 1, 1882, contains the following copy of a telegram sent from Panama to Paris on January 20, of that year:

"The first work on the great cut of the maritime canal was formally inaugurated to-day at Empire in the presence of the dignitaries of the state, the leading citizens of the city, and a great assemblage of the people. The first locomotive has arrived at the newly opened excavation. The city of Panama is celebrating the event with a grand fete."

Subsequent numbers of the *Bulletin* give details, extracts from which follow:

"This opening was effected by drilling and blasts of dynamite, so that the department of labor has there a plant quite sufficient in importance to allow it to make comparisons—while at the same time accomplishing a useful work—between the different systems of drilling in actual use, and to decide upon the apparatus which should receive preference by reason of the nature of the rock existing on the Isthmus, and upon the modifications which the nature of this rock may make advisable in some of this apparatus.

"Following up the same line of ideas, preparations have been made to open a second excavation a little above the first, going up towards the neck of Culebra gorge. In this portion there are found among two layers of trap some pockets that are peculiar to the Isthmian formation, and which are filled up mainly with argile or argillaceous mud. It is intended to put an excavator to work at this place." * * *

A Panama newspaper is quoted:

"Among the invited guests may be mentioned the Right Reverend Bishop, the President of the State, General Reinales, the chief of the general staff of the division, his staff officers, the commanding officers of the two English frigates now lying in the harbor, representatives of the local press, business men, financiers, and politicians of our city, the officers of the garrison, the employes of the Panama Railroad Company and those of the Canal in a body, and finally the band of the pioneer battalion and a picket of troops. The crowd was so considerable that at the last moment it became necessary to attach another car in order to accommodate everybody. At 7.30 the train pulled out and an hour later it discharged its passengers at Empire.

"A magnificent view awaited the visitors. The buildings and workshops of the company had been dressed with flags and ornamented with exquisite taste, through the efforts of Mr. Jacquemin, chief of the section, Mr. Mercier, and the agents of the section. On descending from the train a procession was formed and immediately the guests started to visit the excavating plant situated behind the hill, on which the section house is built. There Messrs. Reclus and Dauzats explained to their visitors that the pit which they saw was located vertically over the axis of the Canal, but about ninety meters above its true position; that the cut would be opened by successive terraces, where tracks would be laid for removing the excavated material, and finally explained all the operations which would have to be made to penetrate the rock. Attention was called to

the fact that the staked line indicated the axis of the canal, which lies through the center of the great opening which will be about three hundred meters wide. These stakes had been driven in several hours from Paraiso to Matachin by the intelligent and active contractor, Mr. Muraccioli. At 11 o'clock, after the arrival of the train from Colon, the blasts which had been prepared were set off, and all repaired to the section house where they gathered around the table to drink a glass of champagne.

"Mr. Reclus, in a few words, thanked his guests for having come to attend the labor feast. He stated that the works properly speaking were opened from that moment on; that the period of study had virtually passed, and that the cut in truth had been commenced on that very day. Briefly he offered a toast to the health of several persons present, to the health of Mr. de Lesseps, and drank in honor of Colombia and the State of Panama, who had accorded such beautiful, complete, and cordial hospitality to the work and to those who had undertaken it. The many and unanimous manifestations of applause, which his words received, must have shown to the eminent director of the company that all persons present shared his sentiments.

"Mr. Cervera, the president of the State of Panama, responded with a few words to the speech of Mr. Reclus, and finally after several warmly applauded addresses, all started for the railroad station to return to Panama on the train which Mr. Woods, with his customary courtesy, had held in waiting there for an hour so that everybody might be brought back to Panama. At the moment when all were getting into the train at the station, there arrived from Colon a locomotive belonging to the Canal Company, in personal charge of engineer Razy, the chief of the works at Colon, who had had the honor to present the first engine, to show that while at Empire the terrace work was opened, at Colon, had been prepared and mounted the material which was to rapidly complete those terraces. It was a happy coincidence, showing to the persons present that from one end of the line to the other all action was well planned and the ideas of the chiefs perfectly understood and interpreted; how complete was the harmony and how perfect the machine, every wheel of which was to work in perfect accord.

"One may now judge with his own eyes the progress of the work. He can see on the spot the results of many years study; of patient and constant efforts made by those who have conceived and fathered this gigantic work. * * *

"Before the ball, at 7.30, a table containing forty covers was laid for Mr. Dauzats and his guests, the principal agents of the Company. At the dessert, Mr. Dauzats, in language picturesque and far reaching in import, recounted in a few words the immense results that had been obtained during the year so rapidly coming to a close. * * * He said that from Paris the government was jealously watching over its family on the Isthmus, and he announced the early arrival of one of the main promoters of the Canal, Mr. Hersent, and concluded by drinking the health of all his guests, whom he thanked for having accepted his invitation.

"Mr. Reclus immediately replied and re-

called in inspiring and choice terms the services rendered by Mr. Dauzats to the canal. He succinctly traced the work of Mr. Dauzats back to the International Congress, and referred to the great plea which had gained for the Panama Canal cause the support of those who had opposed it; the aid he had rendered to the Commission which the year before had come to the Isthmus with Mr. de Lesseps, and finally to the services which he had rendered the company in his capacity of consulting engineer. The warm and unanimous applause with which the words of Mr. Reclus were received must have shown Mr. Dauzats how well the superior agent of the company is regarded in the minds of all.

"Afterward other toasts were offered. Among those who spoke were Dr. Companyo and Mr. Antonio Ferro, the agent of the Canal Company at Bogota, who in the course of an elegant impromptu speech drank to that Universal Progress, of whom the agents of the company are the standard bearers; to Republican France, the beacon of liberty whose rays light the world and finally to the world republic. Among cries of 'long live Colombia,' the diners left the table.

"The ballroom was elegantly decorated, spacious, and cool, and the illuminations along the road to the site of the hospital did credit to the committee who had spent many hours on them. The beauty and gallantry of the city had responded to the invitations, and the dancing did not cease until an early hour of the following day. * * *

"From this moment beyond a doubt the Canal is assured; the trench already made shows the line along which, in a few years, will pass ships carrying the commerce of the world. The axis of the Canal exists not alone on paper, for it is traced in the earth. In a few days a similar attack will be begun on the great cut at another point. At Mindi, the excavators are now ready to commence their work, the dredges are excavating at Colon, and during the approaching year Gatun will be connected with the sea."

Health Inspection Service at La Guayra.

Advices have been received that Acting Assistant Surgeon W. H. Kellogg of the United States Public Health and Marine Hospital Service, has been stationed at La Guayra, with the consent of the Venezuelan authorities, and will examine all passengers, baggage and cargo destined for American ports, including those of the Isthmus. A rigid quarantine has been maintained by the Isthmian quarantine officials against La Guayra, which is the port of Caracas, ever since the presence of bubonic plague at those places became known. This has resulted in practically a complete cessation of passenger and freight traffic between infected points in Venezuela, and the Isthmus. Under the new arrangement, the examining official will inspect and fumigate all baggage and shipments to American ports, and certify to same, which insures their entry upon arrival at destination, although the passengers embarking from those ports will have to undergo quarantine to complete six days before they will be released. Dr. Kellogg was on duty at San Francisco during the plague outbreak there, and will use his experience to co-operate with the Venezuelan health authorities in instituting measures for the eradication of the disease at La Guayra, and other points.

P. R. R. RELOCATION.

Progress of the Work Up to July 1.

The track chart of the Panama Railroad Company, covering the relocated line between Gatun and Gamboa, shows the length of completed track at the time the chart was made, April 1, 1909, and the remainder divided into sections, with their probable dates of completion, extending from July 1, 1909, to June 1, 1910. There were three sections to be laid by July 1, 1909, one between Gatun and Monte Lirio, another between Frijoles and Bohio ridge, and the third between Caimeto and Frijoles. The actual progress of work in these localities indicates that the construction forces are practically up to the schedule.

From Gatun, track has been laid up the Gatun valley for a distance of about three miles, and to a point where a trestle is being built across a deep fill. A few hundred feet beyond this trestle, the track will make a long turn to the right crossing the Quebrancha and Gatun valleys, which will eventually be an arm of Gatun Lake. The schedule called for completion to the end of the trestle by July 1, 1909, and the work was actually finished on July 9.

There is an 8½ mile gap between the work here and the Frijoles connection, two miles of which, across the valleys above mentioned, will take longer than any other portion of relocation on account of the enormous embankment quantities involved. There are numerous cuts and fills to be made, some of the cuts requiring the removal of upwards of 250,000 cubic yards of material, which, however, can be used to advantage in building the large fills. The right of way has all been cleared, and between Frijoles and Bohio ridge, a pile driver will be started to work in a few days constructing trestles which will connect the cuts already excavated. It is expected that it will take from six weeks to two months to complete pile driving in this section. By the time trestling is finished to a point a little south of Bohio ridge, the road bed will have been graded through to the Rio Juan Gallegos, where another trestle will be put in. From here to Gatun River, the grade will be ready for track-laying as soon as this gap is closed. By October 1, it is expected that the permanent track will be completed from Gatun to the Quebrancha, a distance of about 4½ miles, and by January 1, from Frijoles to the Gatun River at Monte Lirio, a distance of 7 miles.

Much of the work in the Monte Lirio section will be done by hand, and one mile of the line, in the vicinity of Rio Juan Gallegos, has been let out by contract. There are six grading gangs of 70 men each, and two clearing gangs of 75 men each, working between the ends of track from Gatun to Frijoles. Some idea of the extent of pile driving operations may be gained from the fact that in the Frijoles section there is a stretch of trestle 3,500 feet long, and in the Caimeto section, one over 2,000 feet long.

Track has been laid about two miles north and one mile south from where the 1½ mile spur track connects the relocated line with the old line at Frijoles station, and there is a gap of only a mile on the south end to connect with the Caimeto section which is completed to Gamboa. This gap will probably be closed within the next 30 days.

From Gamboa to Paraiso, the track will be

laid on a berm on the east bank of the Canal, the excavation to be made by the Canal construction forces. From Paraiso to Corozal, there is about 2 miles of new construction which will be done during the present fiscal year. The new line occupies the Commission dumps in a large part of this territory. These dumps will be raised to grade by continued dumping of material from Culebra Cut. The track in the Miraflores tunnel has been laid, and at 3.30 p. m., on Monday, June 28, the first coaches passed through, consisting of the private car "La France," with General Manager Slifer and party on board, and a baggage car.

Track-laying on the new line between Corozal and a point a little north of the Balboa wye has been completed, and the work is now principally confined to the fill over the swamp near El Diablo Hill. This fill has given some trouble on account of slides, due to soft mud which overlies the rock in this vicinity, but this mud has been displaced by continued dumping of rock from Culebra Cut, and the slide is now practically overcome. The only other slide on the relocation that has given trouble is the heavy fill south of Gatun station. This has been remedied by counterweighting, or dumping material parallel with the base of the embankment, and traffic was resumed over this section of the road from Mindi Junction, to Tiger Hill, on Wednesday, June 16.

The average elevation of the relocated line from Gatun to Gamboa is 95 feet above sea-level. The minimum elevation through this section will be 92 feet above sea-level, or 7 feet above the water in Gatun Lake.

Up to date 19 temporary tracks have been built for construction purposes, 6 of which remain connecting the old and new lines, as follows: No. 1 leaves the old line just south of the bridge over the Pedro Miguel River and joins the relocated track near Miraflores tunnel. No. 2 extends from the old Gatun depot and joins the relocation near the high fill south of the new station. No. 6 leaves the old line south of the Miraflores power plant. No. 7 branches off from the old line just north of Barbacoas bridge and joins the relocation at Caimeto. No. 11 forms the Tiger Hill connection, extending from the new Gatun station to Tiger Hill on the old line. No. 19 leaves the old line at Frijoles station, and forms a wye at its junction with the relocation.

A track layout has been arranged for at proposed stations on the new line, consisting of house and passing tracks. The house tracks will be connected at both ends and pass behind the depots, while the passing tracks will be on the opposite side of the main line from the depots. The house tracks will be 1,500 feet in length, and the passing tracks 3,400 feet. The layout at stations so far considered, is as follows: Diablo—Depot and house tracks; Miraflores—Depot, house and passing tracks; Pedro Miguel—Depot, house and passing tracks; Gamboa—Depot, house and passing tracks; Caimeto—Depot and house track; Frijoles—Station to be located near the present wye, with house and passing tracks; Monte Lirio—Depot, house and passing tracks; Bohio—Depot and house track. There will also be an isolated passing track along the ridge line, about a mile south of Gatun.

The permanent track laid on the new line up to July 1, aggregated 108,120 linear

feet, or about 20½ miles. The number of permanent ties laid to July 1, exclusive of 605 extra size ties used in the Miraflores tunnel, was 59,333. Temporary piling to the amount of 552,294 linear feet, and permanent piling to the amount of 30,559 linear feet, were driven in the construction of trestles. Steel, aggregating 1,244.25 tons was used in bridges, and 30,115 B. M. feet of lumber in culverts. Concrete operations consisted of 904.83 cubic yards placed in the new Gatun depot; 5,665 cubic yards in the Miraflores tunnel, and 26,559.98 cubic yards in culverts. The amount of material excavated to July 1, consisted of 755,092 cubic yards of earth; 117,982 cubic yards of loose rock; 295,631 cubic yards of solid rock; 738 cubic yards of wet earth; 232,499 cubic yards of borrowed material, which, with 212,102 cubic yards allowed for swelling, makes a grand total of 1,614,044 cubic yards. Of this amount, 1,161,804 cubic yards were placed in embankment, and 452,240 cubic yards counted as waste. In addition, the amount placed in embankment by the Commission was 3,091,450 cubic yards.

Police Report for June.

The June report of the Chief of the Division of Police and Prisons shows that 518 arrests, representing 44 nationalities, were made in the Canal Zone during the month. This is a decrease of 89 from May. Of this number 480 were men and 38 were women, the offenses with which they were charged aggregating 50. The arrests were made as follows: Ancon, 30; Las Sabanas, 0; Balboa, 26; Corozal, 0; Miraflores, 13; Pedro Miguel, 15; Paraiso, 24; Culebra, 34; Empire, 69; Las Cascadas, 21; Bas Obispo, 13; Gorgona, 53; San Pablo, 2; Tabernilla, 47; Bohio, 12; Gatun, 61; Cristobal, 80; and Porto Bello, 18. The effective police force on June 30 was 174, and the pay-roll for the month amounted to \$20,273.11.

There were 55 criminal cases tried in the Circuit courts, 15 of which were dismissed, 16 continued, and 24 in which convictions were secured. Of the 24 persons convicted, 13 were sentenced to the penitentiary, 2 to the common jail and had also a fine imposed, 1 received a jail sentence, 3 were fined, and 5 cases in which sentence was suspended. Zone convicts on April 30 numbered 117; received during June, 13; discharged, 13; total on June 30, 117. The number of district prisoners on the same date was 123. Prison pay-rolls for the month were \$1,473.76; cost of prisoners' subsistence, \$857.75; clothing and other property, \$378.80, a total expense of \$2,710.31. The value of work performed by prisoners on Zone roads was \$1,821.55. Twenty-seven civil cases were tried during the month. The sum of \$3,420.97 was collected from executions.

There were 11 deaths by violence, requiring action by the Coroner, four of these being due to railroad accidents, 2 to dynamite explosion, one to drowning, and there were two suicides. Seven persons were deported during the month.

Acting Secretary Isthmian Civil Service Board

During the absence of Mr. John K. Baxter, Secretary of the Isthmian Civil Service Board, Mr. William E. Tragsdorf, office of the Chairman, Culebra, C. Z., will have charge of the work of the Board, as Acting Secretary.

FLOOR OF GATUN LOCKS.]

Extent of Curtain Walls, Method of Anchoring Concrete, and Thickness of Floor.

Excavation for the curtain walls in the upper lock chamber at Gatun is well advanced, the placing of anchorages for the floor of the east lock is under way, and the plant for mixing and handling concrete can be put in operation as soon as one unit of the power plant is completed. A board appointed to determine the plan to be followed in the construction of the floor of the locks, has made recommendations which have been approved. The board was composed of Commissioner H. F. Hodges, Assistant Chief Engineer and Chairman of the Board; Commissioner William L. Sibert, Division Engineer of the Atlantic Division; Commissioner H. H. Rousseau, Assistant to the Chief Engineer; Mr. S. B. Williamson, Division Engineer of the Pacific Division. Extracts from the report to the Chief Engineer follow:

"The Board appointed by your letter of January 3, 1909, to consider the plan for the floor and foundations of the upper portion of the Gatun lock flight, has met formally and informally at various times since the date of the letter appointing it, has given the subject laid before it due consideration and investigation, and has the honor to submit the following report:

"The first meeting of the Board was held at Gatun on January 22, at which time the Board inspected the lock excavation and the material available for the bed of the foundations, and discussed the matters before it. It then adjourned with the intention of completing its deliberations and making report before the 27th of the month, such being the instructions given in your letter. By a later letter from the Chairman of the Board, however, information was conveyed, by your direction, that the requirement as to the date of the Board's report was waived, and that the final meeting should be postponed until later. Understanding this to mean that the Board's conclusions should not be formulated until after the investigation of the works by the expert engineers who visited the Isthmus the latter part of January and the early part of February, the Board laid aside further official discussion of the matter. The individual members of the Board, however, continued their investigations, and especial light was thrown upon the problem by experiments conducted in the lock excavation, pursuant to directions from your office, to determine the effect of anchoring steel bars in the rock underlying the floor, with the purpose of ascertaining to what extent they could be trusted to hold the floor down against upward pressure.

"A number of experiments have been undertaken to this end, and results are shown in detail on the blue prints accompanying this report. Up to date five experiments have been made, the rails being anchored vertically in the soft sandstone layer which was penetrated distances of 5 and 10 feet by cylindrical holes 12 inches in diameter, in which the rails were fastened by concrete. In the first test on a rail put down five feet the rock began to crack under a pull of 98,250 pounds, and finally gave way under a pull of 136,800 pounds. The second rail anchored 10 feet deep, resisted all

efforts to pull it up, the apparatus used for the purpose breaking when the pull on the rail was 237,750 pounds; the rail itself was undisturbed, the concrete, however, showing a crack. The third test was with a rail which was anchored at a depth of five feet. The material began to show signs of failure under a strain of 114,816 pounds, and finally gave way without increase of load after this pull had been continued for about 15 minutes. In the fourth test, with a rail anchored 10 feet, the rock yielded under a load of 186,816 pounds. In the fifth test, with the rail set 5 feet deep, the top of the concrete in which the rail was embedded showed a slight crack under a strain of 113,976 pounds, but the anchor did not finally yield until the stress reached 206,080 pounds. In this test the compression of a timber in a certain part of the apparatus made the pull somewhat oblique and probably caused the indicated stress to be too great. In all these cases, the rails used were the larger size of old French rails, having cross section of 6 square inches. The elastic limit of the material is high and the stresses applied were borne with perfect safety by the steel. Other experiments in the same direction are in progress, but the Board considers that it already has sufficient information to enable it to attach proper value to anchorages similar to those described.

"The design of the floor of the forebay and upper lock of the Gatun flight has been under discussion for several months, and was especially the subject of investigation by a Board convened by your order last summer. The conditions governing the design are set forth in the transcript of proceedings of that Board in the files of your office. Various types of floors were discussed and the conclusion was reached that curtain walls should be introduced along the lock walls and across at the sill of the movable dam, it being the intention at the time that these curtain walls should penetrate not only through the stratum of soft sandstone but also through the underlying stratum of argillaceous sandstone below. If this was done, the area enclosed by these curtain walls would be protected to a considerable, but uncertain, extent against direct ground water head.

"In preparation for the construction of the floor, excavation in the lock pit and forebay has been carried to references about as follows: For the east wall of the forebay to about plus 4; for the west forebay to about plus 11; in the east lock to about sea-level, and in the west lock from plus 10 to plus 12.

"The material in the forebay is of such a nature that its removal in the west lock to a depth probably about the same as that in the east lock is a necessity in order to obtain a reliable foundation. In the east lock the upper portion of the floor must rest upon the soft sandstone for a distance of about 400 feet, measured from the south end. The excavation for the west lock has not uncovered the soft sandstone except in the southeast corner of the chamber. The stratification dips to the north and the layer of conglomerate is thin towards the south end of the excavation, and will be penetrated for a considerable distance if the foundation for the west wall is carried to the same depth as that for the middle wall. * * *

"In its consideration the Board has assumed that the maximum thrust to be re-

sisted above the intermediate gate sill is that of 87 feet of water, this thrust being possible in case the lock and forebay should be pumped dry for examination and a full head should develop under the entire area of the floor. The Board considers that this pressure can be adequately resisted by a concrete floor of reasonable thickness anchored down at suitable intervals by French rails embedded 10 feet or more in the rock. In its calculations the Board has attributed to each such anchorage a resisting power of about 128,000 pounds. In fixing the thickness of concrete floor to be thus anchored down, the Board has taken into consideration the fact that the culvert system already adopted requires a depth of 13 feet from the top of the floor to the bottom of the portion containing the culvert, this distance being based on having 3½ feet of concrete under the cross section of the culvert itself and 3 feet over it, the total thickness being 3½ feet of floor, 6½ feet of culvert and 3 feet of roof.

"In the upper portion of the lock where the soft sandstone exists, the Board has considered that it would be inadvisable to trench this material for the culverts, it being ununiform and not at all hard in its character, as well as water-bearing; and, for security, has thought that this material, where it occurs, should be removed to such a depth as to give a concrete floor of very considerable and uniform thickness. For this thickness the Board has adopted 13 feet.

"Considering the weight of this concrete floor of 13 feet in thickness, as opposed to an upward pressure on its lower surface of 87 feet of water, it is found that, deducting the weight of the concrete at 145 pounds per cubic foot, there is a remaining upward pressure of 3,550 pounds per square foot of floor. Attributing to each anchorage a resistance of 128,000 pounds, one rail will hold down 36 square feet of floor, and a 13-foot floor with anchors at the corners of 6-foot squares, will, therefore, be safe against the extreme possible upward pressure, provided that the effect of the simultaneous pull on all the rails does not develop a horizontal fissure in the stone below the ends of the rails, causing an uplift of the concrete floor loaded with a 10-foot slab of underlying rock.

"If a strength in tension of only 20 pounds per square inch be possessed by the underlying rock, such a fissure cannot occur. Should it, however, develop there would be a combined floor of 13 feet of concrete and 10 feet of rock, which, acting as a flat arch, would take up the total pressure with a thrust in compression of only 310 pounds per square inch, this thrust occurring in the stone at the middle part and in the concrete at the ends. That such an upward pressure can develop is extremely improbable. In order to reduce the chances and also the amount of stress, should it develop, the Board considers that the anchorages in the middle part of the lock floor should be somewhat deeper than the 10 feet already assumed, and recommends for this portion of the floor anchorages at a depth of 15 feet or more. With this additional load in the middle part of the floor, the thrust in the combined stone and concrete would be considerably reduced, and brought down to about 120 pounds at the crown and 170 pounds at the haunches.

"As a precaution against the development

of the maximum head under the floor, except very gradually, and due to only a small quantity of water, the Board believes it advisable to retain the curtain wall, carrying the latter to a depth sufficient to pass entirely through the stratum of soft sandstone and penetrate to a reasonable depth the argillaceous sandstone with tufa lying underneath; and that this curtain wall should be continued down the lock back of the sidewalls for a distance sufficient materially to reduce the head of the ground water which may penetrate around it at its lower end. By this precaution the amount of water which can develop the full lake pressure in the upper portion of the floor, will be only that which can penetrate through the crevices of the stone under the curtain wall, and will be, it is thought, so small in amount that by a suitable system of sumps and telltales it can, if desired, be relieved at any time.

"The Board believes that the floor of the character described should be carried down both locks until the soft sandstone has dipped so far that there is found overlying it a layer of sound rock which, with the concrete floor to be put on it, will give an aggregate thickness sufficient to insure safety against any head which can develop in that portion of the floor. For this aggregate thickness the Board has assumed 20 feet. The borings show that the lower surface of the conglomerate rock is found at a depth 20 feet below sea-level at about the position of the intermediate sill in the upper lock, it being somewhat further upstream under the west wall than under the east wall. The Board believes that the entire portion of both upper locks from the sill of the upper pair of upper lock gates to the sill of the intermediate gate should be excavated to a surface 0.67 feet above sea-level, thus founding all this portion of both the locks at the same level. In deciding this, the Board has not lost sight of the fact that the conglomerate under the west portion of the west lock forms a reasonably good foundation. On account of the unreliable nature of the material underlying this conglomerate, however, the Board has considered it desirable that the floor should extend under the west wall at the same depth as it does under the middle wall, and has believed that greater security will result if the entire excavation for both locks in this upper portion be carried to the reference stated above. Below the intermediate gate sill the stratum overlying the soft sandstone is of sufficient thickness and soundness to be trenched for the culverts, the floor between the culvert trenches to be made relatively thin. For this portion of the floor the Board recommends that the culverts be placed in trenches under the walls and floor, and that the floor between the culverts be made 3 feet thick, all to be anchored to the underlying material with rails penetrating not more than 10 feet. It is the intention that the penetration of these anchoring rails shall be such that the hold developed in the stone will be approximately equal to that developed in the concrete of the floor, latter being increased by transverse bolts or otherwise.

"The floor in the forebay of the lock, i. e., in that portion between the sill of the upper pair of the upper lock gates and the sill of the movable dam, is exposed to up-

ward pressure which cannot be equal in amount to that in the lock pit, since, even when the movable dam is closed and the lock pit unwatered, the portion between the gate sill and the dam sill will be filled with water or other material to the reference of the top of these sills. In the general design prepared for this lock it had been the intention to make the floor in this portion of the structure relatively thin, i. e., with a thickness of 8 feet and to load this floor with large rock paved on the upper surface to the height of plus 35. It is thought, however, on account of the necessity of introducing special appliances to handle stone to be deposited here, that to put all this stone on the floor would cost more than to put in a considerable thickness of concrete, and for this part of the floor the Board recommends that the excavation throughout both forebays be carried to a depth of plus 4, and the walls on the floors founded at this reference, the floors to be given a thickness of 20 feet. * * *

"The Board has considered also the advisability of introducing under the floors a system of sumps with telltales in the walls. While such a system is not absolutely necessary, since the floor is believed to be strong enough to withstand any head which can develop, yet the resulting expenditure will be very small, and will enable the pressure to be watched and relieved if necessary. On the whole the Board is inclined to recommend the adoption of such a system, the details to be left for subsequent determination. * * *

"A summary of the conclusions of the Board is as follows:

"That the floor of all that part of the chamber lying below the sill of the upper pair of upper lock gates should be treated as belonging to the lock, and the portion above that sill as belonging to the forebay.

"That the floor and walls of the forebay from the sill of the movable dam to the sill of the upper duplicate lock gates should be founded at reference plus 4, and that the floor there should be made 20 feet thick.

"That from the upper surface of the sill of the upper duplicate lock gates to and including the sill of the intermediate gates, the excavation for the floor and walls should be carried to plus 0.67.

"That this part of the floor should be made of uniform thickness of 13 feet, and should be anchored down by rails spaced as nearly as practicable 6 feet apart, longitudinally and transversely.

"That the rails should be anchored by concrete to a least depth of 10 feet in the underlying material in the outer parts of each lock pit, and in the middle part the penetration should be from 15 to 20 feet, depending upon the material.

"That below the intermediate gate walls the foundations for the walls and floors should be trenched for the culverts, the floor between the culvert trenches being made three feet thick, and all floors anchored to the underlying material with rails penetrating not more than 10 feet.

"That a curtain wall 6 feet thick should be constructed along the sill of the emergency dam and the upper portion of the lock walls; the wall along the sill to be carried to reliable material, the least depth of the foundation to be minus 8, the walls along the lock walls to be founded at the depth of the foundation of the corresponding end of the cross curtain wall until the soft sandstone stratum is met, and thence at a depth of one or two feet below the surface dividing the soft sandstone and the argillaceous sandstone with tufa until the depth of minus 18 is reached.

"All portions of the lock floors may properly be provided with a suitable system of sumps and telltales, the latter to be placed in the lock walls.

"A sketch illustrating the floor proposed and an approximate estimate of cost are appended, marked B and C. Stenographic record of the first meeting of the Board, at which practically the entire discussion was carried on, is also appended, marked D.

The final meeting of the Board was not reported, it being merely a general deliberation and agreement upon points which had been previously discussed."

Severe Wind Storm on South Slope.

A wind storm of unusual severity blew from the southeast across the bay of Panama on the night of July 10, and caused some damage on the south slope of the Isthmus. The meteorological record for three stations on the south slope and for Culebra on the north slope shows:

Ancon—The storm began about 10 p. m.; the wind attained a maximum velocity of 59 miles per hour at 10.30 p. m. From 10.06 to 10.37 p. m., 1.40 inches of rain fell, the total for the shower being 1.49 inches. From 10.16 to 10.30 p. m. (14 minutes), 1 inch of rainfall occurred. The total rainfall from 8 a. m., July 10, to 8 a. m., July 11, was 3.25 inches.

Balboa—The storm struck Balboa a few minutes after the turning of the high tide, and the water was forced up 0.6 foot from this cause. The total rainfall for the 24 hours ending at 8 a. m., July 11, was 4.87 inches.

Pedro Miguel—The wind attained a maximum velocity of 27 miles from the southeast at 10.15 p. m. The rainfall from 10 to 11 was 0.16 inch. The total rainfall for the 24-hour period ending at 8 a. m., July 11, was 1.02 inches.

Culebra—The wind attained a velocity of 25 miles from the southeast at 10.30 p. m. The maximum velocity for the 24-hour period, ending at 8 a. m., July 11, was 36 miles from the east at 6 a. m. of the 11th. The rainfall from 10 to 11 p. m. was 0.12 inch. The total rainfall for the 24-hour period, ending at 8 a. m., July 11, was 0.92 inch.

Trees in the path of the storm were blown down, or stripped of their limbs, and in Panama city, at Corozal, and at Miraflores galvanized iron roofs were ripped off, or damaged. In many cases houses were flooded and some damage was done to the personal belongings of the occupants. Telephone, telegraph and electric wires were broken by falling limbs, and the services were temporarily cut off.

Independence Day in Panama.

Decree No. 79 of July 2, 1909, of the President of the Republic of Panama, by which the 5th of July, 1909, was declared a civic feast day for the cities of Panama and Colon, reads as follows:

The President of the Republic, in the exercise of the faculty conferred upon him by Article 2 of Law 22 of 1909, and

CONSIDERING:

1. That the Administrative Authority representing the Government of the United States in the Canal Zone has been every year declaring November 3 as a day of civic feast in the said territory;
2. That such declaration pleases the patriotic sentiment of the Isthmus;
3. That it is the Panamanian Government's duty to worthily respond to the expressions of courtesy and cordiality made by the Isthmian Canal Commission as the representative of the Government of the United States; and
4. That the Executive Authority of the Canal Zone, through a recent decree, has postponed the celebration of the anniversary of the independence of the United States to July 5, the 4th falling on a Sunday.

DECREES:

Be the 5th day of July of the current year declared a day of civic feast in the cities of Panama and Colon, commemorating this year the anniversary of the Independence of the United States of America.

Be it published and complied with.

Given at Panama on the 2d day of July, 1909.

J. D. DE ORALDIA,
The Secretary of Government and Justice,
RAMON M. VALDES.

SOCIAL LIFE OF THE ZONE.

Lodge and Club Meetings and Other Features.

At the meeting of the Isthmian Canal Rebekah lodge, No. 1, Gorgona, held July 3, the following officers were installed: Mrs. R. Varenkamp, noble grand; Mrs. Babbitt, vice-grand; Mrs. C. H. Beetham, secretary; Mrs. McCann, treasurer. The lodge was instituted by the district deputy grand sire, B. F. Sisson, October 10, 1909. There are 40 members.

The Gorgona Dancing Club gave a dance at the Commission clubhouse on July 10. This is one of the oldest social clubs in the Zone, having been organized in 1906. There are 45 members. Dances are given on the second and fourth Saturday in the month.

The Young People's Christian Endeavor Society, Gorgona branch, held an election of officers the last week in June. G. C. Mitchell was elected president, Mrs. George H. Lowe, vice-president, E. Orr, secretary, and William Harrison, treasurer. There are three committees of which Mr. McConaughey is chairman of the lookout committee, Mrs. Lowe of the social, and Mr. Orr, of the meeting committee. The society meets in the Commission chapel every Sunday evening at 7 o'clock. Once a month a social meeting is held. There are 25 members.

The Gorgona branch of the Woman's Christian Temperance Union has organized a sewing class for white children with three teachers. Meetings are held in the Commission chapel on Saturday afternoon. Members of the class furnish their own materials.

The Red Cross dance held by the Gorgona district at the Commission clubhouse on July 3, was well attended. The building was decorated with Red Cross emblems, flags and palms. Refreshments were served. Music was furnished by the Culebra orchestra.

The money realized at this entertainment will be used to defray the expenses of the carnival, to be held on July 16, the entire proceeds of which will be turned into the general treasury of the Canal Zone Branch. The Commission clubhouse will be thrown open for the occasion. Booths for the sale of homemade candies, cakes, ice cream, and lemonade will be erected. A ladies' bazaar for the sale of fancy articles, and a periodicals booth, will be attractions. Sideshows of various kinds will be placed at intervals through the building. The evening will close with a carnival dance. No admission will be charged. Sales will be made by coupons which will be purchased at the cashier's window. The entertainment is in charge of seven committees under one general chairman, F. W. Chelf. The divisions are: Mrs. F. M. Morrison, refreshments; Mrs. John Z. Bromley, periodicals; Mrs. George H. Potts, bazaar; A. C. Hackenburg, decorations; G. L. Emery, amusements and advertising; G. C. Mitchell, finance. A special train will be run from Gatun, but the committee has made arrangements to entertain all visitors who wish to remain over night in Gorgona.

A tennis court will shortly be opened at Gatun under the auspices of the Woman's Club. The club will give an entertainment shortly to raise funds to finish paying the expenses of building the court.

A party of 35 Gatun residents made an excursion to Chorrera last week. The trip was made in a chartered launch which left

Panama Sunday, July 3, and returned Monday evening.

The residents of Culebra gave an entertainment to raise funds for the purchase of a library for the Zone penitentiary, at the Commission clubhouse on Friday evening, July 9. The program consisted of songs by Mrs. Faure, and Messrs. Martin, Ham, and Flynn, piano selections by Master Howard, reading and monologues by Messrs. Holland and O'Reilly. The Manila Mandolin Club and the Culebra Male Quartet gave several numbers. At the close of the program refreshments were served in the game room. The net proceeds amounted to \$70.

The Culebra Bachelors' Club gave a dance at the clubhouse, Saturday, July 10. The Culebra Dancing Club will give its regular dance, Saturday, July 17.

PERSONAL.

Mrs. Geo. W. Goethals, accompanied by her son Thomas Goethals, sailed for the States on the *Advance* on July 12.

Lieut. Col. H. F. Hodges, Assistant Chief Engineer, accompanied by his family, returned to the Isthmus on the *Alliance*, which arrived at Cristobal on July 13. Among the other passengers were Joseph A. Le Prince and family of Ancon, and A. Bruce Minear and wife of Culebra.

L. K. Rourke, Assistant Division Engineer, Central Division, sailed for the States on the *Cristobal*, on July 14, for a six weeks' leave of absence in the States.

Among the passengers on the *Panama*, which sailed from Cristobal for New York, on June 6, were W. H. May, Secretary to the Chairman; W. G. Comber, Resident Engineer at Balboa, and family; Geo. L. Campen, Superintendent of Public Works; H. L. Smith, Superintendent of Schools; Dr. Walter Brem, Jr., of Colon Hospital, and Dr. N. D. Brayton, of Ancon Hospital.

Mr. Charles Edward Kendall and Miss Alice Elizabeth Harriett Russell of Cristobal were married at the Ancon Chapel, 7.35 p. m., July 3, 1909, Archdeacon Bryan officiating.

Mr. Alfred J. Walker of Empire, C. Z., and Miss Charlotte H. Broadway of West Hoboken, N. J., were married on June 30, 1909, at the residence of the bride. Mr. and Mrs. Walker will reside at Empire.

Entertainment at Ancon.

The College Girls, as three young lady entertainers now on the Isthmus giving entertainments in the Y. M. C. A. course are called, will give readings, songs, and instrumental selections in Ancon Hall on the night of July 24. They will appear under the auspices of the three organizations most active in Ancon, the Pacific Masonic Club, Ancon Court of Kangaroos, and Ancon Lodge of Knights of Pythias, through the courtesy of the Y. M. C. A. The money realized from the entertainment will be applied towards the purchase of a piano, which will remain permanently in Ancon Hall and be at the disposal of all persons using the hall.

Kangaroos Dance.

Paraiso Court No. 5, I. O. P. K., will give a dance at their lodge hall in Paraiso, on Saturday evening, July 24, at 8 p. m. Train will leave Pedro Miguel at 7.50 p. m. All members of this court in good standing can obtain three invitations for their friends by applying to H. L. Bridges, comptroller.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

"A Lyceum Entertainment Company, known as the "College Girls Trio" arrived from the States on the *Alliance* on July 13. This Company is under the management of the Y. M. C. A., and will appear twice at each Clubhouse, and also at the following towns where there are no clubhouses: Porto Bello, June 19; Camp Elliott, June 21; Pedro Miguel, June 22; Gatun, June 23; Ancon, June 24.

Mr. G. R. D. Kramer, a graduate of the Y. M. C. A. training school of Springfield, Mass., arrived on the *Alliance*, July 13, and has reported for duty as assistant secretary of the Culebra Y. M. C. A.

The Y. M. C. A. of the Canal Zone acknowledge with thanks the services rendered by Mr. Bourke Sullivan, of Philadelphia, who is visiting the Isthmus. Mr. Sullivan rendered gratuitous services at three recent "open house" entertainments. His songs were much appreciated.

CULEBRA.

The "College Girls" will appear at Culebra, Friday, July 16.

The beginners chess tournament, which has been running for the past month, ended last week. F. A. Brown won 6 games, C. E. Gage 5, B. F. Stewart 5, J. M. Weaver 4½, Victor Gronbeck 4, B. F. Ware 2½, George Holland 2, J. W. Holland none.

Baseball games have been arranged with Empire and Gorgona for the 13th and 24th.

An enjoyable program was rendered Tuesday evening by Miss Mary Slifer of Colon, Mr. W. Bourke Sullivan of Philadelphia, and Mrs. M. G. Shivers of Empire.

The benefit given Friday night for the prison library was very successful, and a good sized crowd enjoyed the program, which consisted of musical numbers, readings, quartet, solos, mandolin and guitar, monologue and coon songs. Refreshments were served. Several books have already been donated for this purpose, and any others will be gladly accepted. Leave word at the Y. M. C. A. and they will be called for.

EMPIRE.

The "College Girls" will appear at Empire, Thursday night, July 15.

In the bowling match played at Empire Y. M. C. A., Saturday evening, July 10, between Empire and Gorgona, the former won two games out of three, although the latter had the greater pinfall. The scores were as follows: Empire 749, 764, 780; Gorgona 727, 762, 852.

The Empire Association has received the beautiful trophy won by its bowlers in the last Isthmian duck pin tournament.

The local duck pin tournament will close Friday night, July 16. Much interest is being manifested in the "alleys."

Concert by I. C. C. Band.

EMPIRE, C. Z.,

Sunday, July 18, 1909, at 6 p. m.

PROGRAM.

- 1 March—*Majestic*.....Braham
- 2 Selection—*Marcelle*.....Luders
- 3 { a Characteristic—*Dixie Twilight*.....Johnson
- b Indian Descriptive—*Trailing the Trail*.....Spanding
- 4 Waltz—*Moonlight on the Hudson*.....Herman
- 5 Medley Overture—*Glow Worm*.....La Farge
- 6 Porto Rican Dance—*Rosita*.....Missud
- 7 { a Maple Leaf Rag (by request).....Joplin
- b Popular March—*La, La, La*.....Scotto
- 8 Overture—*Schauspiel*.....Bach
- 9 Morecan Characteristic—*Dawn of Love*.....Bendix
- 10 March—*Stars and Stripes Forever*.....Souza

OLIVER KIMBALL, Assistant Director.

The next concert will be given at Bas Obispo, July 25

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

ANCON, C. Z., July 7, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Beynon, G. E.	Lowman, Miss Alice
Buchan, Mrs. Geo.	(2d class)
Cobban, H. H.	Mitchell, Arthur T.
Dannes, Lammal	Miller, Mrs. J. B.
Dennis, C. C. A.	Peck, Rev. A. S. (2)
Eason, John J.	Riemann, Richard
Englander, Mark	Taylor, Fred
Fitzgerald, J. P.	Valentine, Leon C.
Hanrahan, Thomas	Ward, Capt. R. P.
Krause, Arthur	Winquist, Mrs. C.
	Verkes, Arthur W.

OFFICIAL CIRCULARS.

Manufacturing Account.

The appended report was approved in Circular No 264, published on page 360 of THE CANAL RECORD for July 7, 1909:

EMPIRE, C. Z., June 18, 1909.

LIEUT.-COL. GEO. W. GOETHALS,

Chairman and Chief Engineer, Culebra, C. Z.

Sir—The Committee appointed in your letter of May 29, to consider and recommend what reports shall be made after July 1, 1909, under General Account 2—Manufacturing Account, has the honor to submit the following report:

MANUFACTURING ACCOUNT.

The reports heretofore made of manufacturing work have not furnished the Chairman with the information he desires for several reasons, among them being the fact that the manufacturing requests are made with certain estimates which he approves after taking into consideration the value to the work of the articles; compared with estimated cost of same; and when the work is completed it is found to have cost in some cases an amount which would, if stated on estimate, have led to disapproval of the request for proper regard of economical administration.

The manufacturing accounts and reports of same have not included the whole of the Commission's expense at all shops for manufacturing, inasmuch as all of the manufacturing in the Division shops has not been carried and reported as such, but has been charged into the work.

It is the opinion of the committee that all articles manufactured, except when their manufacture is required for a repair job under way, should be handled through the manufacturing account; such as spare parts manufactured in anticipation of the necessity for their use.

It is the opinion of the committee that no repair work should be included in "Manufacturing Account," and that said account should carry only transactions covering the conversion of material into another form.

CONSTRUCTION AND REPAIRS

In addition to reports covering articles manufactured, it is recommended that the various shops furnish reports of construction and repairs done; such reports (including therein total figures for Manufacturing Account, shop superintendence, repairs and renewals of shop machinery and tools, and shop expense) to cover the total expenses of the shops for the month.

It is recommended that Chief Engineer's authority, Form 159-C. E., be submitted for all repairs to equipment, as follows: Locomotives, spreaders, unloaders, other construction equipment, when it is estimated that the job will exceed \$200, and steam shovels, when the estimate is over \$500.

For any additions to the plant, or improvement on any unit of floating equipment, other than repairs, when it is estimated that the expense will exceed \$5,000, and for repairs or rebuilding of any French floating equipment.

Each job performed under Chief Engineer's authority should be reported separately. The following items should be reported by number or units repaired and total cost of repairs:

Repairs to locomotives, costing less than \$200 for each job.

Repairs to spreaders, costing less than \$200 for each job.

Repairs to other construction equipment, costing less than \$200 for each job.

Repairs to steam shovels, costing less than \$500 for each job.

Repairs to cars.

Repairs to drills.

Repairs to shop machinery and tools.

New shop machinery and tools, including cost of erection, should be reported separately for each machine installed or tools supplied.

Repairs to steamers, tugs, barges and dredges should be reported by total for each unit, with explanation of any abnormal charge.

Repairs to any floating equipment should be by number of units repaired and total cost, with explanation of any abnormal charge.

Report should also be made of all work undertaken under Chief Engineer's authority, Form 159-C. E., such as repairs to buildings, construction of buildings, roads, sewers, drains, etc., and any other special construction feature, the cost of which may be desired by the Chief Engineer.

It is the sense of the committee that all work done during the month should be charged in that month's accounts, and that Circular No. 246, which provides for the rendition of bills only upon the completion of a job, should be recalled. Its operation results in carrying large amounts in suspense from month to

month and complicates the accounting in the division offices.

It has been found impracticable to devise one form to cover the above reports, and there are submitted four forms for your approval.

1. For reports of operations of rock crushers, sand plants, concrete block plants, truck gardens, electric light and power plants, air compressors, Lirio planing mill, printing plant, and field repair shops (such as Cocoli, Cucaracha, Cunette and Gatun).

Sand, crushed rock and cement blocks should be priced at an arbitrary figure, which would approximate the cost of operation and of the plant. It is not practicable to clear these accounts each month, as there will be, from time to time, heavy charges for additions and improvements, which should gradually be absorbed in the price of the product. The unit price should be changed as experience warrants. The output of these plants should be taken up as material, and distributed on Form 132-C. E. under column "Material."

The price at which these commodities are invoiced to individuals and companies should include an arbitrary to cover the cost of plant prior to July 1, 1909, which will not be absorbed in the operations. The difference in price charged to work and to individuals and companies to be credited to the original charge to plant.

Operations of truck gardens should be credited with the value of the products, and balance written off to Classified Expenditures from time to time. The value of the output should be taken up as "Material" and distributed on Form 132-C. E., under the column "Material."

Operation of Electric Light and Power Plants—The price per kilowatt, or per light, should be adjusted as to approximately clear the operating expenses, and plant items subsequent to July 1. For power and lights furnished individuals and companies there should be added to this price a sufficient amount to cover the cost of plant prior to July 1, which amount will be credited to the original cost of plant.

Operation of Air Compressors—Price at which the air is to be charged to the various units of the work should be based on the actual cost of operation during the month, including renewal.

Lirio Planing Mill, and Printing Plant—The credit should be the value of finished product, issued or placed in stock. The balance should represent the value of uncompleted orders.

The expenditures on this form should be carried as a total to Form 4.

2. For Report of Manufactured Articles (other than castings)—This form to be used in reporting all transactions involving the converting of material into another form. This account should carry the cost of new equipment, when set up on the Isthmus, including the original cost and expense of setting up. No repair work should be taken up in this account, but it should be included in report, Form 4. The expenditures on this form should be carried as a total to Form 4.

3. For Foundry Operations—Form 118-A should be used to report foundry operations at all shops. The finished product should be taken up as "Material," and charged out to the work when applied. The expenditures on this form should be carried as a total to Form 4.

4. Report of Repair Jobs and Construction Work—This report should cover all operations of the various shops, repairs to buildings and construction of buildings, roads, sewers, and drains constructed under Chief Engineer's authority, and any special construction feature, the cost of which may be desired by the Chief Engineer. It should include totals from Forms 1, 2, and 3, also for all shops, shipways, dry docks, field repair shops, shop superintendence and shop expenses. Definition of these accounts follows:

Shop Superintendence—Salaries of master mechanics, assistant master mechanics, shop superintendents, general foremen, shop clerical forces and timekeepers, their traveling expenses, the cost of furniture, fixtures, office supplies, stationery and printing, cost of lighting and care of office, etc.

Shop Expense—Salaries and wages of stationary engineers and firemen, and all fuel and supplies used in operating power plants for shops; miscellaneous labor that cannot be charged to any particular line of work, such as sweepers, cleaners and roustabouts, watchmen, cleaning yard about shops, cost of material and labor used in repairing shops, maintaining tracks, and otherwise arranging the yards in and about shops; the wages of engine-men and switchmen, together with fuel and supplies necessary with which to operate switch engines about shops, and incidental expenses for which no provision is otherwise made.

This account will be credited with percentages added to invoices for manufactured material. The balance remaining is the amount which should be taken up on this report.

For the purposes of comparison, it is recommended

that "Shop Superintendence" and "Shop Expenses," be handled uniformly at all shops, dry docks and shipways.

These reports have been made as simple as possible and, after consultation with the officers in charge, it is found that they will entail but little additional work, as the information is at present worked up in a slightly different form. Such reports will give information as to operations of the various shops, and a comparison of the estimates with the actual cost of any job, thus enabling the Chief Engineer to keep in close touch with the operations of all units of manufacturing plant.

Respectfully submitted,

T. L. CLEAR, Chairman, AD. FAURE, F. W. DOTY, C. S. TODD, C. H. ANDERSON, F. E. MOORE, R. M. ROUDEBUSH.

Reimbursement for Coach Hire.

CULEBRA, C. Z., July 15, 1909.

CIRCULAR NO. 265.

Effective this date, employes will not be reimbursed for coach fares, carriage hire, or any similar expense for transportation incurred in going to and from their regular or special work in Panama, Ancon, Balboa, East Balboa, or Corozal, Cristobal, Mount Hope and Gatun, without written authority in advance approved by me.

GEO. W. GOETHALS, Chairman and Chief Engineer.

Compensation for Injured P. R. R. Employees.

PANAMA RAILROAD COMPANY, OFFICE OF PRESIDENT. CULEBRA, C. Z., June 30, 1909.

CIRCULAR:

Effective July 1, 1909, every person in the employ of the Panama Railroad Company on the Isthmus will, whenever injured in the course of such employment, be entitled to receive, for a period not to exceed one year thereafter, the same pay as if he continued to be employed, until, in the opinion of the President of the Company, such employe is able to resume work, such payment to be made on vouchers of the Panama Railroad Company in consideration of the execution of a release by the injured employe and upon submission by the employe of approved claim for compensation on Form No. A. 1. 652:

Provided, that no compensation shall be paid where the injury is, in the opinion of the President of the Company, due to the wilful misconduct of the employe injured.

Form No. A. 1. 652 will show, in addition to the employe's name, etc., the date of the injury, description of the injury, certificate of attending surgeon covering the period for which compensation is claimed, and approval of the claim by the President of the Panama Railroad Company, or official designated by him.

GEO. W. GOETHALS, President.

Reduction of Ice Supply.

SUBSISTENCE DEPARTMENT. CRISTOBAL, C. Z., July 12, 1909.

Beginning July 20, and until further notice, ice supplied to purchasers will be reduced by the following quantities, and until further notice no orders for increases will be accepted after publication of this notice:

Present Delivery.	Will Receive.
10 pounds.....	10 pounds.
20 pounds.....	20 pounds.
30 pounds.....	20 pounds.
40 pounds.....	30 pounds.
50 pounds.....	40 pounds.
60 pounds.....	50 pounds.
65 pounds.....	50 pounds.
70 pounds.....	60 pounds.
75 pounds.....	60 pounds.
80 pounds.....	70 pounds.
100 pounds.....	80 pounds.
125 pounds.....	100 pounds.
150 pounds.....	125 pounds.
200 pounds.....	175 pounds.
250 pounds.....	225 pounds.
300 pounds.....	250 pounds.

This action is necessary in order to enable the department to overhaul the ammonia compressors.

JOHN BURKE, Manager.

Approved:

EUGENE T. WILSON, Subsistence Officer.

Auction Sale.

In order to recover freight and storage charges, the Panama railroad will dispose of the accumulation of "Over" and "Unclaimed" shipments now in its possession, by public auction, Wednesday, July 14, 1909, at 9 a. m., sale to be held on Dock 11, Cristobal, C. Z.

The items to be sold consist of a miscellaneous assortment of wines, liquors, household goods, building material, stationery, groceries, dry goods, machinery and merchandise in general, all of which has been held six months and over in an effort to locate owner.

H. J. SLIFER, General Manager.

4TH OF JULY CELEBRATIONS.

Results at Ancon and Cristobal.

The Fourth of July celebrations at Ancon and Cristobal on Monday, July 5, were attended by large crowds from the Zone towns. The weather conditions at Ancon were all that could be desired, but at Cristobal it rained during the afternoon, interfering with the success of the program to some extent. It cleared up toward night, however, and the evening spectacle of fireworks and illuminated water pageant was an attractive feature. The winners in the athletic events at Ancon, and the athletic and aquatic events at Cristobal were as follows:

ANCON—ATHLETIC EVENTS.

100-yard dash—First heat, J. A. Tannehill, Ancon, first; E. W. Tupper, Culebra, second. Second heat, J. W. Belt, Ancon, first; Crawford, second. Finals, Tannehill, first; Tupper, second; Crawford, third. Time, 11:2 seconds.

880-yard run—D. T. Edwards, Ancon, first; W. S. Hartman, Culebra, second; S. C. Russell, Ancon, third. Time, 2:25.

Running high jump—G. C. Ferris, Gorgona, first, 5.4 feet; B. A. Fogg, Culebra, second, 5.3 feet; Fred A. Feld, Ancon, third, 4.6 feet.

Boys' 50-yard dash—First heat won by Leo McCourt, Gorgona; second heat by Arthur Howard, Culebra, third by Edwin Atkins, Culebra. Results in the finals were: McCourt, first; Howard, second; Atkins, third.

220-yard dash—D. T. Edwards, Ancon, first; C. T. Lindsay, Culebra, second; L. H. Williamson, Culebra, third.

Standing of towns according to points—Ancon, first three times; third twice; points, 17. Culebra, second five times; third twice; points, 17. Gorgona, first twice; points, 10.

MISCELLANEOUS EVENTS.

Obstacle race—S. S. Baumer, Culebra, first; C. T. Lindsay, Culebra, second. Time, 1:45.

Pony race—Lyle Womack, Ancon, first; Ethel Phipps, Ancon, second. Time, 1:25.

Three-legged race—Fred Pierman, Hugh S. Hunter, J. A. Tannehill, S. C. Russell, Ancon. Dead heat. Time, 10:1.

Bucking horse contest—Chas. Higley, Empire, first; Wm. H. Frazier, Paraiso, second.

Equipment race (Marines)—Michael Haugh, Camp Elliott, first; L. J. Hurst, Camp Elliott, second. Time, 1:35.

Mule Race—C. R. Harrington, Ancon, first; C. H. Bath, Ancon, second. Time, 1:35.

Wall scaling contest—Won by Co. C, Camp Elliott. Time, 3:50 2-5. Co. A, second. Time, 4:14 1-5.

Tug-of-war—Won by Corporal Pryor's team, Camp Elliott.

Mounted race—J. A. Tannehill, A. E. Rex, Ancon, first; Fred A. Feld, S. C. Russell, Ancon, second. Time, 11:2.

CRISTOBAL—ATHLETIC EVENTS.

120-yard hurdle—Hertz, first; Harragin, second, Grunewald, third. Time, 18 1-5 seconds.

50-yard dash (80 pound class)—Jadwin, first; Morrisano, second; E. Sibert, third. Time, 7 seconds.

Boys' 50-yard dash (90-pound class)—Levy, first; R. Short, second; Mendes, third. Time, 6 2-5 seconds.

100-yard dash—Harragin, first; Culbertson, second; Hertz, third. Time, 11 seconds.

Sack race—Bartlett, first; Simka, second; Humphreys, third.

440-yard dash—Weller, first; W. O. Sihert, second; Davis, third. Time, 55 1-5 seconds.

Potato race—Simka, first; Jost, second. Time, 1:49:02.

Boys' relay race—Gatun, first; P. R. R. second; Jennings, Y. M. C. A., Cristobal, third.

Relay race—Gatun, first; P. R. R. second. Time, 4:05.

12-pound shot put—Weller, first, 38.40 feet; Hertz second, 31.20 feet; Ruckert, third, 30.95 feet.

Running high jump, Fletcher, first, 5 feet; Hertz, second, 4 1/2 feet; Jost, third, 4 1/4 feet.

Running broad jump—Bailey, first, 18 40-100 feet, Bartlett, second, 17 65-100 feet; Harragin, third, 16 80-100 feet.

Running hop, step and jump—Fletcher, first, 37 feet; Bailey, second, 36 85-100 feet; Corathwaite, third, 35 95-100 feet.

A tie was declared as to points between the Panama Railroad and Gatun track teams, which will be run off on July 24.

Volunteer fire companies' hose race—Gatun, first, 44 seconds; Balboa, second, 44 4-5 seconds; Gorgona, third, 45 1-5 seconds; Pedro Miguel, fourth, 1:17. The time of the Las Cascadas company was 44 seconds, but the team was disqualified on account of outside interference. This decision has been protested by the Las Cascadas company. Requirements in this race were to run 150 yards, lay 150 feet of hose from hydrant, break connection at third section and turn on the water.

AQUATIC EVENTS

Run to Pomper life saving tower on Cristobal Point; time 47 seconds.

Sail boat race—Two starters. Won by Carl Friedenberg from the dredge *Caribbean*.

U. S. Navy steam cutter race, 5-mile course—Won by the *Ruth*, John Elsey, coxswain.

Life boat race—Five starters. Won by crew from the tug *Bohio*, captained by C. Gustafson.

Class 2, tug boat race between *Balboa* and *Grace*—Won by the *Balboa*.

Dory race—Three starters. Won by crew from the *Bohio*, captained by C. Gustafson.

Class 1 gasoline boat race, 5 miles—Three starters. Won by Capt. John Constantine's boat.

Clapet race, 5 miles, between clapets Nos. 2, 3, 12 and 14—No. 3, first; No. 12, second; No. 2, third. Neck and neck race.

Life raft race—Two starters. Won by crew from S. S. *Panama*.

Class 2 gasoline boat race—Four starters. Won by W. S. Perry's launch *Genevieve*.

Swimming race, 100 yards or over—Twelve starters. Won by Mr. Woodward, Gatun.

Rowboat race—Won by Gustaf Carlson from the tug *Mariner*.

Greased spar contest—Won by Gustaf Carlson from the tug *Mariner*.

Tug boat tug-of-war—Between tugs *M. E. Scully* and *Cristobal*. Won by the *Scully*.

Illuminated boat parade, participated in by the tugs *Gatun*, *M. E. Scully*, *Bohio*, *Cristobal*, *Mariner*, *Balboa*, Clapet No. 4, the navy cutters *Ruth* and *Mary S.*, launch *Genevieve*, and the clown boat *Dreadnought*. Prize for the best decorated boat won by W. S. Perry's *Genevieve*.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 21, 1909 (75th meridian time):

DATE.	High.		Low.		High.
	A. M.	P. M.	A. M.	P. M.	
July 15.....	1.52	7.59	2.08	8.28	.....
July 16.....	2.47	8.55	3.01	9.19	.....
July 17.....	3.38	9.45	3.51	10.08	.....
July 18.....	4.23	10.31	4.35	10.51	.....
July 19.....	5.04	11.16	5.18	11.34	.....
July 20.....	5.44	11.58	5.58	.....	.....
July 21.....	.....	12.14	6.23	12.38	6.37

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Stages of the Chagres.

Maximum height of the Chagres River above mean sea-level for the week ending midnight Saturday, July 10, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboua.	Bohio.	Gatun (Canal.)	Gatun (W. D.)
Height of low water above mean sea-level, ft.	125	92	46	1	0	0
Maximum height above mean sea-level, feet:						
Monday, July 4.....	129.0	95.1	50.9	6.6	2.2	1.9
Tuesday, July 5.....	128.1	94.6	50.8	9.7	3.7	2.8
Wednesday, July 6.....	127.6	94.5	50.8	10.1	4.6	3.8
Thursday, July 7.....	130.6	96.0	51.6	6.8	3.2	2.6
Friday, July 8.....	129.8	95.6	51.5	8.9	3.3	2.7
Saturday, July 9.....	131.0	96.3	50.9	8.7	2.8	2.2
Sunday, July 10.....	129.0	95.8	51.7	9.0	3.3	2.6

Rainfall, July 1 to 10, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Atlantic Division—</i>			
Cristobal.....	.48	8	1.64
Brazos Brook.....	1.23	10	1.96
Gatun.....	.43	8	1.33
Bohio.....	1.22	5	2.95
<i>Central Division—</i>			
Tabernilla.....	1.92	7	3.05
San Pablo.....	1.47	7	3.16
Gorgona.....	1.83	5	2.86
Gamboua.....	2.02	5	3.10
Empire.....	.80	5	1.81
Camacho.....	.42	6	1.14
Culebra.....	.44	6	1.14
<i>Pacific Division—</i>			
Rio Grande.....	.28	4	1.01
Pedro Miguel.....	.31	6	.97
Balboa.....	3.51	10	4.40
Ancon.....	2.13	10	2.68
<i>Atlantic Coast—</i>			
Porto Bello.....	2.34	5	7.02
Nombre de Dios, (to 5 p. m. July 3)	.42	2	.43
<i>Upper Chagres—</i>			
El Vigia.....	1.27	2	4.50
Alhajuela.....	.87	2	4.04

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Colon.....	P. R. R. Monday.....	July 12
Prinz Aug. Wilhelm.....	H. A. Saturday.....	July 17
Panama.....	P. R. R. Monday.....	July 19
Ancon.....	P. R. R. Thursday.....	July 22
Clyde.....	R. M. Saturday.....	July 24
Advance.....	P. R. R. Saturday.....	July 24
Allianca.....	P. R. R. Friday.....	July 30
Prinz Joachim.....	H. A. Saturday.....	July 31
Colon.....	P. R. R. Thursday.....	Aug. 5
Cristobal.....	P. R. R. Friday.....	Aug. 6
Thames.....	R. M. Saturday.....	Aug. 7
Panama.....	P. R. R. Wednesday.....	Aug. 11
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Aug. 14
Advance.....	P. R. R. Tuesday.....	Aug. 17
Ancon.....	P. R. R. Thursday.....	Aug. 19
Magdalena.....	R. M. Saturday.....	Aug. 21
Prinz Joachim.....	H. A. Saturday.....	Aug. 28
Orinoco.....	R. M. Saturday.....	Sept. 4
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Sept. 11
Oruba.....	R. M. Saturday.....	Sept. 18
Prinz Joachim.....	H. A. Saturday.....	Sept. 25

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Advance.....	P. R. R. Monday.....	July 12
Cristobal.....	P. R. R. Wednesday.....	July 14
Clyde.....	R. M. Wednesday.....	July 14
Allianca.....	P. R. R. Saturday.....	July 17
Prinz Joachim.....	H. A. Tuesday.....	July 20
Colon.....	P. R. R. Friday.....	July 23
Thames.....	R. M. Wednesday.....	July 28
Panama.....	P. R. R. Friday.....	July 30
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Aug. 3
Advance.....	P. R. R. Thursday.....	Aug. 5
Ancon.....	P. R. R. Friday.....	Aug. 6
Allianca.....	P. R. R. Wednesday.....	Aug. 11
Magdalena.....	R. M. Wednesday.....	Aug. 11
Colon.....	P. R. R. Tuesday.....	Aug. 17
Prinz Joachim.....	H. A. Tuesday.....	Aug. 17
Cristobal.....	P. R. R. Thursday.....	Aug. 19
Panama.....	P. R. R. Monday.....	Aug. 23
Orinoco.....	R. M. Wednesday.....	Aug. 25
Advance.....	P. R. R. Saturday.....	Aug. 28
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Aug. 31
Ancon.....	P. R. R. Thursday.....	Sept. 2
Allianca.....	P. R. R. Friday.....	Sept. 3
Oruba.....	R. M. Thursday.....	Sept. 8
Colon.....	P. R. R. Thursday.....	Sept. 9
Prinz Joachim.....	H. A. Tuesday.....	Sept. 14

NEW ORLEANS TO COLON.

Turrialba.....	U. F. C. Saturday.....	July 17
Abangarez.....	U. F. C. Saturday.....	July 24
Parismina.....	U. F. C. Saturday.....	July 31
Turrialba.....	U. F. C. Saturday.....	Aug. 7
Abangarez.....	U. F. C. Saturday.....	Aug. 14
Parismina.....	U. F. C. Saturday.....	Aug. 21
Turrialba.....	U. F. C. Saturday.....	Aug. 28

COLON TO NEW ORLEANS.

Parismina.....	U. F. C. Tuesday.....	July 20
Turrialba.....	U. F. C. Tuesday.....	July 27
Abangarez.....	U. F. C. Tuesday.....	Aug. 3
Parismina.....	U. F. C. Tuesday.....	Aug. 10
Turrialba.....	U. F. C. Tuesday.....	Aug. 17
Abangarez.....	U. F. C. Tuesday.....	Aug. 24
Parismina.....	U. F. C. Tuesday.....	Aug. 31

COLON TO BARBADOS, CALLING AT TRINIDAD.

Orinoco.....	R. M. Tuesday.....	July 20
Clyde.....	R. M. Tuesday.....	Aug. 3
Thames.....	R. M. Tuesday.....	Aug. 17

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The steamer *David* of the National Navigation Company, will leave Panama, for David, province of Chiriqui, and intermediate points, on Thursday, July 22.

Sale of Carriages and Horses.

Auction: There will be offered for sale, at Ancon corral, July 20, 1909, at 2 p. m., the following Isthmian Canal Commission property: 9 Victorias, 2 double surreys, 4 single surreys, 1 station wagon, 3 horses, and an assortment of harness pertaining to this equipment. Any of the above articles may be seen by prospective bidders at Ancon corral after July 2. Address all inquiries to District Quartermaster, Ancon.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

New Passenger Station at Colon.

The new passenger station of the Panama Railroad Company at Colon will be used for the first time on the morning of July 23, when train No. 3, which leaves Colon at 5.30 a. m., will depart from the new station. The old stations at Colon and Cristobal will be abandoned, as all trains will use the new station beginning with July 23.

Municipal Pumping Plant at Gatun.

Authority has been granted for the purchase of a pumping plant to lift water from the reservoir in process of construction near Gatun, to the large tank on the hill in that village. The plant will consist of two three stage centrifugal pumps direct connected to a three phase 440-volt induction motor. Each pump will have a capacity of 1,400 gallons a minute with a suction lift of 12 feet, and will deliver against a head of 300 feet. The distance from the pumps to the water tank at Gatun will be about 6,800 feet, and delivery will be made through a 12-inch main. There will be two suction connections, one with the filtered water sump, and one direct with the reservoir. It is desired to have the pumps operated automatically by a float valve in the tank. A five ton hand-operated crane will be installed at the station to assist in making repairs.

Dockage for the Cement Ships.

Dredging in the approach channel to Dock 11 at Cristobal is practically completed to a depth of 33 feet and a width of 250 feet. This channel runs from the channel of the Canal in Limon Bay, to the end of Dock 11, near Cristobal Point, a distance of about 4,000 feet, and the work was done by the sea-going suction dredge *Caribbean*. The dipper dredge *Mindi* is continuing its work in front of Dock 11, deepening and making broader the channel at this point in order that the cement ships *Cristobal* and *Ancon* may turn in leaving the dock. A pile driver is at work placing the piles for the extension of the dock

toward Cristobal Point, and it is believed the addition will be completed in August. By that time the dredging will also be finished, and the cement ships, for which the work is being done, will be able to unload at Dock 11.

Dredge for Gatun Locks Sand Service.

The double clam-shell dredge, which will be used for excavating and loading sand at Nombre de Dios, has been completed by the Cristobal marine shops and turned over to the sand service. A test will be made and then the dredge will be towed to Nombre de Dios, relieving the dipper dredge *Chagres* which is at work on the sand deposits at that place. The new dredge is typical of a class of the Canal equipment, combining as it does material left here by the French, and new apparatus brought from the States. The hull is that of an old French dredge which was sluiced out of its berth in the mud on the banks of the Chagres River, near Frioles, during the rainy season of 1908 and towed down to Cristobal. There its machinery was taken out and such repairs as were necessary to put it in serviceable condition were made. A boom was erected on each end, and from each of these booms a modern clam-shell bucket of three yards capacity has been hung. New boilers were put in, and two simple double cylinder engines, 11 by 15 inches, were installed, one for each bucket. The hull is fitted with spuds, and will be towed from place to place as required.

Rebuilding the *De Lesseps*.

De Lesseps is the name of a launch, or tug boat, that has lain unused in the marine graveyard in Folks River at Cristobal since the time when the French gave up the work at the Atlantic entrance of the Canal. A few weeks ago it was hauled out and towed to Cristobal marine shops, and now lies in the dry dock. The vessel is 75 feet long, 15 feet wide, and 9 feet deep. It was made by Lobnitz & Company of Scotland in 1884. Whether it came to the Isthmus under its own steam, or knocked down, is not known. Some of the plates on the hull were so badly rusted that new plates must be put on, but the frame is in good condition. The boiler will be taken out, and a renewed old French boiler will be installed to furnish steam for the engine which is in good condition. When rebuilt the *De Lesseps* will be used in shifting scows and boats, towing barges, changing crews for the dredges and claps, and doing other general work for the Atlantic Division, in Limon Bay.

Lumber for Canal Work.

The Quartermaster's Department has on order about 18,000,000 feet of lumber for delivery on the Isthmus. This includes the present fiscal year estimate of 6,500,000 feet for the Mechanical Division, and 5,000,000 feet for the use of the Atlantic and Pacific

Divisions. Bids on the Mechanical Division's requisitions were opened at Washington on July 12 and 19, the specifications calling for Douglas fir and yellow pine lumber, which will be used largely in repairs to cars. The greater part of the order for the Atlantic and Pacific Divisions has already been placed.

June Money Order Business.

During the month of June, 1909, the sixteen post-offices in the Canal Zone where a money order business is done, sold 15,696 money orders, aggregating \$428,516.90. This is an increase in the number of orders over May of 929, and in value of \$11,763.14. Of the June business, \$316,004.44 represented orders drawn payable in the United States and elsewhere, and \$112,512.46 in orders drawn payable in the Canal Zone. The fees collected amounted to \$1,827.74. The orders paid and repaid amounted to \$149,921.40, which includes \$855 representing invalidated money orders paid by the Treasurer.

In the number of orders drawn, Cristobal was first with 3,101; Empire second with 1,730, and Ancon third with 1,661. In the total value of orders, Cristobal was first with \$88,061.53; Empire second with \$42,728.18, and Gorgona third with \$42,428.01. Of the amount payable in the United States and elsewhere, Cristobal was first with \$73,259; Empire second with \$34,548.92, and Gorgona third with \$30,488.95. In orders payable in the Canal Zone, Cristobal was first with \$14,802.53; Gorgona second with \$11,939.06, and Gatun third with \$9,903.32. Of the amount paid and repaid, Cristobal was first with \$28,335.34; Empire second with \$14,439.16, and Gorgona third with \$14,423.77.

The average of all the orders issued was \$27.30. The highest average was at San Pablo where 531 orders, amounting to \$18,034.19, were issued, an average of \$33.96; the lowest was at Matachin where 232 orders amounted to \$4,634.57, an average of \$19.98.

Eight New Cranes.

Two 20-ton cranes have recently arrived on the Isthmus, and six more are on order and will shortly be delivered. The two already here are being erected. One will be used by the Atlantic Division, and the other by the Mechanical Division at Empire in the work of preparing old French rails for reinforcing the concrete in the locks. Two of the cranes on order are for the use of the Central Division. They will have a 30-foot boom and will be equipped with orange peel buckets. Two cranes with 40-foot booms and equipped with orange peel buckets will be used by the Pacific Division. Two cranes with 30-foot booms and without buckets will be assigned, one to the Atlantic Division, and one to the Mechanical Division, to be used in place of broken and damaged cranes and for emergency work.

DREDGING IN JUNE.

Increased Output Over May—Details of the Work.

The combined output of the dredges of the Atlantic and Pacific Divisions for June amounted to 1,755,178 cubic yards, as compared with 1,535,846 cubic yards for May, an increase of 219,332 cubic yards. Of the June excavation, 1,085,176 cubic yards were taken from the Canal prism, and 670,002 cubic yards from outside works. In the Atlantic Division, 221,404 cubic yards belonged to Canal excavation, and 654,272 cubic yards to outside works. In the Pacific Division, 863,772 cubic yards were removed from the prism, and 15,730 from outside. Both divisions show an increase over May, the Atlantic Division by 78,265 cubic yards, and the Pacific Division, by 141,067 cubic yards.

The suction dredge *Caribbean*, and the dipper dredge *Mindi*, were wholly engaged on work outside the prism during June. The *Caribbean* removed 9,700 cubic yards of earth at Pier 1, Colon; 248,151 cubic yards of earth from the approach channel to Cristobal harbor, and 120,162 cubic yards of earth from in front of Cristobal docks, a total of 378,013 cubic yards. This exceeds the best previous record of the *Caribbean*, made in May, 1909, by 3,953 cubic yards. The *Mindi* removed 3,150 cubic yards of earth at Pier 1, Colon; 7,525 cubic yards of earth and 21,125 cubic yards of rock from the approach channel; 8,050 cubic yards of earth from in front of Pier 11, and 7,394 cubic yards of earth in front of Pier 13, Cristobal.

The other dredges at work in the harbor and channel section, removed from the prism, 153,886 cubic yards of earth and 28,689 cubic yards of rock.

Dredge No. 82 excavated 91,930 cubic yards from the borrow pit east of the Chagres River, and dredge No. 83 removed 106,360 cubic yards from the borrow pit west of the river, both dredges working the entire month pumping into Gatun Dam. Dredge No. 85 continued excavating in the lower chamber of the locks until June 19, removing 38,829 cubic yards. It was then transferred and began excavating the shoal in the Chagres River, and French canal channel, in front of the spillway dock, taking out 30,725 cubic yards to the end of the month.

Boats in dry dock during the month were: Tug *Phenix* on June 2; dredge No. 1, June 14 and 20; tug *Galun*, on June 20 and 21; dredge No. 3, on June 21; *Grace*, on June 21 and 25; clapnet No. 12, on June 21 and 25; U. S. barge No. 6, on June 26 and 30; clapnet No. 14, on June 26, and dredge No. 1, on June 30.

The detailed statement of operations in the Atlantic Division follows:

DREDGE.	Type.	Cu. yds.
<i>Caribbean</i>	Suction.....	378,013
No. 1.....	Ladder.....	68,376
No. 5.....	Ladder.....	98,249
No. 6.....	Ladder.....	15,950
<i>Mindi</i>	Dipper.....	47,244
No. 82.....	Suction.....	91,930
No. 83.....	Suction.....	106,360
No. 85.....	Suction.....	69,551
Total.....		875,676

In the Pacific Division the dredge *Gopher* was engaged in the new channel for the entire month, making a cut along the east bank toward the intersection of the French and American channels. This cut will be

continued until the rock point at the intersection of the channels is reached. The *Mole* worked in the upper French canal to June 6, when it was moved out in the bay. It remained at this place until June 30, when it was moved to a point opposite the Panama railroad wharf, to clean off a rock area. The *Marmot* was at work in the upper French canal, at a point about 900 feet above the intersection of the Rio Grande with the Canal, up to June 6, when it was moved to the position vacated by the *Mole*, continuing there for the remainder of the month. The dipper dredge *Cardenas*, was engaged the entire month, with the exception of two days, on the east bank of the Canal at a point a short distance below the intersection of the Rio Grande with the French canal. The total excavation of the *Badger* was confined to the south end of the new sand and storage wharf, and in front of the slipways. This dredging was done with a view of making the wharf available at all stages of the tide. Heretofore, owing to the presence of a sloping mud bank, it has been impossible to dock vessels at this point except at high tide. The orange peel dredge worked the entire month in the Cardenas diversion channel. The suction dredge *Culebra* spent all its time in deepening the channel from the intersection of the Rio Grande and the French canal, to a point a short distance below the end of the Panama railroad dock. The *Sandpiper* was kept at work nearly the whole month excavating in the lower lock chamber at Miraflores. The dredge began pumping into the dam about the middle of the month, the amount of hydraulic fill being 17,668 cubic yards. The detailed dredging statement follows:

DREDGE.	Type.	Cu. yds.
<i>Marmot</i>	Ladder.....	127,744
<i>Gopher</i>	Ladder.....	161,395
<i>Badger</i>	Ladder.....	5,610
<i>Mole</i>	Ladder.....	118,350
<i>Cardenas</i>	Dipper.....	101,802
Orange Peel.....	O. P.....	10,120
<i>Culebra</i>	Suction.....	329,784
<i>Sandpiper</i>	Suction.....	24,697
Total.....		879,502

Thanks to Volunteers on Wrecking Car.

PANAMA RAILROAD COMPANY,
COLON, R. P., July 13, 1909.

COL. GEO. W. GOETHALS,
Chairman and Chief Engineer, *Culebra*, C. Z.

Dear Sir—On last Sunday there were a number of volunteers who manned the wrecking car at Pedro Miguel to come out to Diablo Curve, rendering very valuable assistance until the regular wrecking crew from Empire reached the ground.

On behalf of the Panama railroad, I should like to recognize this action and extend the thanks of the Company for this voluntary and valuable assistance. Yours truly,

HIRAM J. SLIFER, *General Manager*.

June Record of Track Shifters.

The six track shifting machines in the Central Division moved a total of 625,663 feet, or 118.5 miles of track during June. At Tabernilla track shifter No. 5 moved 245,000 feet, or 46.4 miles; at San Pablo and Caimeto shifter No. 6 moved 113,824 feet, or 21.6 miles; at Gorgona and Santa Cruz relocation No. 7 moved 56,856 feet, or 10.8 miles; at Santa Cruz No. 1 moved 11,088 feet, or 2.1 miles; at Miraflores No. 8 moved 77,288 feet, or 14.6 miles; at Balboa No. 2 moved 121,607 feet, or 23 miles.

CENTRAL DIVISION.

Steam Shovel Records for June.

During the month of June, the total amount of material excavated in the Central Division was 1,520,975 cubic yards, of which 403,623 cubic yards were classified as earth and 1,117,352 cubic yards as rock. Of this quantity, 1,475,428 cubic yards were removed by steam shovels, 25,651 cubic yards by hand, and 19,896 cubic yards by sluicing action of the Chagres River. The quantity of material removed from the Canal prism was 1,516,683 cubic yards, while 1,351 cubic yards were removed from the Obispo Diversion, 2,174 cubic yards from inclines at Point No. 3, Santa Cruz, and 767 cubic yards from the engine house site at Gamboa. The total excavation for the same month in 1908 was 1,456,177 cubic yards, showing a gain of 64,798 cubic yards for June of the present year.

For comparison with high monthly records, the following table is given:

DATE.	Prism.	Prism and outside.
March, 1908.....	1,540,497	1,615,118
October, 1908.....	1,551,409	1,598,981
February, 1909.....	1,516,008	1,644,636
March, 1909.....	1,966,294	2,065,827
April, 1909.....	1,722,442	1,798,454

The high record for the month was made by shovel No. 204, working in the *Culebra* District, which excavated 49,767 cubic yards of earth in 25 working days. The best record for a shovel in the 70-ton class was made by shovel No. 132, working in the *Tabernilla* District, which excavated 30,021 cubic yards of earth in 25 working days. Shovel No. 223, in the *Culebra* District, made the high record for one day by excavating 3,268 cubic yards of rock on June 24. Shovel No. 132, working in the *Tabernilla* District, excavated 2,060 cubic yards on June 26, this being the high record for one day by a 70-ton shovel during the month.

Monthly records are computed by place measurement, while the daily records are based on car measurement. The best records for the month and for one day in each district are shown below:

TABERNILLA DISTRICT.				
Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
254.....	32,271	5,253	37,524	25
132.....	30,021		30,021	25
BAS OBISPO DISTRICT.				
263.....		31,369	31,369	26
210.....	7,817	23,449	31,266	26
EMPIRE DISTRICT.				
207.....	220	46,013	46,233	26
265.....	15,092	28,028	43,120	26
CULEBRA DISTRICT.				
204.....		49,767	49,767	25
266.....		47,788	47,788	26

BEST RECORD FOR ONE DAY.				
Shovel No.	Location.	Date.	Character of material excavated.	Cubic yds. excavated.
254	Tabernilla.....	June 3.	Rock and earth	2,640
254	Tabernilla.....	June 2.	Rock and earth	2,460
201	Bas Obispo.....	June 17.	Rock.....	2,375
210	Bas Obispo.....	June 28.	Earth.....	2,204
207	Empire.....	June 16.	Earth.....	2,811
220	Empire.....	June 16.	Earth.....	2,569
223	<i>Culebra</i>	June 24.	Rock.....	3,268
203	<i>Culebra</i>	June 30.	Rock.....	2,888

Shovel No. 254 made the four highest daily excavations in the *Tabernilla* District during the month.

SOCIAL LIFE OF THE ZONE.

Meetings Past and to Come—The Methodist Missionary Society.

Maintaining a little Spanish girl in the Methodist College at Panama is one of the tangible results of the quarterly tea meetings held by the Panama Branch of the Woman's Foreign Missionary Society of the Methodist Episcopal Church. The purpose of these meetings is to raise funds for the work of the society, but they are also a delightful social diversion for the members and their friends. They are held in the parsonage in Panama on the evenings of days announced in advance. The business meetings are held each month, and the next one is set for August 3 in the parsonage. At the business meetings a prepared program is rendered and informal discussions are held. All members are urged to attend the next meeting. Auxiliaries of the society have been organized in Gorgona and Pedro Miguel.

According to arrangements made four months ago, the chapel services at Gorgona are held in the Commission clubhouse on the fourth Sunday evening in the month under the direction of the Y. M. C. A. secretary. Special speakers are invited to make the addresses at these meetings, and the attendance has been good.

The next meeting of the directors of the Canal Zone Humane Society will be held at the residence of Archdeacon Bryan at Ancon on Sunday, August 3. It is expected that the number of directors will be increased at this meeting. The Society is effectively active both in Colon and Panama.

A camera club, similar to that in Cristobal, is active in connection with the Culebra clubhouse. While there is no formal organization, the members work together. The clubhouse contains a dark room and equipment for developing and printing.

On June 27, the Gorgona Sunday School elected Mr. McConaughy superintendent, and George H. Wright, assistant superintendent.

The Pedro Miguel Woman's Club held a social meeting at the home of Mrs. Mark White on the afternoon of July 14. The club has arranged for a course of study in the history of Panama. Mrs. H. E. Weber has resigned as secretary on account of her departure for the States.

Mrs. Abbie B. Hillerman, organizer of the Canal Zone Branch of the Woman's Christian Temperance Union, left for her home in the States on July 20.

Ancon Hall Remodeled.

The upper story of the building in Ancon occupied as a quartermaster's storehouse has been remodeled for the use of fraternal and other organizations. The formal opening will take place Saturday evening July 24, when an entertainment will be given by the College Trio, a lyceum company now touring the Commission clubhouses. The accommodations provided consist of a meeting hall, two committee rooms, and toilet rooms. The meeting hall is 100 feet long and 50 feet wide. At one end a stage 50 feet long and 15 feet deep has been erected, and will be equipped with footlights and curtains. Applications for the privilege of holding meetings in the new hall should be made to the District Quartermaster at Au-

con. The Ancon Woman's Club, which now occupies quarters over the office of the District Quartermaster, will hold its meetings in the new hall, when it resumes its work in October. The hall has been assigned to the Knights of Pythias for Tuesday evening, Kangaroos, Friday, and the Masonic Club, Saturday evening of each week.

Notice to Red Cross Members.

Members of the Canal Zone Branch of the American National Red Cross transferring from one district to another, are requested to notify the chairman of the district from which they are moving, giving the name of the station in which they will be located, and also to notify the chairman of the district to which they move. A complete list of the local officials was published in THE CANAL RECORD, on May 19, 1909.

Fourth of July Celebration.

In the report of the results of the Fourth of July celebration at Ancon, published in THE CANAL RECORD of July 14, the result of the 440-yard run, the relay race and the tennis tournament were omitted. They were as follows:

440-yard run—D. T. Edwards, Ancon, first; H. E. Ham, Culebra, second; Fred A. Feld, Ancon, third.

Relay race—Two teams from Ancon entered. Ancon, first; Culebra, second; Ancon third.

Revised standing of towns according to points is as follows: Ancon, first, five times; third, four times; points 29. Culebra, second, seven times, third twice; points 23. Gorgona, first, twice; points 10.

In the tennis tournament held on the courts of the Panama Tennis club, the final matches in singles and doubles resulted as follows:

Singles—Brewster, Empire, beat Lindo, Panama, 6-1, 6-0.

Doubles—Lister and Ross, Ancon, beat Melhado and Matta, Panama, 11-9, 3-6, 6-4.

Negro Mission in Guachapali.

A church for negroes, erected in the Guachapali district of the city of Panama by the National Baptist Missionary Society, was formally opened on the afternoon of July 16. Hon. Herbert G. Squiers, American Minister to Panama, turned the key and opened the door, after which a short dedication service was held. In the evening at a public meeting, addresses were delivered by Chief Justice H. A. Gudger, Judge Wesley M. Owen, and others. The corner stone of the building was laid some months ago by General Manager H. J. Slifer of the Panama railroad. The building is on land leased from the railroad company at a nominal rent. It is 60 feet long, 50 feet wide, and has a seating capacity of 450. An immersion font, and an organ recently donated to the mission, are part of the furnishings of the church. A mission house is in process of construction and a school house is projected. The mission was opened eighteen months ago and has a membership of about two hundred.

Park Benches on Cristobal Water Front.

Twenty-five park benches have been brought from the States and will be placed along the water front in Cristobal, around the Columbus statue and in front of the De Lesseps house.

PERSONAL.

Among the passengers on the *Colon*, which arrived at Cristobal on July 18, were Col. William C. Gorgas, Chief Sanitary Officer, and Mrs. Gorgas; and Mr. W. W. Warwick, Examiner of Accounts, and Mrs. Warwick.

Mr. J. A. Smith, Superintendent of the Panama Railroad, accompanied by his family, and Dr. F. M. Shook of Colon Hospital, were passengers on the *Cristobal* which sailed from Colon on July 15.

Mr. Frank Gause has been appointed Superintendent of Schools of the Canal Zone to succeed Mr. H. L. Smith, who has resigned. Mr. Gause graduated from the Indiana University in 1904, and has done graduate work at the Chicago University. He holds the degrees of A. B., and A. M., was superintendent of schools at Cicero, Indiana, for 7 years, and held the same position at Salem, Indiana, for 3 years. He is 34 years old, and married.

Resolution of Thanks.

In view of the unprecedented enthusiasm which attended the celebration of the Fourth of July, 1909, at Cristobal, through the untiring efforts and active cooperation of the various divisions and participants, it is deemed appropriate that a resolution of appreciation be extended to all who contributed to the success of the occasion; therefore, be it

Resolved, That the thanks of the Cristobal celebration committee, and through them, the thanks of the residents of all participating towns be and are hereby extended to the Atlantic Division for its magnificent aquatic display; to the Engineering and Electrical Departments of the Panama railroad for very efficient assistance and interest; to the Fire Department for its instructive exhibitions, and to the Police Department and the Railroad Transportation Branch for official service which gave all an enjoyable day not marred by accident.

The results bespoke the ability and zeal of all concerned.

COMMITTEE, CRISTOBAL 4TH OF JULY CELEBRATION.
Cristobal, C. Z., July 5, 1909.

Odd Fellows.

Cristobal lodge No. 2, I. O. O. F., installed its officers on the night of July 19, at the lodge hall in Cristobal. The lodge gave a dance on the night of July 3 in the Commission clubhouse at Cristobal. The hall was decorated with palms and bunting, and music was furnished by the I. C. C. orchestra. In addition to residents of Cristobal and Colon, there were a number of guests from points along the line of the Canal.

Rivalry Between Fire Departments.

In the firemen's tournament, held at Cristobal, on July 5, the Gatun company won the hose race over competing teams, going through the maneuvers in 44 seconds. The volunteer company at Tabernilla has now issued a challenge to the Gatun team for a contest to be held shortly, which has been accepted.

Concert by I. C. C. Band.

BAS OBISPO, C. Z.,
Sunday, July 25, 1909, at 2:30 p. m.

PROGRAM.

- 1 March—*On Guard*..... Reeves
- 2 Selection—*Marcelle*..... Luders
- 3 Waltz—*Die Grafenberger*..... Gungl
- 4 { a Characteristique—*Dixie Twilight*... Johnson
- b Indian Descriptive—*Travling the Trail*..... Spaulding
- 5 Popular Medley of Late Songs..... La Farge
- 6 Chilean Dance—*Manana*..... Missud
- 7 { a Persian Lamb Rag..... Wenrich
- b Popular March—*La, La, La*..... Scott
- 8 Overture—*Lustspiel*..... Kelar Bela
- 9 Dance of the Nile Maidens..... Losey
- 10 March—*Festal Day*..... Roux

OLIVER KIMBALL, Assistant Director.
A concert will be given at Hotel Tivoli, August 1

OFFICIAL CIRCULARS.

Classified Expenditures and Manufacturing Accounts.

(Circular No. 14 as revised to date is appended herewith:

EMPIRE, C. Z., July 6, 1909.

Circular No. 14:

The following revision of the Classified Expenditures and Manufacturing Accounts, of the Isthmian Canal Commission, is effective from July 1, 1909.

T. L. CLEAR,

Acting Examiner of Accounts.

Approved:

GEO. W. GOETHALS,

Chairman and Chief Engineer.

General Account No. 1—Classified Expenditures.

This account will be charged for all expenditures located to any unit of the work and under the proper classified heading, and credited all collections made.

This account will be divided into the following sub-accounts:

DEPARTMENT OF CIVIL ADMINISTRATION.

101. Administration.

To this account will be charged the salaries and allowances of the member of the Commission in charge of the Government of the Canal Zone, the salaries and wages of the Executive Secretary, their clerks and attendants, their traveling expenses, the cost of furniture and fixtures, stationery, printing and other office supplies, cost of lighting and care of offices, law books and other incidental expenses connected with the office.

102. Supreme and Circuit Courts.

To this account will be charged the salaries and allowances of the Chief Justice of the Supreme Court, Judges of the Circuit Courts, their assistants, clerks and attendants, bailiffs and other court officers, their traveling expenses, fees and salaries paid witnesses and jurors, the cost of court furniture and fixtures, law books, stationery, printing and supplies, cost of lighting and care of court rooms and other rooms and buildings occupied by court officials.

103. Prosecuting Attorney.

To this account will be charged the salaries and allowances of the prosecuting attorney, his assistants, clerks and attendants, their traveling expenses, cost of furniture and fixtures, stationery, printing and other office supplies, cost of lighting and care of offices, law books and other library expenses connected with the office.

104. Division of Revenues.

To this account will be charged a proportion of the salary of the Collector of Revenues and Director of Posts, the salaries of Deputy Collectors of Revenue, their clerks, collectors and attendants, their traveling expenses, the cost of office furniture and fixtures and stationery and printing, cost of lighting and care of offices.

105. Division of Posts.

To this account will be charged a proportion of the salary of the Collector of Revenues and Director of Posts, his clerks and attendants, the salaries of postmasters and their clerks, railway postal clerks, and other employes and attendants of the postal service, and any other expense not payable from the funds of the Government of the Canal Zone. This account will be credited with balances turned over to the Commission by the Government of the Canal Zone.

106. Division of Customs.

To this account will be charged a proportion of the salaries of the Collector of Revenues and Director of Posts, his clerks and attendants, and the salaries of all persons engaged in the customs service, their traveling expenses, the cost of furniture, fixtures, office supplies, stationery and printing, the cost of lighting and care of offices.

107. Division of Lands and Buildings.

To this account will be charged a proportion of the salaries of the Collector of Revenues and Director of Posts, his clerks and attendants, their traveling expenses, of the cost of furniture, fixtures, office supplies, stationery and printing, and other incidental expenses, the salaries and expenses of collectors engaged in the collection of rents, but does not include the salaries of collectors engaged in the collection of rent of property belonging to municipalities, which are payable from Canal Zone funds.

108. Division of Estates.

To this account will be charged a proportion of the salaries and wages of the Collector of Revenues and Director of Posts, of his clerks and attendants, of their traveling expenses, cost of furniture and fixtures, office supplies and stationery and printing.

109. Police and Prisons.

To this account will be charged the pay and al-

lowances of the Chief of Police, his lieutenants, sergeants, detectives, policemen, clerks and attendants, either at the headquarters or at stations in the Zone, of Wardens, guards and other employes in and about penal institutions, their traveling expenses, transportation and subsistence of prisoners awaiting trial and in penal institutions, all furniture, fixtures and supplies, including equipment, uniforms, sidleirns, handkerchiefs, proportion of expenses of corns, care of offices and buildings.

110. Fire Protection.

To this account will be charged the salaries and expenses of the Fire Chief and his personnel, allowances to volunteer firemen, the cost of fire apparatus, such as fire engines, hoses, hook and ladder trucks, hose carts, fire extinguishers, hand grenades, and all other equipment used as protection from fire.

111. Maintenance and Operation Water Works and Sewers—Panama.

To this account will be charged a proportion of salaries of the Superintendent of Public Works, of his clerks and attendants, of their traveling expenses, of his office furniture, fixtures and supplies, including stationery and printing, and of other incidental expenses and expenditures for labor and material used in the maintenance and operation of the water works and sewers within the limits of the city of Panama.

112. Maintenance and Operation Water Works and Sewers.—Colon.

To this account will be charged a proportion of the salaries of the Superintendent of Public Works, his clerks and attendants, their traveling expenses, office furniture, fixtures and supplies, including stationery and printing, and of other incidental expenses, and all expenditures for labor and material used in the maintenance and operation of water works and sewers within the limits of the city of Colon.

113. Repairs and Maintenance of Pavements.—Panama.

To this account will be charged a proportion of the salaries of the Superintendent of Public Works, of his clerks and attendants, of their traveling expenses, of his office furniture, fixtures and supplies, including stationery and printing, and of other incidental expenses, and all expenditures for labor and material used in the maintenance and repair of the pavements within the limits of the city of Panama.

114. Repairs and Maintenance of Pavements.—Colon.

To this account will be charged a proportion of the salaries of the Superintendent of Public Works, his clerks and attendants, their traveling expenses, office furniture, fixtures and supplies, including stationery and printing, and other incidental expenses, and all expenditures for labor and material used in the maintenance and repair of the pavements within the limits of the city of Colon.

115. Miscellaneous Zone Public Works.

To this account will be charged all expenditures payable by the Commission for labor and material used in the operation of miscellaneous Zone public works, such as slaughter houses, markets, lights, etc. This account will not be charged with expenditures in connection with Zone water works and sewers, or Zone roadways.

116. Treasurer of the Canal Zone.

To this account will be charged the expenses of the office of the Treasurer of the Canal Zone, including the salaries and wages of the Treasurer, Assistant Treasurer, clerks and attendants, their traveling expenses, office supplies, furniture and fixtures, stationery and printing, and lights and care of offices.

117. Construction of Buildings.

To this account will be charged the salaries and wages and traveling expenses of mechanics, laborers and other employes engaged in, and the value of material and supplies used in the construction of buildings for the Department of Civil Administration.

118. Repairs to Buildings.

To this account will be charged the salaries and wages and traveling expenses of mechanics, laborers and other employes engaged in, and the value of material and supplies used in repairs of buildings for the Department of Civil Administration.

DEPARTMENT OF SANITATION.

201. Administration.

To this account will be charged the salaries and allowances of the member of the Commission in charge of the Department of Sanitation, and of his assistants, their clerks and attendants, and all employes whose salaries and wages are not directly chargeable to other accounts, their traveling expenses, office furniture, fixtures and supplies, including stationery and printing, lighting and care of offices, the expense of the hospital launch and

of hospital cars and other incidental expenses connected with the office.

202. Hospitals and Asylums.

A. Medical Store-house, Colon.

To this account will be charged the salaries and allowances of the storekeeper of the medical store-house at Colon, his clerks and attendants, the material and supplies used in its operation, stationery, office furniture and fixtures.

B. Ancon Hospital.

To this account will be charged the salaries and wages of the Superintendent, clerks, chaplains, physicians and pharmacists, all employes of the laboratory, nurses, maids, messengers and other employes in and about the hospital, their traveling expenses, expenses of carts owned or hired, ambulances, carriages and other vehicles necessary to the conduct of the hospital, cost of embalming fluid and of burying the dead and expenses of conducting the laundry, the cost of office furniture and fixtures, equipment, such as beds and bedding, mattresses, springs, cots, tables, chairs, surgical, laboratory and other scientific instruments, drugs and medicines, soap, fuel and disinfectants, medical books, the subsistence of employes and patients, the cost of lighting, care of Ancon cemetery, and of constructing roads and water and sewer systems, etc., within the hospital grounds, when such expenses are paid from appropriations for the Sanitary Department.

C. Colon Hospital.

To this account will be charged the salaries and wages of the Superintendent, clerks, chaplains, physicians, pharmacists, nurses, maids, messengers and other employes in and about the hospital, their traveling expenses, expenses of carts owned or hired, ambulances, carriages and other vehicles necessary to the conduct of the hospital, cost of embalming fluid and of burying the dead, cost of laundry work, the cost of office furniture and fixtures, equipment such as beds and bedding, mattresses, springs, cots, tables, chairs, surgical and other scientific instruments, drugs and medicines, soap, fuel and disinfectants, medical books, the subsistence of employes and patients and the cost of lighting, and of constructing roads, and water and sewer systems, etc., within the hospital grounds, when such expenses are paid from appropriations for the Sanitary Department.

D. Taboga and Sanitarium.

To this account will be charged the salaries and wages of the Superintendent, clerks, physicians, nurses, messengers, attendants and other persons employed in and about the Sanitarium, the cost of subsistence, medical and other supplies, furniture and fixtures.

E. Santo Tomas Hospital.

To this account will be charged the salary of the Superintendent, physicians and nurses, and such other expenses as are payable from the funds of the Commission, as per agreement with the Republic of Panama.

F. Other Hospitals, Dispensaries and Sick Camps.

To this account will be charged the salary and wages of the Superintendent, clerks, chaplains, physicians, pharmacists, nurses, messengers and other employes in and about the hospitals, their traveling expenses, expenses of carts owned or hired, ambulances, carriages and other vehicles necessary to the conduct of the hospitals, cost of laundry work, the cost of office furniture and fixtures, equipment such as beds and bedding, mattresses, springs, cots, tables, chairs, surgical and other scientific instruments, drugs and medicines, soap, fuel and disinfectants, and the cost of lighting.

203. Quarantine.

To this account will be charged the salaries and allowances of the Chief Quarantine Officer and his assistants, clerks and attendants, of the officers in charge of Quarantine stations (including Boas del Toro), their assistants, clerks and attendants, including the personnel of the quarantine stations, their traveling expenses, the salaries and allowances of the crews of launches and other craft in the quarantine service, the cost of office furniture and fixtures, office supplies, stationery and printing, instruments, drugs, medicines, etc., and the cost of lighting and care of offices and buildings, and of annual transportation used in this service.

204. Sanitation—Panama and Colon.

A. Sanitation Proper, Panama.

To this account will be charged the salaries and expenses of the Health Officer at Panama, his assistants, clerks and attendants, and his office expenses, the salaries and expenses of officers and employes engaged in the work of preventing and eradicating contagious diseases, of disinfecting and fumigating, and all work pertaining to mosquito

extermination, and the cost of material and supplies used in such work.

B. Disposal of Garbage, Street Cleaning, Etc., Panama.

This account will be charged with the amount paid by the Department of Sanitation to the Republic of Panama for street cleaning and garbage removal in the city of Panama.

C. Sanitation Proper, Colon.

To this account will be charged a proportion of the salaries and expenses of the Health Officer at Colon, his assistants, clerks and attendants, and of his office expenses, the salaries and expenses of officers and employes engaged in the work of preventing and eradicating contagious diseases, of disinfecting and fumigating, and all work pertaining to mosquito extermination, the care of Mount Hope Cemetery, and the cost of material and supplies used in such work.

D. Disposal of Garbage, Street Cleaning, Etc., Colon.

To this account will be charged a proportion of the salaries and expenses of the Health Officer at Colon, his assistants, clerks and attendants, and of the office expenses, the salaries and wages of foremen and laborers engaged in street cleaning and removing garbage and other refuse, the cost of animal transportation, cart hire and material and supplies.

205. Zone Sanitation.

A. Sanitation Proper.

To this account will be charged a proportion of the salary of the Chief Sanitary Inspector, his assistants, inspectors, clerks and attendants, and of his office expenses, the salaries and expenses of officers and employes engaged in the work of preventing and eradicating contagious diseases, of disinfecting and fumigating, and all work pertaining to mosquito extermination, burial of the dead and care of cemeteries, excepting the cemetery at Ancon Hospital, and the cost of material and supplies used in such work.

B. Disposal of Garbage, Street Cleaning, Etc.

To this account will be charged a proportion of the salaries and expenses of the Chief Sanitary Inspector, his assistants, inspectors, clerks and attendants, and of his office expenses, the salaries and wages of foremen and laborers engaged in street cleaning and removing garbage and other refuse outside of the cities of Panama and Colon, the cost of animal transportation, cart hire and of material and supplies.

206. Construction of Buildings.

To this account will be charged the salaries and wages and traveling expenses of mechanics, laborers and other employes engaged in, and the value of material and supplies used in the construction of buildings for the Department of Sanitation.

207. Repairs of Buildings.

To this account will be charged the salaries and wages and traveling expenses of mechanics, laborers and other employes engaged in, and the value of material and supplies used in repairs of buildings for the Department of Sanitation.

DEPARTMENT OF CONSTRUCTION AND ENGINEERING.

301. General Administrative Expenses.

To this account will be charged a proper proportion of the salaries and expenses of the office of the Chairman and Chief Engineer, and all other officers and employes engaged in general supervision of Canal construction. The expenses of the first, second and third divisions of the office of the Chairman and Chief Engineer will be charged to this account, except such part as may be properly chargeable directly to one of the following accounts under the Department of Construction and Engineering. A proper proportion of the expenses of the fourth division of the office of the Chairman and Chief Engineer will be charged to Account No. 370, Miscellaneous General Expenses. A report will be made monthly showing the total expenditures of the office of the Chairman and Chief Engineer and the accounts properly chargeable therewith.

ATLANTIC DIVISION.

310. Dry Excavation. (Prism).

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes while engaged directly in the work of excavating dry material, and the transportation and disposition of it; also all material and supplies used and expenses incurred, and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the

value of plant heretofore purchased for or used by this division in the work of dry excavation, and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions, and credited with plant transferred from this division.

311. Dredging Excavation. (Prism).

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division and the salaries and expenses of all officers and employes while engaged directly in the work of excavating material by dredging, and the transportation and disposition of it; also all material and supplies used and expenses incurred, and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for or used by this division in the work of dredging excavation and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

312. Gatun Dam and Spillway.

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes while engaged directly in the work of constructing the Gatun Dam and Spillway; also all material and supplies used and expenses incurred, and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased or used by this division in the work of constructing the Gatun Dam and Spillway, and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

313. Gatun Locks.

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes while engaged directly in the work of constructing the Gatun Locks, and also all material and supplies used and expenses incurred, and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for or used by this division in the work of constructing the Gatun Locks, including labor and material used in construction of temporary power plant and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

314. Gatun Power Plant (Permanent).

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervisory force of the division, and the salaries and expenses of all officers and employes while engaged directly on the construction of the permanent power plant, including all material, machinery, equipment and supplies used and entering into its construction, and expenses incurred thereby, including the value of any machinery, etc., transferred from the temporary power plant or any other portion of the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for, or used by this division and necessary for the erection and construction of the power plant, and of any such plant hereafter purchased or used therein. It is not intended to include any items of machinery or plant required for its operation after completion. This item will be charged with any plant transferred from other divisions or other portions of the work. It will be credited with plant transferred from this work.

315. Rock and Sand Account.

A. Porto Bello Rock—Plant.

This account will be opened with a charge of the value of plant heretofore purchased or used by this division in the operation of the crusher plant and in obtaining stone to be crushed; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

B. Nombre de Dios Sand—Plant.

This account will be opened with a charge of the value of plant heretofore purchased or used in obtaining sand, including sand lands purchased, and

with plant transferred from other divisions and credited with plant transferred from this division.

C. Transportation—Plant.

This account will be opened with a charge of the value of all plant, including vessels, barges, etc., used in transportation heretofore purchased or used by this division in the transportation of rock and sand from Porto Bello and Nombre de Dios; also to be charged with all plant transferred from other divisions and credited with plant transferred from this division.

316. Colon Breakwater.

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division and the salaries and expenses of all officers and employes while engaged directly in the work of constructing the breakwater; also all material and supplies used and expenses incurred, the repair of equipment used in the work, and the cost of transportation of material.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased or used in the construction of Colon Breakwater, and of plant hereafter purchased or used herein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

CENTRAL DIVISION.

325. Dry Excavation.

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes while engaged directly in the work of excavating dry material and the transportation and disposition of it; also all material and supplies used and expenses incurred, and the repair of the equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for, or used by this division in the work of dry excavation and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

326. Dredging Excavation.

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes while engaged directly in the work of dredging excavation and the transportation and disposition of it; also all material and supplies used and expenses incurred, and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for, or used by this division in the work of dredging excavation and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

PACIFIC DIVISION.

335. Dry Excavation. (Prism).

A. Construction.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes while engaged directly in the work of excavating dry material, and the transportation and disposition of it; also all material and supplies used and expenses incurred and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for, or used by this division in the work of dry excavation and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

336. Dredging Excavation. (Prism.)

A. Construction work.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes while engaged directly in the work of dredging excavation, and the transportation and disposition of it; also all material and supplies used and expenses incurred and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for, or used by this division in the work of dredging excavation and of plant hereafter purchased for or used therein; also to be charged with plant transferred from

other divisions and credited with plant transferred from this division.

337. *Pedro Miguel Locks and Dams,*

A. Construction.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes while engaged directly in the work of constructing Pedro Miguel Locks and Dams; and also all material and supplies used and expenses incurred, and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for, or used by this division in the work of constructing the Pedro Miguel Locks and Dams and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

338. *Miraflores Locks and Dams.*

A. Construction.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division and the salaries and expenses of all officers and employes while engaged directly in the work of constructing Miraflores Locks and Dams, and also all material and supplies used and expenses incurred and the repair of equipment used in the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for, or used by this division in the work of constructing the Miraflores Locks and Dams and of plant hereafter purchased or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

339. *Rock and Sand Account—Plant.*

This account will be opened with a charge to the several subheadings of the value of plant heretofore purchased by this division in the operation of rock and sand plants of this division or used therein; also to be charged with plant transferred from other divisions and credited with plant transferred from this division.

The following subdivisions will be made:

- A. Ancon Rock—Plant.
- B. Ancon Rock—Transportation Plant.
- C. Chamé Sand—Plant.
- D. Chamé Sand—Transportation Plant.

340. *Miraflores Power Plant.*

A. Construction Work.

To this account will be charged a proper proportion of the salaries and expenses of the supervisory force of the division, and the salaries and expenses of all officers and employes while engaged directly in the construction of the power plant, including all material, machinery, equipment and supplies used and entering into its construction, and expenses incurred thereby, including the value of any machinery, etc., transferred from any other portion of the work.

B. Plant.

This account will be opened with a charge of the value of plant heretofore purchased for, or used by this division and necessary for the erection and construction of the power plant, and of any such plant hereafter purchased or used therein. It is not intended to include any items of machinery or plant required for its operation after completion. This item will be charged with any plant transferred from other divisions or other portions of the work. It will be credited with plant transferred from this work.

GENERAL EXPENSES.

NOTE—The following accounts include expenses properly chargeable to all departments of the Isthmian Canal Commission, and will be prorated monthly to the Department of Civil Administration, the Department of Sanitation and the three divisions of the Department of Construction and Engineering.

370. *Miscellaneous General Expenses.*

A. On the Isthmus.

To this account will be charged the proper proportion of the salaries and expenses of the office of the Chairman and Chief Engineer, the expenses of any special committees of engineers, or special commission and committees of Congress, legal services, a proper proportion of the salary of the Secretary of the Commission, and all other incidentals and miscellaneous expenses on the Isthmus paid by the Commission and which are not directly chargeable to any department or division. A report will be made monthly showing the total expenditures of the office of the Chairman and Chief Engineer and the accounts properly chargeable therewith.

B. CANAL RECORD.

To this account will be charged a proper propor-

tion of the salary of the Secretary of the Commission and all salaries, wages and expenses in connection with the publication of THE CANAL RECORD. It will be credited with the receipts from the sale of THE CANAL RECORD.

C. Y. M. C. A. Clubhouses.

To this account will be charged the salaries and expenses of officers and employes connected with clubhouses, also the expenses of furniture, fixtures and supplies, and all other expenses paid by the Commission, except the cost of constructing and furnishing new buildings.

D. I. C. C. Band.

To this account will be charged all salaries and expenses of the band, including the purchase of instruments, music, etc.

E. In the United States.

To this account will be charged all miscellaneous general expenses of the Commission in the United States, including salaries, printing, travel expenses, and other expenses of the office of Administration, telegraphs, telephones and cables, legal services, rent of office building, light, fuel, power, and custodian force, etc.

371. *Disbursing Officers.*

A. In Washington.

B. On the Isthmus.

To this account will be charged all expenses of the disbursing offices.

372. *Examiner of Accounts.*

A. In Washington.

B. On the Isthmus.

To this account will be charged all expenses of the offices of the Examiner of Accounts and Assistants.

373. *Transportation on the Isthmus.*

To this account will be charged the monthly payment for transportation of employes over the rail lines of the Panama Railroad Company, and of animal transportation to and from trains.

374. *Telegraph and Telephones.*

To this account will be charged all expenses in connection with telegraphing, telephoning and cabling.

375. *Purchasing Expenses in the United States.*

To this account will be charged all expenses in connection with purchasing, inspecting, and testing supplies obtained from the United States.

376. *Compensation to Injured Employes.*

To this account will be charged payments made as compensation to injured employes, under the Act of May 30, 1908. Payments made on account of "Meritorious Sick Leave" will not be charged to this account, being carried on the regular pay rolls of the several divisions. The charges to this account will be made by the Examiner of Accounts, from the vouchers and pay rolls prepared by the Claim Officer.

SUBSISTENCE DEPARTMENT.

377. *Hotels, Messes and Kitchens—Operations.*

To this account will be charged a proportion of the expenses of the supervisory force of this Department, the cost of operating the hotels (except Tivoli Hotel), messes and kitchens, the cost of supplies used in their operation, and other expenses incidental thereto.

This account will be credited with collections of every nature, from employes and other departments, for subsistence furnished.

378. *Hotel Equipment.*

To this account will be charged the cost of equipment used in the operation of hotels (except Tivoli Hotel), such as furniture and fixtures, crockery, glassware, kitchen utensils, and the cost of repairs and renewals thereof when payable from Congressional appropriations, and not from revenues derived from operations.

379. *Hotels—Incidental Expenses.*

To this account will be charged the cost of fuel, light and power furnished hotels (except Tivoli Hotel), and such other expenses as are to be paid from Congressional appropriations and not from revenues derived from operations.

380. *Tivoli Hotel.*

To this account will be charged a proportion of the expenses of the supervisory forces of this Department, the cost of operating the Tivoli Hotel, including care of grounds, charges for equipment and repairs thereof, renewals, cost of fuel, light, power, etc. The cost of construction of the hotel and alterations and repairs to the building are carried under Accounts No. 408 and No. 409 respectively.

This account will be credited with collections or revenues of every nature for service or subsistence rendered by Tivoli Hotel.

QUARTERMASTER'S DEPARTMENT.

385. *Operation of Storrs.*

To this account will be charged a proportion of the expenses of the supervisory forces, the cost of

all salaries and wages and materials used in the operation of storehouses of the Quartermaster's Department and incidental expenses.

386. *Freight, Advertising and Miscellaneous Items.*

To this account will be charged the cost on the Isthmus of advertising in newspapers, freight, handling and miscellaneous items of expense in connection with the cost of purchasing, handling and transportation of material and supplies.

387. *Recruiting.*

To this account will be charged a proportion of the expenses of the supervisory forces, the transportation of employes from the United States and other countries to the Isthmus, the salaries, wages and expenses of labor agents, the cost of subsistence furnished recruits, and all expenses incidental to the securing of labor, as well as the cost of deportations. This account will be credited with collections for transportation.

388. *Quarters.*

To this account will be charged a proportion of expenses of the supervisory forces, the cost of furniture heretofore and hereafter used in quarters for employes, and the expense of repairing same, cost of supplies such as oil, electric light, fixtures therefor, and the salaries and wages of employes engaged in caring for and cleaning quarters.

389. *Corrals.*

A. Equipment.

To this account will be charged the cost of all animals, carriages, wagons, etc., for use in animal transportation on the Isthmus, and it will be credited with the proceeds of sale of property of this description.

B. Operation.

This account will be charged a proportion of the expenses of the supervisory forces, with all labor and material entering into the operation of all corrals, except for new equipment and will receive credit for services rendered other departments and individuals, for which bills are to be rendered in accordance with flat charges made for the keeping of animals.

GENERAL ITEMS.

NOTE—Expenditures under the following accounts are not yet being charged to any particular item of Canal construction:

401. *Lands Purchased.*

A. For Construction Work or to be flooded.

To this account will be charged all payments for lands acquired by the Commission for construction purposes or which are to be flooded, including all expenses in connection with their purchase or expropriation.

B. For other purposes.

To this account will be charged all payments for lands acquired for purposes other than actual Canal construction or to be flooded, including all expenses in connection with their purchase or expropriation.

402. *Cristobal Terminals.*

A. Docks and Wharves.

To this account will be charged all expenditures for labor and material used in the construction and repair of docks and wharves for permanent service, including the tracks laid thereon, together with all machinery, tools, supplies, etc., that may be used in construction and renewals of same.

B. Dredging.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes engaged in the dredging for approaches and docking purposes, all material and supplies used and expenses incurred and the repair of equipment used in the work.

403. *Balboa Terminals.*

A. Docks and Wharves.

To this account will be charged all expenditures for labor and material used in the construction and repair of docks and wharves for permanent service, including the tracks laid thereon, together with all machinery, tools, supplies, etc., that may be used in construction, and renewals of same.

B. Dredging.

To this account will be charged a proper proportion of the salaries and expenses of the supervising force of the division, and the salaries and expenses of all officers and employes engaged in the dredging for approaches and docking purposes; all material and supplies used and expenses incurred, and the repair of equipment used in the work.

NOTE—Docks H and Hat Cristobal and the Balboa dock are leased to the Panama Railroad Company, the Commission assuming the repairs of the *substructure only*. Any additions or improvements made to these docks should be charged

to the account to which they relate and statement rendered the Examiner of Accounts showing cost of the work, as by the terms of the lease an additional rental is to be collected to cover such expenditures.

404. Panama Railroad Second Main Track.

To this account will be charged the cost of building the second main track of the Panama railroad.

405. Relocation of Panama Railroad.

A. Construction Work

To this account will be charged the expenses incurred in relocating the Panama railroad.

B. Maintenance.

To this account will be charged all expenses in connection with the maintenance of the relocated line, under the agreement between the Commission and the Panama Railroad Company, to maintain the road for a certain period after the construction is completed.

406. Panama Railroad Marine and Fire Losses.

To this account will be charged all payments made to the Panama Railroad Company, on account of marine and fire losses sustained, so far as such losses may be paid from Commission funds, under authority of Act of Congress.

407. Purchase, Improvement and Repair of Steamers.

A. Panama.

B. Colon.

C. Cristobal.

D. Ancon.

To this account will be charged the purchase price of the vessel, and all expenses of repairs and improvements, and credit will be given for revenues derived from such vessels as may be chartered.

408. Construction of Buildings, Department of Construction and Engineering.

To this account will be charged the expense incurred in the construction of buildings for the Department of Construction and Engineering, Examination of Accounts, Disbursements, Quartermaster's and Subsistence. It does not include "Division Structures," the expense of which should be charged directly against the construction work benefited. This account will include buildings furnished for the use of the Panama Railroad Commissaries, and the buildings used by the Y. M. C. A. and the Tivoli Hotel. It will also include the construction of buildings used for quarters for employes.

409. Alteration and Repair of Buildings, Department of Construction and Engineering.

To this account will be charged all expenses of alteration and repair of buildings for the Department of Construction and Engineering, Examination of Accounts, Disbursements, Quartermaster's and Subsistence. It does not include repairs to "Division Structures," the expense of which should be charged directly to the Division or Department benefited. The account will include cost of repairs made to buildings furnished for the use of the Panama Railroad Commissaries, and buildings used by the Y. M. C. A. and the Tivoli Hotel. It will also include the repairs of buildings used for quarters for employes.

410. Purchase from New Panama Canal Company.

To this account will be charged the amount paid the New Panama Canal Company for property and rights acquired, and credited when an authorized distribution is made to other accounts.

411. Payment to Republic of Panama.

To this account will be charged the amount paid the Republic of Panama for rights acquired.

412. Loans to Panama Railroad Company.

To this account will be charged loans made the Panama Railroad Company, and credited with repayments of same.

413. Purchase of Panama Railroad Stock.

To this account will be charged payments made for purchase of Panama railroad stock, and credited amounts received from sale of same.

414. Machine Shops and Other Manufacturing Plants.

This account will be opened with a charge of the value of plant heretofore purchased for or used in the general manufacturing plants, including machine shops, electric light plants, planing mill, concrete block plant, etc. All expenditures for buildings and other improvements in connection with these plants should be included. This account is not to be increased. All payments for new plant and repairs will hereafter be charged to operations.

Separate accounts will be kept as follows:

- A. Empire Machine Shops.
- B. Gorgona Machine Shops.
- C. Electric Light Plants.
- D. Lirio Planing Mill.
- E. Concrete Block Plant.
- F. Printing Plant.
- G. Cristobal Dry Dock Shops.
- H. Balboa Ship Ways.

J. Bas Obispo Shops Crusher.

K. Rio Grande Crusher.

415. Construction Water Works and Sewers, Panama.

To this account will be charged the salaries, wages and allowances of officers, clerks, laborers, and their traveling expenses, the cost of all material, including water pipes, sewer pipes, cement, all plumbing materials, lumber, etc., cost of transportation of men and animals and material, the tools and supplies used and all other incidental expenses connected with the construction of water works and sewers within the limits of the city of Panama.

416. Construction Water Works and Sewers, Colon.

To this account will be charged the salaries, wages and allowances of officers, clerks and laborers, and their traveling expenses, the cost of all material, including water pipes, sewer pipe, cement, all plumbing material, lumber, etc., the cost of transportation of men and materials, the tools and supplies used, and all other incidental expenses connected with the construction of water works and sewers within the limits of the city of Colon.

417. Zone Water Works and Sewers.

A. Construction.

To this account will be charged all expenditures for labor and material used in the construction of water works and sewers in the Zone, including reservoirs, main pipe lines and connections to Commission buildings, but does not include the construction of water works and sewers in the cities of Panama and Colon, which is chargeable to Accounts Nos. 415 and 416, respectively, or in native villages and houses in the Zone, which expense is payable from Canal Zone funds, and should be charged to General Account No. 8—Individuals and Companies.

B. Repairs and Maintenance.

To this account will be charged all expenditures for labor and material used in the repair and maintenance of water works and sewers in the Zone, including reservoirs, main pipe lines and connections to Commission buildings, but does not include repairs and maintenance of water works and sewers within the cities of Panama and Colon, which are chargeable to Accounts Nos. 415 and 416, respectively, or in native villages or houses on the Zone, expenses for which are payable from Canal Zone Funds, and should be charged to General Account No. 8—Individuals and Companies.

418. Paving, Panama.

To this account will be charged all expenditures for labor and material used in paving the streets of Panama, such as paving, filling, and grading, and includes the wages of engineers directly in charge of the work, the cost of transportation of men and materials and incidental expenses. This account does not include repairs and maintenance of paved streets, which are chargeable to Account No. 113.

419. Paving, Colon.

To this account will be charged all expenditures for labor and material used in paving the streets of Colon, such as paving, filling, and grading, and includes the wages of engineers directly in charge of the work, the cost of transportation of men and materials and incidental expenses. This account does not include repairs and maintenance of paved streets, which are chargeable to Account No. 114.

420. Zone Roadways.

A. Construction.

To this account will be charged all expenditures for labor and material used in the construction of roads outside of the cities of Panama and Colon, including the cost of right-of-way, the transportation of men and material, the cost of tools, plant, and machinery used in the work and incidental expenses. This account will not be charged with the cost of constructing trails or roads which are to be paid from Canal Zone funds. When Commission labor or material is used in such work the amounts will be charged to General Account No. 8—Individuals and Companies.

B. Repairs and Maintenance.

To this account will be charged all expenditures for labor and material used in the repair and maintenance of roads outside of the cities of Panama and Colon, including the use of borrow pits, transportation of men and material, the cost of tools and machinery used in the work and incidental expenses. This account will not be charged with the cost of repairs or maintenance of roads or trails, which is to be paid from Canal Zone funds. When Commission labor or material is used in such work the amounts will be charged to General Account No. 8—Individuals and Companies.

C. Miscellaneous, Grading and Other Municipal Work.

To this account will be charged all expenditures for labor and material used in miscellaneous improvements, grading and other municipal work,

including the cost of recreation grounds and other miscellaneous municipal charges authorized by the Chairman and Chief Engineer and not otherwise provided for.

421. Moving and Care of French Material and Equipment.

To this account will be charged all expenditures for labor and material used in caring for French material and equipment, except such as may be necessary to prepare it for use or care for it after it is ready for issue. It includes wrecking and moving excavators, dredges, locomotives, etc., from the Canal site, merely to get them out of the way, or concentrate the material at central points, also the care of marine and other equipment to keep it afloat and watch it, and other incidental expenses of like character. This account will not be charged for any expenses incurred on account of the recovery, preparation or shipment of French scrap intended for sale. The transactions involved will be handled in General Account No. 6—Value of French Material Recovered.

General Account No. 2—Manufacturing Account.

This account is intended to care for the operations of the manufacturing plants on the Isthmus, and will be charged under the proper manufacturing unit with the value of all new equipment, replacements, additions and repairs, all material and supplies drawn from the Quartermaster's storehouses and intended for manufacturing purposes, the salaries and wages of all employes, and all other expenses of maintenance and operation which have entered into the cost of the finished product.

The account will be credited with the value of the manufactured product, by a monthly statement of charges to material and supplies, other divisions of the work, or individuals and companies, and will include the value of all material and labor used, with such added surcharge, to include superintendence and all other expenses as may be found sufficient. The balance remaining in the account to represent the value of manufacturing orders uncompleted.

The following subdivisions of the account will be maintained:

1. Empire Machine Shops.
2. Gorgona Machine Shops.
3. Electric Light Plants.
4. Air Compressor Plants.
5. Lirio Planing Mill.
6. Concrete Block Plant.
7. Printing Office.
8. Gardens and Truck Farms.
9. Porto Bello Rock Plant.
10. Nombre de Dios Sand Plant.
11. Porto Bello and Nombre de Dios, Transportation.
12. Cristobal Dry Dock Shops.
13. Bas Obispo Rock Crusher.
14. Rio Grande Rock Crusher.
15. Balboa Shipways Shops.
16. Ancon Rock Crusher.
17. Chamé Sand Plant.

Percentages of Surcharges.

CULEBRA, C. Z., July 1, 1909.

CIRCULAR NO. 169-B:

Effective this date, the following percentages of surcharges will be added in all cases where labor is furnished between departments and divisions, and where labor and material are furnished by the Isthmian Canal Commission to the Panama Railroad Company, or to individuals and companies:

BETWEEN DEPARTMENTS AND DIVISIONS.

Shop work (including work done by all shops, excepting regular repairs to equipment).....	30 per cent on labor.
All labor with machinery..	30 per cent on labor.
Mechanical shop labor, without machinery.....	30 per cent on labor.
Other labor, without machinery.....	10 per cent on labor.

BETWEEN I. C. C. AND P. R. R.

Shop work.....	30 per cent on labor.
All labor, with machinery..	30 per cent on labor.
Mechanical shop labor, without machinery.....	30 per cent on labor.
Other labor, without machinery.....	10 per cent on labor.
Material, with or without labor.....	20 per cent on material.

FOR INDIVIDUALS AND COMPANIES.

Shop work (including work done in all shops).....	50 per cent on labor.
All labor, with machinery..	50 per cent on labor.
Mechanical shop labor, without machinery.....	50 per cent on labor.

Other labor, without machinery..... 10 per cent on labor.
 Material, with or without labor..... 20 per cent on material.
 All other instructions, heretofore issued, regarding the percentages of surcharges, are hereby revoked.
 GEO. W. GOETHALS, *Chairman.*

Transportation for Public Business.

CULEBRA, C. Z., July 14, 1909.

CIRCULAR No. 261-A:

The following transportation will be used exclusively for the transaction of public business, in addition to that authorized by Circular No. 261:

At Ancon—One single surrey, for use of Superintendent of Ancon Hospital, when necessary in connection with inspection duties; one single surrey, for use of Health Officer of the city of Panama.

At Cristobal—One single surrey, for use of Health Officer at Cristobal.

The transportation enumerated in Circular No. 261 and 261-A may be used for any other official purpose than that specifically designated in these circulars on order from the Chairman or the Chief Quartermaster.

GEO. W. GOETHALS, *Chairman.*

Travelling Engineer.

CULEBRA, C. Z., July 15, 1909.

CIRCULAR No. 266:

The position of Supervisor of Road Engines in the Mechanical Division is hereby abolished.

The position of Travelling Engineer is hereby created.

Mr. James G. Craig is hereby appointed Travelling Engineer for duty under the immediate direction of the Assistant to the Chief Engineer.

Effective July 16, 1909.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Instructions for Timekeeping.

DEPARTMENT OF EXAMINATION OF ACCOUNTS,
 EMPIRE, C. Z., July 14, 1909.

CIRCULAR No. 13:

To all Timekeepers:—The following supplement to General Timekeeping Circular No. 1, dated April 1, 1907, is published for the guidance of all concerned:

Employees entering upon leave of absence will be paid up to, and including, the day preceding that on which they enter on leave.

In cases of discharge, the employe will be paid to and including, the day of discharge based on its regular hours of service, and notice of discharge should be issued stating "at close of business," giving the date of last service day.

In the case of an hourly man discharged during his service day, the certificate should show the time and date. Such employe will be paid up to the time of his discharge.

T. L. CLEAR, *Acting Examiner of Accounts.*

Approved: GEO. W. GOETHALS,
Chairman and Chief Engineer.

Acting Superintendent, P. R. R.

PANAMA RAILROAD COMPANY,
 COLON, R. P., July 14, 1909.

CIRCULAR No. 129

Heads of Departments and Divisions—Effective July 11, 1909, Mr. F. R. Blunt will act as Superintendent, Panama railroad, during the absence of Mr. J. A. Smith on leave.

H. J. SLIFER, *General Manager.*

Proposals for Buildings.

Contract buildings. Sealed proposals will be received at the office of the Constructing Quartermaster, Isthmian Canal Commission, Culebra, C. Z., until 2 p. m., Wednesday, July 28, 1909, when they will be publicly opened, for the erection of four (4) buildings. One engine house, one oil house, one storehouse and office, one coaling platform and one cinder pit. The Commission will furnish all materials at the site of the work, and the contractor is required to provide all labor. Plans and specifications can be obtained upon application to the Constructing Quartermaster. A deposit of \$5 is required to insure their return. Each bidder must accompany his proposal with a check, cash or money order for \$50 as a guarantee that contract will be entered into, and the successful bidder will be required to deposit \$500 conditioned upon the faithful performance of the contract. The Commission reserves the right to reject any or all proposals, to accept any proposals as may be deemed to its interest, and to waive defects or informalities in proposals.

C. A. DEVOL,
Chief Quartermaster.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, July 17, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gambou.	Bohio.	Gatum (Canal.)	Gatum (W. D.)
Height of low water ab. n. n. sea-level, ft.	125	92	46	1	0	0
Maximum height ab. mean sea-level, feet:						
Sunday, July 11....	135.0	98.9	54.8	11.9	4.7	3.9
Monday, July 12....	127.6	94.3	50.1	11.7	5.0	4.0
Tuesday, July 13....	127.8	94.4	50.0	6.9	3.0	2.4
Wednesday, July 14....	127.4	94.0	50.0	7.6	2.9	2.0
Thursday, July 15....	128.7	94.7	52.4	6.4	3.7	2.2
Friday, July 16....	130.3	95.8	53.4	14.1	7.2	6.0
Saturday, July 17....	130.3	96.7	53.5	13.7	7.8	6.6

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending July 23, 1909 (75th meridian time):

DATE.	Low.		High.	
	A. M.	P. M.	A. M.	P. M.
July 22.....	12.54	6.59	1.19	7.15
July 23.....	1.33	7.38	2.01	7.53
July 24.....	2.13	8.16	2.43	8.31
July 25.....	2.54	8.55	3.29	9.17
July 26.....	3.40	9.45	4.18	10.08
July 27.....	4.32	10.30	5.13	11.08
July 28.....	5.31	11.29	6.11	.....

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Rainfall, July 1 to 17, 1909, Inclusive.
 (MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Atlantic Division—</i>			
Cristobal.....	2.30	16	9.08
Brazos Brook.....	1.65	16	7.54
Gatum.....	1.90	15	6.87
Bohio.....	1.22	5	5.91
<i>Central Division—</i>			
Tabernailla.....	1.92	7	6.96
San Pablo.....	1.85	15	7.93
Gorgona.....	3.86	16	8.68
Gambou.....	2.17	15	8.19
Empire.....	.88	15	4.20
Camacho.....	1.04	11	3.94
Culebra.....	.83	11	3.50
<i>Pacific Division—</i>			
Rio Grande.....	.94	11	3.51
Pedro Miguel.....	1.24	16	4.58
Balboa.....	3.51	10	11.71
Ancon.....	2.13	10	6.90
<i>Atlantic Coast—</i>			
Porto Bello, (to 5 p. m. July 16)....	3.21	15	16.36
Nombre de Dios, (to 5 p. m. July 10)	.61	8	1.73
<i>Upper Chagres—</i>			
El Vigia.....	1.27	2	7.03
Alhajuela.....	1.85	17	8.14

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
 ANCON, C. Z., July 21, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Atkins, Sam	Kummers, A. P.
Billingslea, Loy E.	Lewis, Dr. John Waring
Blohm, Jno. H.	Lyng, John
Byrd, J. B.	Mann, C.
Cadman, Charles	McNaught, Miss Ethel
Conway, Ed Zent	Morgan, Geo. W.
Edwards, Newton	Plazell, Emanuel
Ernst, P. A.	Pugh, Robert G.
Henderson, Mrs. W. A.	Purcell, P.
Herring, Fred	Suart, M. A.
Jones, Robert W.	Williams, Eglort G.

The camera club of the Cristobal Y. M. C. A. will give an exhibition of the photographs taken by members of the club, at the Commission clubhouse beginning Thursday, July 22.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Panama.....	P. R. R. Monday.....	July 19
Ancon.....	P. R. R. Thursday.....	July 22
Clyde.....	R. M. Saturday.....	July 24
Advance.....	P. R. R. Saturday.....	July 24
Allianca.....	P. R. R. Friday.....	July 30
Prinz Joachim.....	H. A. Saturday.....	July 31
Colon.....	P. R. R. Thursday.....	Aug. 5
Cristobal.....	P. R. R. Friday.....	Aug. 6
Thames.....	R. M. Saturday.....	Aug. 7
Panama.....	P. R. R. Wednesday.....	Aug. 11
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Aug. 14
Advance.....	P. R. R. Tuesday.....	Aug. 17
Ancon.....	P. R. R. Thursday.....	Aug. 19
Magdalena.....	R. M. Saturday.....	Aug. 21
Allianca.....	P. R. R. Monday.....	Aug. 23
Prinz Joachim.....	H. A. Saturday.....	Aug. 28
Colon.....	P. R. R. Saturday.....	Aug. 28
Cristobal.....	P. R. R. Thursday.....	Sept. 2
Orinoco.....	R. M. Saturday.....	Sept. 4
Prinz Aug. Wilhelm.....	H. A. Saturday.....	Sept. 11
Oruba.....	R. M. Saturday.....	Sept. 18
Prinz Joachim.....	H. A. Saturday.....	Sept. 25

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca.....	P. R. R. Saturday.....	July 17
Prinz Joachim.....	H. A. Tuesday.....	July 20
Colon.....	P. R. R. Friday.....	July 23
Thames.....	R. M. Wednesday.....	July 28
Panama.....	P. R. R. Friday.....	July 30
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Aug. 3
Advance.....	P. R. R. Thursday.....	Aug. 5
Ancon.....	P. R. R. Friday.....	Aug. 6
Allianca.....	P. R. R. Wednesday.....	Aug. 11
Magdalena.....	R. M. Wednesday.....	Aug. 11
Colon.....	P. R. R. Tuesday.....	Aug. 17
Prinz Joachim.....	H. A. Tuesday.....	Aug. 17
Cristobal.....	P. R. R. Thursday.....	Aug. 19
Panama.....	P. R. R. Monday.....	Aug. 23
Orinoco.....	R. M. Wednesday.....	Aug. 25
Advance.....	P. R. R. Saturday.....	Aug. 28
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Aug. 31
Ancon.....	P. R. R. Thursday.....	Sept. 2
Allianca.....	P. R. R. Friday.....	Sept. 3
Oruba.....	R. M. Thursday.....	Sept. 8
Colon.....	P. R. R. Thursday.....	Sept. 9
Prinz Joachim.....	H. A. Tuesday.....	Sept. 14
Clyde.....	R. M. Wednesday.....	Sept. 22
Prinz Aug. Wilhelm.....	H. A. Tuesday.....	Sept. 28

NEW ORLEANS TO COLON.

Abangarez.....	U. F. C. Saturday.....	July 24
Parismina.....	U. F. C. Saturday.....	July 31
Turrialba.....	U. F. C. Saturday.....	Aug. 7
Abangarez.....	U. F. C. Saturday.....	Aug. 14
Parismina.....	U. F. C. Saturday.....	Aug. 21
Turrialba.....	U. F. C. Saturday.....	Aug. 28
Abangarez.....	U. F. C. Saturday.....	Sept. 4
Parismina.....	U. F. C. Saturday.....	Sept. 11
Turrialba.....	U. F. C. Saturday.....	Sept. 18
Abangarez.....	U. F. C. Saturday.....	Sept. 25

COLON TO NEW ORLEANS.

Turrialba.....	U. F. C. Tuesday.....	July 27
Abangarez.....	U. F. C. Tuesday.....	Aug. 3
Parismina.....	U. F. C. Tuesday.....	Aug. 10
Turrialba.....	U. F. C. Tuesday.....	Aug. 17
Abangarez.....	U. F. C. Tuesday.....	Aug. 24
Parismina.....	U. F. C. Tuesday.....	Aug. 31
Turrialba.....	U. F. C. Tuesday.....	Sept. 7
Abangarez.....	U. F. C. Tuesday.....	Sept. 14
Parismina.....	U. F. C. Tuesday.....	Sept. 21
Turrialba.....	U. F. C. Tuesday.....	Sept. 28

COLON TO BARBADOS, CALLING AT TRINIDAD.

Clyde.....	R. M. Tuesday.....	Aug. 3
Thames.....	R. M. Tuesday.....	Aug. 17

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The steamer *David* of the National Navigation Company, will leave Panama, for David, province of Chiriqui, and intermediate points, on Thursday, July 22.

The next sailings of the Leyland Line will be as follows: *Mercian*, on or about July 31, for Tampa, Fla., via Kingston, Ja., and *Cuban* for New Orleans via Kingston on or about August 9.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for the month of June is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed description of the progress of Canal work in all departments and divisions.

Improved Water System for Balboa and Ancon.

Work on the new water service extension to Balboa was begun on July 15. This system will increase the efficiency of the water supply at Ancon and Balboa and will furnish, through a connection with the new high pressure reservoir on Aucon Hill, adequate fire protection for these towns. Additional fire protection has already been provided for the city of Panama, as a connection between the city mains and the high pressure reservoir can be made at any time. The pressure for fire purposes will be from 75 to 80 pounds, sufficient to throw a stream of water from a hose over the highest building in Panama, and to afford adequate protection to the buildings on the higher slopes of Ancon Hill. About 12,500 feet of 8 and 10-inch pipe will be used to complete the extension and numerous connections and hydrants will be installed along the line.

The present system consists of a 6-inch pipe line, connected with the 16-inch main from the Rio Grande reservoir, near Balboa Junction, which follows the railroad track to the docks at Balboa. At Big Tree tank, a 3½-inch pipe line branches off from the 6-inch line and follows the dump tracks of the Central Division to a point a short distance beyond the commissary at East Balboa, and other lines extend to East Balboa, and to the electric light plant and the Union Oil Company's buildings at Petrolia. The pressure in the 6-inch line from the Rio Grandemain is frequently very low on working days, because of the demands for water made by steamers, dredges and other vessels at the Balboa docks.

The new extension provides for a 10-inch

cast iron pipe line from the Rio Grande main, near Balboa Junction, by way of the Zone boundary road and the old Balboa road to the dump tracks of the Central Division at East Balboa. From this point an 8-inch main will extend to the electric light plant, through the yards of the Union Oil Company to the beach, and thence to Balboa docks where it will be connected with the present 6-inch main, thus forming a loop and furnishing complete circulation.

To provide for the use of the high pressure reservoir in time of emergency, the new pipe line will be connected with the reservoir main near the filtration plant at Ancon, and a check valve will be placed in that part of the pipe nearest the Rio Grande connection, so that when the high pressure service is employed, the valve, operating automatically, will close, and when the pressure is relieved, it will be reopened by the pressure from the Rio Grande main.

Awards for Lock Materials.

The bids on Circular 513, for certain iron work to be embedded in the masonry of the locks, were opened on May 25. The lowest formal bids were as follows:

Class 1. Steel castings and structural material to be embedded in the masonry of all the locks, The United Engineering and Foundry Company of Pittsburg, \$528,124.70.

Class 2. Cylindrical valves for the upper locks at Gatun and the locks at Pedro Miguel, The Rosedale Foundry and Machine Company of Pittsburg, \$84,600.

Class 3. Thirty-six-inch gate valves for the upper locks at Gatun, and the locks at Pedro Miguel, The Chapman Valve Manufacturing Company of Indian Orchard, Mass., \$9,515.

Class 4. Copper ladders for all the locks, The Penn Bridge Company of Beaver Falls, Pa., \$2,058.40.

Class 5. Castings for movable dam, sills, and certain other parts for all locks, The United Engineering and Foundry Company of Pittsburg, \$46,683.57.

On each of classes two and five an irregular bid was submitted which was lower than the lowest regular bid. Under the specifications consideration could not be given to such bids.

Bids on Circular 515, for certain sample Stoney valves for the main culverts of all the locks were opened on June 1. Award was made for two sets of the valves to the lowest bidder, The Penn Bridge Company of Beaver Falls, Pa., for \$24,527.42.

Gatun Locks Cableways.

A test of the cableways, that will convey concrete from the west bank of the lock site at Gatun and deliver it at any point desired in the lock chamber, was made last week. Each of the eight cableways was tested for two hours of continuous running by the

engineer in charge of the work for the contractor, in the presence of the men who are to operate the cables for the Commission. A test of ten days under working conditions will be made by the Commission before the cableways are accepted. Each of the eight cableways must be able to deliver 40 cubic yards of concrete an hour, and from the results of the tests so far made it is probable that the plant will exceed the required capacity.

Material in Slides.

Thirteen slides were in motion in the territory of the Central Division during the fiscal year 1909, and from them 884,530 cubic yards of material were removed. It is estimated that 993,000 cubic yards of material are now in motion and must be removed in the course of the Canal excavation. None of the slides has proved of serious detriment to the work. The largest two, those at Cucaracha and Whitehouse, are in Culebra Cut, and they are being handled without any difficulty. The amount of material taken from slides in the territory between Gatun and Pedro Miguel represents less than one-twentieth of the total amount excavated in that territory in the fiscal year, as the total excavation was 19,067,777 cubic yards.

Colon Harbor Breakwater.

During the month of June, a survey was made of the site of the proposed west breakwater at Toro Point, across the harbor from Cristobal, as well as the shore line and the coral reefs in the immediate vicinity. Soundings with loaded pipe were also made to determine the character of the bottom. On Toro Point, 7,270 linear feet were chained; 11,000 linear feet of levels were run; 257 linear feet drilled, and 33,165 linear feet of trocha cut, staked and measured by stadia, in addition to a large amount of miscellaneous survey work. The preliminary surveys for the breakwater were authorized some time ago, and are now nearly completed. No actual work on the breakwater itself will be commenced for the present, and probably not until after the Congressional Committee has visited the Isthmus and gone over the ground. The appropriation for the fiscal year 1911, includes an estimate on the breakwater construction. The dredges of the Atlantic Division have been dumping spoil on the seaward side of the breakwater site for some time past.

Dynamite for Canal Work.

A contract to supply 9,282,000 pounds of dynamite for the Canal work during the present fiscal year has been let to the lowest bidder, the Keystone Powder Company. The *Italia*, from Thompson's Point, arrived at Cristobal on July 13, with 1,018,000 pounds of dynamite from the Du Pont Powder Company, completing the delivery of the dynamite contracted for in the fiscal year 1909.

NOTES OF PROGRESS.

(Continued.)

The dynamite now in store on the Isthmus is sufficient to last until December, and deliveries under the new contract will begin in September. The amount of dynamite by classes delivered each year since the beginning of the American regime on the Isthmus, and the amount on order for 1910, together with the price paid are shown in the appended table. No dynamite was delivered in 1905, as sufficient was left over from 1904 to last throughout the year.

AMOUNT AND PRICE BY YEARS.

DYNAMITE.	1904.		1906.	
	Quantity.	Price per pound.	Quantity.	Price per pound.
	Pounds.	Cents.	Pounds.	Cents.
30 per cent....				
45 per cent....			700,000	11.25
			400,000	11.10
60 per cent....	250,000	13.5	100,000	13.00
			100,000	12.75
75 per cent....	250,000	14.25		12.60
Total.....	500,000		1,400,000	
1907.		1908.		
30 per cent....	20,000	9.75	45,000	10.25
			45,000	10.45
45 per cent....	1,517,000	10.45	2,200,000	11.75
	700,000	10.50		
	50,000	10.55		
	1,200,000	10.70		
60 per cent....	850,000	12.00	2,532,000	13.00
	150,000	12.04		
	550,000	12.25		
75 per cent....	50,000	13.50		
Total.....	5,087,000		6,822,000	
1909.		1910.		
30 per cent....	30,000	9.80		
40 per cent....			5,000	10.20
45 per cent....	5,740,000	10.70	5,825,000	12.30
60 per cent....	2,500,000	11.70	3,452,000	11.60
Total.....	8,270,000		9,282,000	

AMOUNT AND PRICE BY GRADE.

30 PER CENT.		45 PER CENT.		60 PER CENT.	
Amount.	Price per pound.	Amount.	Price per pound.	Amount.	Price per pound.
Pounds.	Cents.	Pounds.	Cents.	Pounds.	Cents.
20,000	9.75	1,517,000	10.45	2,500,000	11.70
30,000	9.80	700,000	10.50	850,000	12.00
45,000	10.25	50,000	10.55	150,000	12.04
45,000	10.45	6,940,000	10.70	550,000	12.25
		400,000	11.10	100,000	12.60
		700,000	11.25	100,000	12.75
		2,000,000	11.45	2,632,000	13.00
		2,200,000	11.75	250,000	13.50
		5,825,000	12.30	3,452,000	11.60
140,000		20,332,000		10,584,000	
40 PER CENT.		75 PER CENT.			
Amount.	Price per pound.	Amount.	Price per pound.		
Pounds.	Cents.	Pounds.	Cents.		
5,000	10.20	50,000	13.50		
		250,000	14.25		
5,000		300,000			

Total delivered..... 22,079,000 pounds.
 Total on order..... 9,282,000 pounds.

Grand total..... 31,361,000 pounds.

Clearing Channel in Gatun Lake.

The amount of clearing remaining to be performed in the Canal channel in Lake Gatun does not exceed from three to four hundred acres, and consists mostly of underbrush and small timber from three to six inches in diameter, in rather soft ground. The method of performing this work will

be by letting it to contract in separate sections of about 50 acres. However, this will not prevent one person from obtaining the contract for the entire area to be cleared if his proposal is advantageous.

Young Officers for Canal Service.

In special orders issued by the War Department on July 12, 1909, the fifteen young men who were graduated from West Point Military Academy, in the class of 1909, and assigned to the Corps of Engineers, are ordered to duty on the Isthmus under the Chairman of the Isthmian Canal Commission, from November 30, 1909, to about May 10, 1910, "for instruction and duty." The men so assigned are Second Lieutenants Stuart C. Godfrey, Francis C. Harrington, Cleveland C. Gee, John R. D. Matheson, William H. Sage, jr., Charles J. Taylor, Edwin H. Marks, Earl North, John M. Wright, Albert H. Acher, Gilbert Van B. Wilkes, John C. H. Lee, Frank S. Beson, Lindsay C. Herkness, and Albert K. B. Lyman.

Removal of District Quartermaster's Office.

The office of the District Quartermaster at Ancon, has been moved from house No. 74, near the fire station, to house No. 67 on the road leading to the Ancon gate. The office occupies the north end of the lower floor, the rest of this floor being used for store room purposes. Ancon Hall is located on the upper floor of the same building, and is undergoing extensive alterations and improvements. The building containing the former office of the District Quartermaster will be converted into family quarters.

Fatal Dynamite Explosion.

In an explosion of dynamite on the relocation of the Panama railroad near Gatun on Sunday, July 25, four men were killed and nine were injured. The dead are: R. M. Preddie, Jamaican negro, timekeeper, check No. 37401, and negro laborers—Simeon Gor-

don, Barbadian, check No. 37456; Son Trotman, Barbadian, check No. 37467; and one unknown whose legs were found but are unidentified. Walter Mathewson, a negro laborer, is missing and it is believed he is the fourth dead. Nine men were slightly injured, among them C. G. Jones the white supervisor of the relocation work at Gatun. The accident occurred in the morning about a mile south of the new railway station at Gatun. A locomotive in coupling onto a flat car loaded with 550 cases of dynamite jarred some of the explosives off the car. While the men were putting the cases back on the car some of the dynamite exploded. The cause of the explosion is unknown.

Immigrants from Barbados.

The sailing schooner *Viola*, from Barbados, arrived at Colon, Tuesday, July 13, with 106 passengers, mostly Barbadians, men, women and children, who have come to the Isthmus to better their condition. These people emigrated independently, paid their passage money, and had sufficient funds in their possession to enable them to enter the country. The immigration law of the Republic of Panama provides that each person, over 12 years of age, entering the country with the intention of locating, must be possessed of a sum of money equal to \$15 United States currency. During the past 30 days three sailing vessels have arrived at Colon from Barbados, each with a load of passengers, and there have been only a few instances where the immigrant did not have the required sum. Most of the men coming in this manner from Barbados find employment almost immediately with the Commission and prove to be good workmen, which is indicated by their thriftiness in getting a sufficient amount of money together to enable them to make the trip, and have enough to keep them for awhile after they land. The sailing craft from Barbados bring, besides passengers, yams, and other native products, which find a ready market here.

LABOR FORCE FOR JUNE.

The report of the Chief Quartermaster for the month of June shows that the number of Isthmian Canal Commission employes actually at work on June 23, was 26,468, of whom 4,166 were "gold" employes, and the remainder were on the "silver" or labor roll. The Panama railroad force was 5,704, and the Panama railroad commissary force numbered 768. Thus the total number of persons at work on the Canal and railroad on the 23rd day of June was 32,940. During June 187 people were added to the "gold" roll and there were 175 separations, the net increase in the force being 12.

The number of family quarters occupied by "gold" employes was 1,497, and the occupants numbered 4,510; bachelor quarters by "gold" employes, 2,086, and the occupants numbered 3,419, of whom 113 are women, and 137 are men living in fire stations, police stations, etc., which are not considered regular quarters. The family quarters occupied by West Indians numbered 943, and the occupants 3,213; bachelor quarters, 226; number of occupants, 4,432. The family quarters occupied by European laborers numbered 273, and the occupants 896; bachelor quarters, 121; number of occupants 4,383.

A statement of the force actually at work on June 23, 1909, follows:

DEPARTMENT.	Monthly.	Artisans.					European Laborers.		West Indian Laborers.				Total Silver.	Total Gold.	Grand Total.
		14 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	16 cents.	13 cents.	10 cents.	7 cents.			
Const'n and Eng'ring.	2,350	33	60	443	1,342	2,356	3,331	441	1,104	1,794	4,344	272	17,870	3,074	20,944
Civil Administration....	169	..	2	2	15	..	..	..	..	..	3	..	191	340	531
Sanitation.....	597	..	3	4	..	..	..	..	71	..	..	..	877	359	1,236
Quartermaster's.....	1,072	1	4	74	180	190	341	34	21	..	3	828	2,748	227	2,975
Subsistence.....	598	..	3	..	..	..	..	..	..	..	..	..	601	59	660
Disbursements.....	8	..	..	..	..	..	..	..	..	..	..	..	8	23	31
Examinat'n of Accounts.	7	..	..	..	..	..	..	..	..	..	..	..	7	84	91
Totals.....	4,801	34	67	522	1,528	2,561	3,672	475	1,196	1,797	5,370	279	22,302	4,166	26,468

Panama railroad force, 5,704; Panama railroad commissary force, 768.

RED CROSS FUNDS.

How a Portion of Them Has Been Disbursed.

MAJ. C. A. DEVOL,
President Canal Zone Branch, American National
Red Cross, Culebra.

My Dear Major—Complying with your suggestion of a few days ago, I submit here-with a statement of the financial condition of the Canal Zone branch of the American National Red Cross Association up to date.

RECEIPTS.	
Membership dues.....	\$1,306.00
From entertainments.....	734.18
Loan repaid in part.....	15.00
Interest on deposits.....	9.02
Miscellaneous.....	4.80
	\$2,069
EXPENDITURES.	
Postage.....	\$42.51
Printing.....	20.69
First-aid books.....	12.00
Relief furnished.....	515.61
Miscellaneous.....	.40
Balance on hand.....	1,477.79
	\$2,069

The item "loan repaid in part" carried under receipts was a loan of \$50 authorized by the Executive Committee to enable an individual who was bitten by a rabid dog to go to the Pasteur Institute in the United States for treatment.

In connection with the balance on hand of \$1,477.79, it must be remembered that but \$824.79 of this is available for the use of the Canal Zone branch, as 50 per cent of the total receipts for membership dues goes to the headquarters of the association at Washington at its annual meeting in November next.

Relief has been given in ten instances, the amounts ranging from \$2.50 to \$150. In some instances a special amount has been asked for and given. The Executive Committee, with your approval, and having in mind that the resources of the branch were limited, and consequently the amounts to be given in individual cases would have to be limited to cover emergencies, felt compelled in several instances to scale the amounts asked for. In every instance, however, sufficient money has been given to cover the present needs of the individual in the way of food and clothing, as well as traveling expenses when the individual to be helped had to leave the Isthmus. As far as the latter item is concerned, however, the Isthmian Canal Commission has been as liberal as it was possible to be in all instances. It should be remembered by the members of the association that its funds, subject to the action of the Executive Committee and your approval, are available to all, irrespective of race, creed or nationality, and with the enormous work going on in the Zone and the many dangers incident to it, the association is running on a very narrow financial margin. It is incumbent on every member of the association, and particularly the entertainment committees of the various chapters, to bestir themselves and provide the association with funds that may within reason meet any emergency that may arise.

New members should be gotten, for, during the past four months we have not averaged a member a day.

Since June 1, the association has received from all sources \$35.02 and has expended \$184.86, of which latter amount, \$172.50 was for relief. Comment as to how long the branch will last under such conditions is unnecessary. Very truly yours,

JOHN L. PHILLIPS,
Acting Treasurer.

Ancon, C. Z., July 19, 1909.

Social Life of the Zone.

Over five hundred people attended the carnival given by the Gorgona Red Cross district on the evening of July 16. The Commission clubhouse was transformed into a miniature jungle scene with its decorations of giant palms, ferns and other plants, through which were passages leading to the booths and side shows. The attractions were numerous and included a German garden, a fortune-teller, a fishing pond, a mechanical checker-player, an art gallery, Japanese tea room, booths for the sale of ice cream, cakes, and lemonade, and a ladies' bazaar. During the evening a concert was given by the Marine Band from Camp Elliott, which also furnished music for the carnival dance at the close of the entertainment. Fifty Gorgona residents took active part in the entertainment. Special trains brought visitors from points along the Line between Gatun and Culebra. The net proceeds amounted to \$200. The carnival is the eighth entertainment that has been given by Red Cross districts since their organization in January. Corozal gave one on February 12; the Ancon district gave a dance at the Hotel Tivoli, February 20; the district of Las Cascadas held a cake sale in March; dances were given by the Culebra and Paraiso districts in April, by Paraiso in May, and at Gorgona on July 3. The aggregate amount raised by these entertainments is nearly \$1,000.

The Las Cascadas Palm Club gave a dance in the club rooms on Friday evening, July 23. A special train brought guests from Pedro Miguel and the attendance was large.

The Kangaroos, Paraiso Court No. 5, gave a dance in the lodge hall, Paraiso, on Saturday evening, July 24. A large number of invitations were issued by the members and the dance was unusually well attended.

Fifty books from the Cristohal clubhouse library have been lent to the American settlement at Porto Bello. These books are kept at the post-office, and are circulated upon payment of a subscription fee of \$1.50.

Personal.

Mr. Joseph Bucklin Bishop, accompanied by Mrs. Bishop and Miss Bishop, returned to the Isthmus on the *Panama*, which arrived at Colon on Sunday, July 25.

Mr. H. D. Reed, accompanied by his sister, sailed on the *Turrialba* on July 27 for his annual leave of absence in the States.

Obituary.

John Ryan died at Ancon Hospital on July 17, 1909. He came to the Isthmus from Pennsylvania, was thirty-three years of age, single, and had been on the Isthmus eleven months, residing at Empire.

Missing Men.

Information is desired in regard to the following men:

John J. Hughes, who was last heard from at Tabernilla, C. Z.

John Thomas, hoisting engineer, who is supposed to have come to the Isthmus about three years ago.

Any one having knowledge concerning either of these men is requested to communicate with the American Minister at Panama.

LOST—On Sunday, July 25, at the Panama railroad station, a pocketbook containing a meal book, a 24-trip pass book, and several receipts from fraternal orders. Finder is requested to return to Arthur J. Goulstone, Paraiso, C. Z., and receive reward.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

REPORT FOR JUNE, 1909.

Total membership.....	1,222
Total number of bowling games.....	4,182
Number different tournaments, billiard, pool, chess, etc.....	7
Total number of tournament players.....	116
Total number of pool and billiard games.....	12,151
Total income from soda fountains.....	\$2,060.85
Number different men using gymnasiums.....	83
Total attendance of men using gymnasiums.....	475
Number enrolled in chess and checker clubs.....	45
Number enrolled in glee clubs.....	10
Number enrolled in camera clubs.....	85
Number enrolled in bible classes.....	37
Number of members in library.....	567
Total number of books withdrawn.....	1,714
Number of Sunday meetings.....	1
Attendance.....	100
Number of local entertainments.....	10
Attendance.....	2,095
Number of imported entertainments.....	9
Attendance.....	2,205
Number of functions outside association management.....	6
Attendance.....	720
Number of afternoons for women.....	23
Attendance.....	164
Number evening functions to which women were invited.....	17
Attendance.....	1,055
Different men on committees.....	24
Number of men called on in hospitals.....	173
Number of letters written at public tables.....	4,090
Total attendance at buildings.....	42,761
Average attendance per day.....	1,425

BOYS' DEPARTMENT (AGES 10-16).

Number of members.....	61
Number of afternoons open to boys.....	49
Total attendance.....	559
Attendance at gymnasium exercises.....	351

CULEBRA.

Regular gymnasium classes will be started at the Culebra Y. M. C. A. next week under the instruction of G. R. D. Kramer. Tumbling, apparatus work and drills will be held as well as the indoor games. Boys' classes will also be started along the same lines.

On Sunday, July 25, at 3.30 p. m., the "College Girls" gave a concert at the Y. M. C. A. hall. This was the first of a series of Sunday afternoon concerts that have been arranged for, and it was greatly enjoyed by a large audience.

Saturday, July 24, the Culebra indoor baseball team defeated the Gorgona team by a score of 20 to 17.

GORGONA.

Sunday evening, July 25, Judge H. A. Gudger gave an address at the Gorgona Y. M. C. A. His subject was "Universal Peace." Special music for the evening was furnished by Mrs. P. H. Pierson, Miss Berenice Hackenberg, and Mr. W. C. Catlin. The service was well attended.

The "College Girls" will make their only appearance at Gorgona on Wednesday evening, July 28. On account of the Red Cross carnival which was under way during the first week of their stay on the Isthmus, it was impossible to arrange for a second engagement.

Concert by I. C. C. Band.

HOTEL TIVOLI, ANCON.

Sunday, August 1, 1909, at 7.30 p. m.

PROGRAM.

- 1 March—*Festal Day*.....Roux
- 2 Selection—*A Stubborn Cinderella*.....Howard
- 3 Waltz—*Die Grafenberger*.....Gungl
- 4 { a—*Dixie Twilight*.....Johnson
- { b—*La, La, La*.....Scotto
- 5 Popular Medley.....La Farge
- 6 Porto Rican Dance—*Rosita*.....Missud
- 7 { a Texas Rag—*The Tarantula*.....Powell
- { b Medley Waltz—*Always Me*.....Harris
- 8 Overture—*Schauspiel*.....Bach
- 9 *First Heart Throbs*.....Eilenberg
- 10 March—*On Guard*.....Reeves

OLIVER KIMBALL, Director.

The next concert will be given at Culebra, Sunday, August 8.

The following steamers have recently arrived at Balboa: July 18, *Manavi*, from intermediate ports; July 22, *Aysen*, from Southern ports, and *San Juan*, from San Francisco; July 23, *Chiriqui*, from intermediate ports. Departures were: July 18, *Chile*, for Southern ports; July 21, *Arica*, for Guayaquil, and *Acapulco*, for San Francisco; July 23, *Foxton Hall*, for Southern ports, and *Manavi*, for intermediate ports.

CANAL WORK FOR JUNE.

Monthly Report of the Chairman to the Secretary of War.

CULEBRA, C. Z., July 15, 1909.

The Honorable the Secretary of War, Washington, D. C.

Sir: I have the honor to submit the fol-

lowing report of operations on the Isthmus for the month of June, 1909:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central and Pacific Divisions during the month:

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry.....	Cubic yards.....	116,657	1,518,034	126,624	1,761,315
Work excavation, wet.....	Cubic yards.....	221,404	.....	869,382	1,090,786
Total work excavation.....	Cubic yards.....	338,061	1,518,034	996,006	2,852,101
Plant excavation, dry.....	Cubic yards.....	7,051	2,941	33,700	43,692
Plant excavation, wet.....	Cubic yards.....	.....	.....	.....	.....
Total plant excavation.....	Cubic yards.....	7,051	2,941	33,700	43,692
Total Canal excavation.....	Cubic yards.....	345,112	1,520,975	1,029,706	2,895,793
Explosives used.....	Tons (2240 lbs)	28.30	235.90	23.60	287.80
Rock drilling.....	Feet.....	55,242	360,419	62,859	478,520
Track removed.....	Miles.....	.....	13.60	.....	13.60
New track laid.....	Miles.....	3.16	12.30	3.94	19.40
Material placed in dams.....	Cubic yards.....	370,183	.....	58,926	429,109
Rock crushed.....	Cubic yards.....	23,775	5,945	5,445	35,165
Cement used.....	Barrels.....	11,723	.....	2,353.50	14,076.50
Concrete placed.....	Cubic yards.....	10,602	.....	2,261.50	12,863.50
New roads built.....	Miles.....	.30	.88	.10	1.28
Water mains laid.....	Feet.....	12,215	1,100	3,011	16,326
Sewers laid.....	Feet.....	340	151	95	586
Open drains and ditches dug.....	Feet.....	524	1,601	150	2,275
Average daily force.....	.....	5,263	8,781	3,621	17,665
Rainfall, average.....	Inches.....	16.35	7.84	14.19	11.85
Wash drilling.....	Feet.....	.....	.....	.....	.....

Atlantic Division.

GATUN LOCKS.

Excavation—Excavation was continued during the month with three steam shovels, suction dredge No. 85 and one crane. Excavation was nearly completed in the upper chamber; about 200,000 cubic yards remained to be removed in the middle chamber; and 1,200,000 cubic yards remained to be removed from the lower chamber at the close of the month. The total excavation during the month was 74,823 cubic yards.

Cement Shed—The cement shed storeroom and the cement walk and gutter along the east side of the cement shed were completed. Work on the barrel conveyor for the cement shed and a concrete division wall between the rock and sand piles were commenced during the month.

Mixer Building—Carpentry work on this building was completed, and the installation of machinery was nearly completed at the close of the month.

Automatic and Industrial Railways—The industrial road was 90 per cent completed, and about 50 per cent of power rail for this road had been placed at the close of the month. At the close of the month, 60 per cent of the automatic road had been ballasted and 50 per cent of power rail placed. The roof over the inclines on the automatic road was 95 per cent completed.

Shed for Saw-mill and Form Construction—Concrete footings for this structure were built and the sills placed during the month.

Unloading Cableways—Duplex towers 2 and 3 were ready for operation, excepting the propelling apparatus, and cableway No. 1 was 95 per cent completed, at the close of the month.

Lock Cableways—These cableways were 90 per cent completed, all cables being strung, all carriages in place and three buckets hung, at the end of the month.

Lock Anchors—The setting of floor anchors was continued and a total of 282 rails had been set on June 30.

Power House—The building for the power house was completed, except painting. The erection of machinery in the engine room was 90 per cent completed, the installation of

the electrical apparatus 85 per cent completed, and the erection of the boilers 65 per cent completed, at the close of the month.

During the month, eleven barges, containing 7,465 cubic yards of stone, were delivered at the lock site.

GATUN DAM.

Construction during the month increased the total fill by 370,183 cubic yards, making the total at the end of the month 2,947,305 cubic yards.

Stripping and Clearing—The stripping area was extended by one acre, making the total area at the close of the month 192.2 acres. Some of the area already stripped was gone over again, owing to a new growth of vegetation. Clearing was continued ahead of the dredges, extending the area by 8.6 acres and making the total at the close of the month 90.9 acres. About 4.3 acres were grubbed.

Hydraulic Fill—Allowing 10 per cent for loss, the hydraulic fill was increased by 229,015 cubic yards during the month, making the total at the end of the month 716,574 cubic yards. Dredges No. 82 and 83 worked the entire month pumping into the dam, and dredge No. 85 worked from June 20 to the end of the month pumping into the dam.

Emplacements—The material received from Bas Obispo, the Spillway, Mindi and the stripped area of the dam, amounting to 141,168 cubic yards, was placed on the north and south toes of the dam. The total dry fill at the close of the month was 2,230,731 cubic yards.

Trestles—The south toe trestle was extended 434 linear feet toward the west end of the dam; the north toe trestle, west of the Spillway, was extended 84 linear feet to the West Diversion; a trestle 350 feet long was driven near New Gatun for the purpose of developing a dump for the storage of Bas Obispo rock to be used in paving the lake side of the dam; and a trestle 182 feet long was driven near New Gatun for the Municipal Engineering Department in connection with the construction of the new water works dam.

GATUN SPILLWAY.

Excavation—During the month, the ma-

terial excavated by crane, by hand and by steam shovels amounted to 8,177 cubic yards, making the total Spillway excavation at the close of the month 1,298,722 cubic yards.

Concrete—The floor below the Spillway dam was completed and construction of the west side wall was started during the month. The total amount of concrete placed during the month was 9,817 cubic yards, making the total at the end of month 30,464 cubic yards.

PORTO BELLO.

General miscellaneous mechanical and repair work was continued during the month. Five steam shovels were in operation at this point. The total yardage for the month was about 65,715 cubic yards, and the crusher produced 23,775 cubic yards of crushed rock.

NOMBRE DE DIOS.

The work of deepening and widening the entrance channel and opening the channel to the sand zone was continued. The new 16-inch suction dredge worked six days and dredged 225 cubic yards of sand; and 2,390 cubic yards of sand were dredged by the clam shell dredge.

HARBOR AND CHANNEL SECTION.

Dry Excavation Below Sea Level—Mindi: During the month, 25,730 cubic yards of earth and 54,371 cubic yards of rock were excavated by two 70-ton Bucyrus and one Model 91 Marion steam shovels.

Dredging—Ocean to Mindi: Four dredges removed from the prism 153,886 cubic yards of earth and 28,689 cubic yards of rock during the month. In addition, the dredge *Ancon* removed 9,700 cubic yards of earth at Pier No. 1, Colon, 248,151 cubic yards of earth from the approach channel to Cristobal harbor, and 120,162 cubic yards of earth from in front of the Cristobal docks. The dredge *Mindi* removed 3,150 cubic yards of earth at Pier No. 1, Colon, 7,525 cubic yards of earth and 21,175 cubic yards of rock from the approach channel, 8,050 cubic yards of earth in front of Pier No. 11, and 7,394 cubic yards of earth in front of Pier No. 13, Cristobal. On June 30, 40 feet of water could be carried from 0 to mile 2 plus 4,700 feet; 30 feet to mile 3 plus 1,150 feet; 20 feet to mile 4 plus 2,200 feet; and 10 feet to mile 4 plus 4,900 feet, the end of the cut.

MUNICIPAL ENGINEERING AND BUILDING CONSTRUCTION.

The usual work of these sub-divisions was performed during the month, including work on the Mount Hope-Gatun road, and water works at Gatun and Mount Hope; and construction work was continued on the power plant, commissary at Gatun and machine and boiler shops at Cristobal.

Central Division.

During the month of June, the total amount of material excavated in the Central Division was 1,520,975 cubic yards, of which 403,623 cubic yards were classified as earth and 1,117,352 cubic yards as rock. Of this quantity, 1,475,428 cubic yards were removed by steam shovels, 25,651 cubic yards by hand and 19,896 cubic yards by sluicing action of the Chagres River. The quantity of material removed from the Canal prism was 1,516,683 cubic yards, while 1,351 cubic yards were removed from the Obispo Diversion, 2,174 cubic yards from inclines at point No. 3 at Santa Cruz, and 767 cubic yards from engine house site at Gamboa.

The daily average number of steam shovels at work during the month was 45.65, as compared with 50.60 for the month of May.

For comparison with the work done by steam shovels during the corresponding

month of the previous year in the area embraced in the Central Division, the following table has been prepared:

Period.	Excavated by shovels		Classification of material.		Av. No. of steam shovels working during month	W'kg days in m'th	Av. amount excavated per shovel per 8-hour day.
	cu. yds.	cu. yds.	Rock	Earth			
1908:	cu. yds.	cu. yds.	cu. yds.				cu yds
June....	1,450,113	1,013,549	436,564		55.15	26	1,011
1909:							
June....	1,475,428	1,097,968	377,460		45.65	26	1,243

Rainfall at Empire: 1908, 8.20 ins.; 1909, 7.84 ins.

The above table shows that the average output per shovel day was nearly 23 per cent greater in June, 1909, than in the corresponding month of the previous year.

During the month, 185,538 cubic yards of material excavated from the prism were transported to the relocation of the Panama Railroad at Caimito, Santa Cruz and Corozal and dumped as filling in the embankment for the new roadbed, the total at the close of the month for this purpose being 1,314,784 cubic yards. During the month, 30,902 cubic yards of rock from Bas Obispo were transported to Gatun and dumped in the toe of the dam, making the total for this purpose at the close of the month 401,183 cubic yards.

Work on the Empire suspension bridge was continued during the month, the superstructure of the towers being completed, the cables placed and the attaching of hangers begun.

The daily average number of laborers at work was 7,780, while the average number of gold men working was 1,001.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

The total excavation during the month amounted to 185,021 cubic yards.

At Pedro Mignel, excavation to the subgrade in the west lock chamber was practically completed and the work of excavating for the lateral culverts was begun. Work was continued on the storage trestles, on the construction of cement tracks, the removal of loose waste and excavation in the forebay.

At Miraflores, the dredge *Sandpiper* worked during the month within the limits of the lower locks, discharging during the greater part of the month into the core of the west dam. Work was continued at the power house during the month.

At Ancon Quarry, regular preliminary operations were continued and foundations were laid for four No. 6 rock crushers.

DISTRICT NO. 2—DREDGING.

Five dredges were in operation during the greater part of the month. During the last three days six dredges were at work. The material excavated by these dredges is shown in the following table:

Dredge	Type.	Cubic yards.		Remarks.
		In p'm	Auxil'y	
Culebra	Suction	329,784	.....	Scow measurement
Gopher	Ladder	161,395	.....	Place measurement
Mole...	Ladder	118,350	.....	Place measurement
Badger.	Ladder	5,610	.....	Place measurement
Cardenas...	Dipper	101,802	.....	Place measurement
Marmot	Ladder	127,744	.....	Place measurement
Total.....		844,685	.....

The necessary work in connection with maintenance of equipment was satisfactorily performed.

DISTRICT NO. 3—MUNICIPAL AND BUILDING WORK.

Building and municipal work was continued during the month, and the filtration plant,

Ancon steam plant and the Rio Grande rock crusher were successfully operated.

Mechanical Division.

The usual work of the division was satisfactorily performed during the month.

Relocation of Panama Railroad.

During the month, 121,079 cubic yards of material were excavated, making the total excavation at the close of the month 1,401,942 cubic yards, and 207,814 cubic yards of material were placed in embankment, making the total for this purpose at the end of the month 4,705,494 cubic yards. During the month, 1,462 linear feet of temporary trestle were driven, and numerous small culverts were completed. During the month, 9,373 linear feet of permanent track were laid, making the total at the close of the month 108,120 linear feet. The force of laborers during the month averaged 2,118 men.

Quartermaster's Department.

During the month, there were 187 additions to the gold force, and 175 separations, making the net increase 12. Lieut. W. D. Smith arrived on the Isthmus June 24, and assumed charge of the construction and repair division of this Department.

Lieut. R. E. Wood, Assistant Chief Quartermaster, returned from Barbados, British West Indies, on June 28. While in Barbados, he adjusted some difficulties that had arisen in connection with the recruitment of West Indian laborers, and made satisfactory arrangements in regard to future recruiting. The expense for recruiting has heretofore been \$6 per man, but under the new arrangement this expense will be reduced to about \$2 per man. The steamship *Cristobal*, sailing from New York June 25, was diverted to Barbados for the purpose of transporting eight hundred laborers to the Isthmus.

Subsistence Department.

The operation of the Hotel Tivoli during the month showed a loss of \$462.69. There was a loss of \$1,314.47 on the operation of the line hotels, and a profit was made on the operation of the kitchens and mess halls. The net operations of this Department for the month of June showed a profit.

Department of Civil Administration.

COURTS.

The Supreme Court held one session in June, and one civil case was disposed of. In the circuit courts 12 civil and 35 criminal cases were disposed of, and in the district courts 74 civil and 492 criminal cases were disposed of.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

The total revenues in June aggregated \$37,157.70. The general revenues amounted to \$28,801.86, as compared with \$12,278.59 for the month of May; this large increase in the general revenues was due to the collection of the real estate tax. The postal revenues were \$6,511 on account of stamp sales, \$17.15 on account of newspaper postage, and \$1,827.69 on account of money order fees. Money order sales during the month amounted to \$428,510.26, of which \$315,936.35 was payable in the United States and foreign countries and \$112,573.91 in the Canal Zone. Fifty-seven dispatches of mail were made to foreign ports by the *Cristobal* exchange office.

Seventeen vessels entered at and 17 cleared from the port of Ancon, and 17 vessels entered at and 17 cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total effective strength of the police force on June 30 was 174 officers and men, and the total force of the Division on that

date aggregated 253 officers and men. The number of arrests during June was 518, as compared with 607 during the month of May. There were 123 prisoners confined in the district jails at the close of the month. Thirteen convicts began penitentiary sentences during the month; 13 were discharged at the expiration of their sentences, and on June 30, 117 convicts were confined in the penitentiary.

DIVISION OF PUBLIC WORKS.

The regular inspection and maintenance work of this division was performed during the month. In the city of Panama 28,183,000 gallons of water were consumed, and in the city of Colon 18,924,675 gallons were consumed. The revenue derived from rental of space in the public markets amounted to \$333.56.

DIVISION OF FIRE PROTECTION.

Two alarms of fire were responded to by the Canal Zone Fire Department during the month, one at Colon and one at Mount Hope. No damage resulted in either case.

DIVISION OF SCHOOLS.

The schools were closed on June 30, and will be reopened on October 1. Final examinations were held during the month. The total enrollment in the white schools during June was 585, and the average daily attendance was 486. In the colored schools the total enrollment was 1,170, and the average daily attendance was 576.

Department of Sanitation.

The annual death rates, per thousand, from all causes, for the months of June during American control, for white employes, black employes, all employes, and for the total population of the Canal Zone, including the cities of Panama and Colon, were as follows:

YEAR.	Annual death rate per thousand.			
	White.	Black.	All employes.	Total population.
June, 1905.....	29.29	13.02	16.44	50.57
June, 1906.....	7.23	48.96	41.55	51.89
June, 1907.....	21.05	29.96	27.53	33.45
June, 1908.....	19.54	9.46	12.35	29.17
June, 1909.....	9.44	9.32	9.34	16.42

The number, per thousand, of employes admitted to hospitals and sick camps, including those sick in quarters, were as follows:

June, 1907.....	116
June, 1908.....	61
June, 1909.....	69

(Rates for 1905 and 1906 are not available, as during these years the records for the sick camps and those sick in quarters were not included.)

The number of employes for Junes of preceding years, with deaths and annual percentages per thousand, were as follows:

YEAR.	Number.	Deaths.	Death rates.
June, 1904.....	4,782	2	5.02
June, 1905.....	17,517	24	16.44
June, 1906.....	28,010	97	41.55
June, 1907.....	39,659	91	27.53
June, 1908.....	45,662	47	12.35
June, 1909.....	47,193	37	9.34

For white employes, the number of deaths from all causes for the month of June was 9; from disease 6, with a death rate of 6.29, and from violence 3, with a death rate of 3.15. For black employes, the total deaths from all causes for the month were 28; 22 from disease, with a death rate of 7.32, and 6 from violence, with a death rate of 2.00. Among the employes during the month, one white employe died of haemoglobinuric fever, and one black employe from malarial

fever. Three deaths among black employes were from pulmonary tuberculosis, and two deaths, one white and one black, were from pneumonia. There were no deaths among employes from typhoid fever or dysentery.

The number of white employes from the United States on the Isthmus was 5,072. Of the five deaths among them, two were from disease and three from violence. The number of deaths among the families of white American employes on the Isthmus was three, all being children, the oldest of whom was two years, and the other two were less than a month old; all of the deaths being caused by diseases of infancy.

One case of plague was taken from a ship from Callao and died in quarantine station five days afterwards. No plague, smallpox or yellow fever originated on the Isthmus, or, with the exception of the case noted above, was brought to the Isthmus during the month.

Respectfully,
 GEO. W. GOETHALS,
Chairman.

Status of Nonclassified Employes.

The petition of clerical employes of the Commission on the Isthmus, who are not in the classified executive civil service and who desire to be covered into that service upon passing a noncompetitive examination has been denied by the Civil Service Commission, in the following letter:

UNITED STATES CIVIL SERVICE COMMISSION,
 WASHINGTON, D. C., June 25, 1909.
*Chief of Office, Isthmian Canal Commission,
 Washington, D. C.*

Sir: The Commission has given consideration to the petition of certain clerks now in the service of the Isthmian Canal Commission on the Isthmus of Panama, forwarded by Lieut.-Col. Geo. W. Goethals, Chairman and Chief Engineer of the Isthmian Canal Commission, through Mr. W. W. Warwick, Examiner of Accounts of the Commission, in which the request is made that the petitioners be made eligible for transfer to the classified service in the United States after a service of three years on the Isthmus, two years of which have been in competitive positions, and upon passing a noncompetitive examination if deemed necessary by the Civil Service Commission.

However, the Commission, after careful consideration of the matter, finds that the granting of the petition would not be proper, and requests that the petitioners be advised through the Isthmian Canal Commission that they, and other employes whose status is the same, should enter the open competitive examination which will be held on the Isthmus of Panama on the same dates that similar examinations are held throughout the United States, and that they should take their places upon the eligible lists in accordance with the ratings obtained through examination, and that when regularly certified and selected from the examination appropriate for the positions which they occupy, they may be given a regular competitive status at the rates of compensation then received by them. Thereafter they will be eligible for transfer, subject to the rules and regulations governing transfers. By direction of the Commission.

Very respectfully,
 (Sgd.) JOHN C. BLACK, *President.*

Persons desiring to take the competitive examinations referred to in the above letter should write for information to Mr. Wm. E. Tragsdorf, Acting Secretary of the Isthmian Civil Service Board, Office of the Chairman, Culebra, C. Z.

Odd Fellows.

Members of the I. O. O. F. and others, interested in the formation of an Odd Fellows' lodge at Ancon, are requested to attend a meeting at Ancon hall on Monday night, August 2, at 8 o'clock.

The east bank of the lock site at Gatun is being extended southward in order that the tail towers of the concrete handling cableways may operate along the side of the forebay of the locks.

OFFICIAL CIRCULARS.

Wage Classification of Silver Employes.

CULEBRA, C. Z., July 15, 1909.

CIRCULAR No. 229-A:

The tables given hereinafter, showing ratings and rates of pay for employes on the "silver" roll, Isthmian Canal Commission, effective on and after August 1, 1909, have been prepared with a view to limiting the rates of pay for "silver" employes, both hourly and monthly to standard rates and to securing uniformity in pay in the different Departments and Divisions for the same class of work. A revision of and a reduction in the number of ratings have been made, and the minimum and maximum limits have been fixed.

The following are the standard "silver" rates, per hour, expressed in terms of U. S. Currency: 5 cents, 7 cents, 10 cents, 13 cents, 16 cents, 20 cents and 25 cents. In addition to these seven standard silver hourly rates of pay, the two special rates—32 cents and 44 cents per hour—have been continued under certain restrictions as described hereinafter. No other hourly rates will be paid.

For monthly "silver" employes, the maximum rate of pay, per month, is \$75 U. S. Currency, except where special authority has been obtained from the Chairman. Monthly silver rates of pay shall not exceed the pay which would be received for the number of hours worked at the hourly rate of pay established for that kind of work. The monthly silver roll is intended for employes whose hours of work are more or less irregular, or whose time it would be difficult to check up on an hourly basis. Wherever practicable, an hourly rate should be applied in preference to a monthly rate. The following table shows the corresponding monthly amount, at the different standard hourly rates of pay, based on eight, nine, ten and twelve hours of work, per day:

Standard rates per hour.	Monthly pay equivalent to different hourly rates. Sundays not included.			
	8 hours daily, 204 hrs. per month.	9 hours daily, 230 hrs. per month.	10 hours daily, 255 hrs. per month.	12 hours daily, 306 hrs. per month.
U. S. Currency				
5 cents.....	\$10.20	\$11.50	\$12.75	\$15.30
7 cents.....	14.28	16.10	17.85	21.42
10 cents.....	20.40	23.00	25.50	30.60
13 cents.....	26.52	29.90	33.15	39.78
16 cents.....	32.64	36.80	40.80	48.96
20 cents.....	40.80	46.00	51.00	61.20
25 cents.....	51.00	57.50	63.75	76.50
Special:				
32 cents.....	60.28	73.60	81.60	97.92
44 cents.....	89.76	101.20	112.20	134.64

No rating, in addition to those given hereinafter shall be authorized until after same has been approved by the Chairman, and his approval shall likewise be necessary for any new rates of pay, under any rating.

The standard rates of hourly pay, for silver employes, and description of duties, are as follows:

BOY "A," FIVE CENTS PER HOUR.

This rating is for the lighter and easier work. It is intended that all boys (including water, shop, and messenger) shall be taken on at this rating, and not promoted until qualified and required to perform work of Boy "B."

BOY "B," SEVEN CENTS PER HOUR.

This rating is for heavier and harder work. In addition to boys, it may be filled by men who have been injured in the service of the Commission, when the grade of work which they are capable of performing does not entitle them to be carried in the next higher rating.

LABORER "A"—TEN CENTS PER HOUR.

This is the standard rate for all West Indian common labor, and shall not be exceeded for such. Men who have been injured in Commission service performing the work of "Boy A" or "Boy B" may be rated "Laborer A," provided the circumstances in each particular case renders same desirable or necessary. Other men performing work of "Boy A" or "Boy B" should not be graded "Laborer A" unless boys cannot be obtained who can perform the work satisfactorily. Boys performing work of "Boy A" or "Boy B" cannot be rated "Laborer A."

LABORER "B"—THIRTEEN CENTS PER HOUR.

This is the maximum rate of pay for Panamanians, Colombians and similar Central and South American unskilled labor, and also for Hindoos. West Indians shall not be employed, as laborers at this rate. Length of service, however satisfactory, does not entitle a West Indian, "Laborer

A," to promotion to "Laborer B." Laborers, performing duties of helpers to shop and other mechanics, such as carpenters, etc., shall be known and graded as "Helper B," etc., with the designation "Carpenter" or "Machinist" prefixed, if desired.

LABORER "C," ARTISAN "C"—SIXTEEN CENTS PER HOUR.

This rating shall be applied to:

1. Laborer "C." This is the highest rate of pay at which a non-contract European or other white laborer or black American laborer can be employed. Laborers employed at this rating shall not be eligible for promotion to "Laborer D" until after three months' satisfactory continuous service.

2. Artisan "C," which shall be the standard rate of pay for shop, building construction and other mechanics and artisans, who shall be known as "Machinist C," etc.

LABORER "D," ARTISAN "D"—TWENTY CENTS PER HOUR.

This rating shall be applied to:

1. Laborer "D," which is intended to cover European contract labor. It may also be applied to such European non-contract labor and other white laborer or black American laborer, on responsible work, as may be found worthy of same, after not less than three months' continuous satisfactory service.

2. Artisan "D," which shall be applied to such shop and other mechanics and artisans, the quantity and quality of whose work is above the average and whose length of satisfactory service in grade "C" renders them worthy of promotion.

ARTISAN "E," TWENTY-FIVE CENTS PER HOUR.

This shall be the highest regular hourly rate of pay for silver employes and shall be applied only to those employes, the quality and quantity of whose work is most satisfactory.

ARTISAN "F," THIRTY-TWO CENTS PER HOUR; (SPECIAL.)

This is a special grade to cover such employes as were carried on the rolls prior to July 15, 1909, at thirty-two cents per hour, who, it is not recommended shall be reduced to grade "E," effective August 1st.

No new employe and no employe receiving at present less than 32 cents an hour, shall, hereafter, be given 32 cents per hour.

ARTISAN "G," FORTY-FOUR CENTS PER HOUR; (SPECIAL.)

This is a special grade to cover such employes as were carried on the rolls prior to July 15, 1909, at forty-four cents per hour, who, it is not recommended shall be reduced to grade "E" or grade "F," effective August 1st.

No new employe, and no employe receiving at present less than forty-four cents per hour shall be given grade "G," except for designation of "Diver," as provided hereinafter.

List of ratings eliminated on August 1, 1909, showing the new designations of employes at present carried thereunder to which they shall be transferred without increase in pay.

- Dispensers: To be re-rated as druggists.
- Foremen, sub: To be re-rated as foremen.
- Foremen, assistants to: To be re-rated as clerks.
- Storekeepers: To be re-rated as storemen.
- Telephone operators: To be re-rated as messengers.
- Timekeepers: To be re-rated as clerks or messengers.
- Blue printers: To be re-rated as messengers.
- Boilerscalers: To be eliminated.
- Chambermaids: To be re-rated as maids.
- Cranemen: To be re-rated as crane operators.
- Engineers, locomotive: To be eliminated.
- Flagmen: To be re-rated as trainmen.
- Gravediggers: To be re-rated as cemeterymen.
- Levelmen: To be eliminated.
- Leadsmen: To be eliminated.
- Moneycounters: To be re-rated as clerks.
- Nightsolimen: To be re-rated as scavengers.
- Orderlies: To be re-rated as attendants.
- Pumpmen: To be re-rated as stationary engineers.
- Scrubbers: To be re-rated as helpers.
- Scullions: To be re-rated as helpers.
- Seamstresses: To be re-rated as maids.
- Wardmaids: To be re-rated as maids.

Silver Roll.

DESIGNATIONS AND RATES OF PAY "OFFICERS AND EMPLOYES."

(Note: Rates of pay marked with an asterisk will be gradually eliminated as employes now carried at those rates leave the service, and no appointments or promotions shall be made to these rates.)

	Rate U.S.C. Mo'th. Hour.		Rate U.S.C. Mo'th. Hour.		Rate U.S.C. Mo'th. Hour.
Attendants	\$15.00	Cemeterymen	\$32.50	Machinists	.16
(Note: The rate of \$40 is exclusively for morgue attendants and the rate of \$45 is exclusively for operating room attendants.)	17.50 25.00 *30.00 40.00 45.00	Chairmen	30.00		.20
Captains. (Masters will be known and rated as "Captains.")		Checkers	40.00		*.32
Note: (Ratings above \$75 per month are only for other than West Indians.)		Coalmen	30.00		*.44
Dredges	890.00 110.00 125.00 80.00 100.00	Coalpassers	40.00	Machinists helpers	
Clapets	75.00	(Note: Coalpassers shall be employed only on sea-going dredges.)		Molds	\$12.00
Launches	30.00	Compositors	.20 .25 *.32	(Note: The \$15 rate shall be confined to molds at the Ancon Insane Asylum and the Quarantine Station on Culebra Island. The \$17.50 rate shall be confined to one head chambermaid at the Tivoli Hotel.	15.00 17.50 *20.00
Clerks	37.50 42.50 45.00 50.00 60.00 62.50 75.00	Cooks	25.00 30.00 35.00 37.50 40.00 45.00 50.00 60.00 75.00 *87.50	Masons	.16 .20 .25 *.32 *.44
Foremen	25.00 30.00 37.50 50.00 62.50 75.00 *87.50 *90.00 *125.00 *150.00	Coppersmiths	.16 .20 .25 *.32 *.44	Mason helpers	.13 .16 .20 .25 *.32 *.44
Note: The entrance salary for West Indian Foremen shall be not more than \$37.50, and the entrance salary for European Foremen shall be not more than \$62.50 a month.)		Coppersmith Helpers	.13	Molders	.20 .25 *.32 *.44 .13
Mates: (Second Captains will be known and rated as "Mates.")		Crane Operators	.16 .20	Molder helpers	.13
Note: (Ratings above \$75 per month are only for other than West Indians.)		Dairymen	25.00 30.00	Oilers	30.00 35.00 40.00 45.00 50.00 55.00
Dredges	80.00 90.00 100.00 70.00 80.00	Divers	40.00	(Note: The \$55 rate shall be confined to oilers on sea-going dredges, pipeline dredges and tugs; the \$50 rate shall be confined to oilers on other marine equipment. The maximum rate for oilers on land shall be \$45 for 12 hours' service.)	.16 .20 .25 .44 .16 .20
Clapets	17.50 20.00 25.00 30.00 35.00 37.50	Drill Runners	40.00	Painters	.16 .20 .25 .44 .13
Messengers	25.00 30.00 35.00 37.50	(Note: The 20 cent and 25 cent rates shall be confined to Drill Runners on tripod drills. Foremen and riggers employed under certain circumstances in the operation of Star Drills should be rated as such and not as Drill Runners.)	40.00 .16 .20 .25	Paper cutters	.20
(Note: Messengers paid more than \$37.50 who cannot consistently be given some other authorized designation carrying a higher rate of pay shall be reduced to conform to this schedule.)		Drill helpers	32.50	Pipefitters	40.00 .16 .20 .25 *.32 *.44
Policemen	40.00 45.00 50.00	Druggists	40.00 45.00 50.00 *75.00	Pipefitter helpers	.13
Storemen	25.00 30.00 37.50 50.00	Engineers—		Pitmen	.13 .16 .16
(Note: Blacksmiths shall not be employed at monthly rates over \$45, except for service on dredges and in Quartermaster's Department.)		(Note: Ratings above \$75 per month are only for other than West Indians.)		Powder helpers	32.50 40.00 .16 .20
Blacksmiths	45.00 50.00 55.00	Dredges	67.50 75.00 80.00	(Note: The monthly rates shall be confined to powder helpers working with the dredges, who would make excessive overtime if employed on the hourly basis.)	.16 .20 .25 .44
Blacksmith helpers	.13	Clapets	62.50 67.50 75.00 80.00	Pressmen	.16 .20 .25 .44
Boatmen	25.00 30.00 37.50	Launches	60.00 75.00	Plumbers	.16 .20 .25 .44
(Note: This rating is for the crews of cayucas, rowboats and motor boats only.)		Stationary	40.00 45.00 50.00	Planing mill hands	.16 .20 .25 *.32 *.44
Boatswains	45.00	Farriers	40.00 50.00 30.00 35.00 37.50 40.00 45.00 50.00 60.00 62.50 *75.00	Planing mill helpers	.13 .13 .25
Boilermakers	.16 .20 .25 *.32 *.44	Firemen	30.00 35.00 37.50 40.00 45.00 50.00 60.00 62.50 *75.00	Riggers	.13
Boilermaker helpers	.13	Gardeners	30.00	Rubber stamp makers	.25
Bookbinders	.25	Helpers	10.00 12.50 15.00	Saddlers	30.00 40.00 50.00 50.00 62.50 75.00 40.00
Boys	10.00 12.50 15.00	(Note: The designation "helper" will apply to cook's helpers, kitchen helpers, scullions, scrubbers and other employes performing helpers duties for which distinct designations are not provided.)	25.00	Scavengers	32.50
(Note: Waterboys and shopboys shall be employed at hourly rates only. Cabinboys and messboys shall be re-rated as waiters.)		Hostlers	25.00 30.00 85.00 37.50 40.00	Seamen	30.00 32.50 37.50 40.00
Cablesplacers	60.00 75.00 *80.00	Ironworkers	.16 .20 .25	Shipwrights	.16 .20 .25 *.32 *.44
Car repairers	.16 .20 .25 *.32 *.44	Janitors	\$17.50 20.00 25.00 30.00 37.50	Stablemen	30.00
Car repairer helpers	.13	Head janitors		Stewards	37.50 50.00 62.50 75.00
Carpenters	45.00 .16 .20 .25	Laborers	.10 .13 .16 .20	Switch tenders	.10 .13
(Note: Monthly rate for dredges only.)		(Note: The maximum rate for West Indian laborers is 10 cents. The 13 cent rate is for Panamanians, Colombians and Hindoos. The 16 cent rate and the 20-cent rate are for European, other white, and black American laborers only.)		Teamsters	35.00 40.00 35.00
Cartmen	30.00 35.00	Laundresses	15.00 17.50 20.00 22.50 35.00 25.00 30.00 32.50 35.00 37.50 60.00 42.50	Trammen	.13 .16
Caulkers	.16 .50 .25 *.32 *.44	Laundrymen	25.00 30.00 32.50 35.00 37.50 60.00 42.50	(Note: The monthly rate is for helpers on motor cars.)	.16
Caulkers helpers	.13	Linemen	.16 .20 .25 .32 .13	Upholsterers	.20

New employes shall be entered on the rolls at the lowest rate of pay authorized for the class of work which they are to perform, except when regularly transferred.

Employes shall not be promoted from a lower to a higher rate of pay until they have completed at least three months' service at the lower rate. Promotions shall always be to the next higher grade.

The existing regulations covering the furnish-

ing of subsistence for certain classes of work and certain positions will remain unchanged.

Employes' ratings shall in all cases correspond to their duties.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Use of Fuel Oil.

CULEBRA, C. Z., July 22, 1909.

CIRCULAR No. 267:

The following regulations governing the supplying, gauging and use of fuel oil on the Isthmus are published for the guidance of all concerned:

1. Request to have fuel tanks filled must be telephoned to the Union Oil Company forty-eight (48) hours or more in advance of the time when it is desired to have same filled, and the Oil Company must be advised at the same time of amount of oil on hand. This telephone request must immediately be followed by a letter confirming same sent by the District Quartermaster of the Isthmian Canal Commission, or by the Storekeeper of the Panama Railroad Company. The various divisions requesting this oil should forward request in writing to the District Quartermaster, keeping the above time limits in mind. It is desired that as much notice, within reasonable limits, as possible be given the Union Oil Company, and that Company should be advised of the approximate amount of oil on hand so they can make final arrangements for filling the tank.

2. The various departments interested will, in case of emergency when requested by the Oil Company, arrange to have a representative on the ground from daylight to dark.

3. At the gauging, the representatives of the District Quartermaster, the division requesting the oil and the Oil Company will be present, and each will sign run tickets in quadruplicate. These tickets will be retained by the gauger of the Union Oil Company, two copies remaining in the hands of the Company permanently, and two copies, including the original, to be attached to the bill for the oil when rendered. Copies of the run tickets are to be made and retained by each of the other representatives.

4. Gaugings to be made with standard steel tape with plumb bob attached at one end.

5. Immediately after the last gauging the valve next to the tank in the supply line is to be closed and securely locked by the District Quartermaster.

6. When a break develops in the side line the Union Oil Company is to be reimbursed for the loss resulting therefrom, calculated by the capacity of that portion of the branch line which is emptied by the break.

7. Gasoline tests, as provided for in the Supplemental Agreement made between the Isthmian Canal Commission and the Union Oil Company of California, to be made at any time by the Mechanical Division upon request of parties desiring such test, a representative of the Oil Company being present at the test.

GEO. W. GOETHALS,
Chairman Isthmian Canal Commission,
President Panama Railroad Company.

Sale of Vehicles and Harness.

The vehicles named below will be sold to any person desiring to purchase at the prices mentioned:

One victoria, C-7	150
One victoria, C-9	200
One victoria, C-4	350
One victoria, C-24	200
One victoria, 39	250
One station wagon	125
One sarry	60
Harness, per set	25

By order of the Chairman.

C. A. McILVAINE,
Acting Assistant to the Chairman.

Supplies for Canal Work.

The following steamers arrived at the ports of Cristobal and Colon during the week ending July 24, with supplies for the Isthmian Canal Commission:

Colon, July 18, from New-York, with 316 tons bar iron and steel; 805 kegs bolts and rivets; 15 tons wire screening; 7,000 gallons lincseed oil; 5,000 gallons valve oil, for stock; 56 tons alum for filtration plants; and a miscellaneous cargo aggregating 6,567 packages, weighing 990 tons.

Sarnia, July 20, from New York, with 5,600 pounds concentrated lye for stock.

Turrialba, July 22, from New Orleans, with 95 tons hay for corrals; 70,000 feet lumber for buildings; 4,850 gallons kerosene oil for stock.

LOST—Between the bathing beach, Panama, and Gorgona, on Sunday, July 25, a lady's size gold watch with open face, and with the monogram "G. H. P." engraved on the case. A reward will be paid for the return of this watch to Mrs. G. H. Pierson, Gorgona, Canal Zone.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 4, 1909 (75th meridian time):

DATE.	High.		Low.	
	A. M.	P. M.	A. M.	P. M.
July 29	12.14	6.33	12.33	7.08
July 30	1.16	7.31	1.32	8.01
July 31	2.11	8.24	2.26	8.51
August 1	3.00	9.14	3.16	9.38
August 2	3.39	10.03	4.03	10.25
August 3	4.34	10.49	4.50	11.10
August 4	5.19	11.37	5.38	11.57

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Rainfall, July 1 to 24, 1909, Inclusive.
(MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum one day.	Date.	Total for period.
<i>Atlantic Division—</i>			
Cristobal	2.30	16	11.25
Brasos Brook	1.65	16	10.12
Galun	1.90	15	9.98
Bohio	1.34	22	8.77
<i>Central Division—</i>			
Tabernilla	2.41	20	9.47
San Pablo	1.85	15	9.80
Gorgona	3.86	16	10.40
Gamboa	2.17	15	10.65
Empire	2.23	20	7.04
Camacho	2.41	20	7.49
Culebra	2.29	20	6.98
<i>Pacific Division—</i>			
Rio Grande	1.99	20	6.49
Pedro Miguel	1.95	20	6.67
Balboa	3.51	10	13.76
Ancon	2.13	10	7.92
<i>Atlantic Coast—</i>			
Porto Bello	3.21	15	21.83
Nombre de Dios, (July 1 to 17)	4.37	11	10.64
<i>Upper Chagres—</i>			
El Vigia	2.57	20	11.69
Alhajucla	2.32	20	11.43

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, July 24, 1909:

Height of low water above mean sea-level, ft.	STATIONS.					
	Vigia.	Alhajucla.	Gamboa.	Bohio.	Gatum (Canal.)	Gatum (W. D.)
Maximum height above mean sea-level, feet:	125	92	46	1	0	0
Sunday, July 18	127.1	93.9	49.6	10.8	7.2	6.1
Monday, July 19	126.8	93.6	49.0	8.2	4.8	4.1
Tuesday, July 20	132.8	97.6	56.0	13.8	5.9	4.9
Wednesday, July 21	129.2	95.8	55.8	16.7	8.9	7.6
Thursday, July 22	128.2	94.6	50.1	10.4	7.6	6.5
Friday, July 23	130.0	95.8	51.0	9.4	5.8	4.8
Saturday, July 24	127.6	94.2	49.7	9.0	5.3	4.4

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., July 28, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Barnes, Z.	Martin, Mrs. Chas.
Boyd, Dr. W. A.	Milan, Harry
Bridbury, R. T.	Miller, W.
Brocksby, Miss Leana	Pettijohn, J. W.
Bromley, Mary B.	Sanchez, Alexander M.
(21 class)	Sheriden, P. L.
Coffin, Mrs. R. L. (3)	Smith, Clarence
Delaney, M. H. B.	Smith, Mark D.
Dunnville, B. B.	Stewart, Mrs. N.
Greeley, Miss Marjorie	Thelma, Miss Lorraine
Harrington, C. R.	Walton, W. J.
Hawkins, Cleveland	Williams, C. H.
Kincaid, Mrs. Geo.	Wolba, F. G.
	Woodford, E. T.

FOUND—Metal check No. 46,729. Owner can recover same by applying to H. E. Hele, Room 2, house No. 111, Ancon, C. Z., and proving property.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Ancon	P. R. R. Thursday	July 22
Clyde	R. M. Saturday	July 24
Advance	P. R. R. Saturday	July 24
Allianca	P. R. R. Friday	July 30
Prinz Joachim	H. A. Saturday	July 31
Colon	P. R. R. Thursday	Aug. 5
Cristobal	P. R. R. Friday	Aug. 6
Thames	R. M. Saturday	Aug. 7
Panama	P. R. R. Wednesday	Aug. 11
Prinz Aug. Wilhelm	H. A. Saturday	Aug. 14
Advance	P. R. R. Tuesday	Aug. 17
Ancon	P. R. R. Thursday	Aug. 19
Magdalena	R. M. Saturday	Aug. 21
Allianca	P. R. R. Monday	Aug. 23
Prinz Joachim	H. A. Saturday	Aug. 28
Colon	P. R. R. Saturday	Aug. 28
Cristobal	P. R. R. Thursday	Sept. 2
Panama	P. R. R. Friday	Sept. 3
Orinoco	R. M. Saturday	Sept. 4
Advance	P. R. R. Thursday	Sept. 9
Prinz Aug. Wilhelm	H. A. Saturday	Sept. 11
Allianca	P. R. R. Wednesday	Sept. 15
Ancon	P. R. R. Thursday	Sept. 16
Oruba	R. M. Saturday	Sept. 18
Colon	P. R. R. Tuesday	Sept. 21
Prinz Joachim	H. A. Saturday	Sept. 25
Panama	P. R. R. Monday	Sept. 27
Cristobal	P. R. R. Thursday	Sept. 30

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Colon	P. R. R. Friday	July 23
Thames	R. M. Wednesday	July 28
Panama	P. R. R. Friday	July 30
Prinz Aug. Wilhelm	H. A. Tuesday	Aug. 3
Advance	P. R. R. Thursday	Aug. 5
Ancon	P. R. R. Friday	Aug. 6
Allianca	P. R. R. Wednesday	Aug. 11
Magdalena	R. M. Wednesday	Aug. 11
Colon	P. R. R. Tuesday	Aug. 17
Prinz Joachim	H. A. Tuesday	Aug. 17
Cristobal	P. R. R. Thursday	Aug. 19
Panama	P. R. R. Monday	Aug. 23
Orinoco	R. M. Wednesday	Aug. 25
Advance	P. R. R. Saturday	Aug. 28
Prinz Aug. Wilhelm	H. A. Tuesday	Aug. 31
Ancon	P. R. R. Thursday	Sept. 2
Allianca	P. R. R. Friday	Sept. 3
Oruba	R. M. Thursday	Sept. 8
Colon	P. R. R. Thursday	Sept. 9
Prinz Joachim	H. A. Tuesday	Sept. 14
Panama	P. R. R. Wednesday	Sept. 15
Cristobal	P. R. R. Thursday	Sept. 16
Advance	P. R. R. Tuesday	Sept. 21
Clyde	R. M. Wednesday	Sept. 22
Allianca	P. R. R. Monday	Sept. 27
Prinz Aug. Wilhelm	H. A. Tuesday	Sept. 28
Ancon	P. R. R. Thursday	Sept. 30

NEW ORLEANS TO COLON.

Parissima	U. F. C. Saturday	July 31
Turrialba	U. F. C. Saturday	Aug. 7
Abangarez	U. F. C. Saturday	Aug. 14
Parissima	U. F. C. Saturday	Aug. 21
Turrialba	U. F. C. Saturday	Aug. 28

COLON TO NEW ORLEANS.

Abangarez	U. F. C. Tuesday	Aug. 3
Parissima	U. F. C. Tuesday	Aug. 10
Turrialba	U. F. C. Tuesday	Aug. 17
Abangarez	U. F. C. Tuesday	Aug. 24
Parissima	U. F. C. Tuesday	Aug. 31

COLON TO BARBADOS, CALLING AT TRINIDAD.

Clyde	R. M. Tuesday	Aug. 3
Thames	R. M. Tuesday	Aug. 17

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailings of the Leyland Line will be as follows: *Mexican*, on or about July 31, for Tampa, Fla., via Kingston, Ja., and *Cuban* for New Orleans via Kingston on or about August 9.

The steamer *David* of the National Navigation Company, will leave Panama, for David, province of Chiriqui, and intermediate points, on Thursday, August 5.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Pacific Division Sand Service.

The ladder dredge *Gopher*, of the Pacific Division, which was laid up during the greater part of July for general overhauling, was taken to Chamé on Monday, July 26, and will be used in sand dredging at that point. It will work into position within a few days, and as there is but little stripping to be done in any part of the sand zone, deliveries can begin without delay. Five barges, each of 500 cubic yards capacity, are ready for the service, and the four knocked down barges which arrived on the steamer *Cristobal*, July 7, are now in the yards at Balboa waiting to be put together. The piling for the sand dock has been completed, but work on the bins has not yet been started. Most of the sand used in concrete construction in the Pacific Division for several months past has come from the island of Taboguilla in Panama Bay, and has proved satisfactory.

Single Outlet for the Chagres.

The Chagres River now finds its way into Limon Bay through two outlets, one the river channel which opens into the bay at Fort Lorenzo, and the other the old French canal which begins at Cristobal. In the near future the outlet through the French canal will be closed, and all the water will be forced through the river channel past Fort Lorenzo. At present the floods that follow every heavy rain carry quantities of driftwood into the French canal, and this interferes with the operation of the stern wheel steamer *Exotic* which tows the sand and rock barges up to Gatun. The large amount of river water that flows into the canal also causes troublesome currents.

The original channel of the Chagres made a big open loop at Gatun,—that is, the river flowed south to a point near Gatun, then east, then south again, then west, and finally, within a mile of the bend from south to east, continued southward. The line of the French canal ran across the south and north parts of the loop, and in order to keep the exca-

vation dry a ditch was dug through which the water was diverted from the loop and made to flow directly south past Gatun. When the excavation was finished the river flowed partly through its own channel and partly through the canal. Gatun Dam has closed up the French canal, and the river now flows through the west diversion across the west end of the present dam site, as it did during construction by the French. A large quantity of water, however, backs through the old river channel north of Gatun Dam into the French canal, and in time of freshet there is a very large volume with a strong current. A dam will be built across the old channel south of the big dam and the river water will thus be kept out of the canal.

As soon as the dam closes the channel the only means of water communication between Cristobal and the Chagres, south of Gatun, will be by way of Fort Lorenzo.

Empire Suspension Bridge.

The suspension bridge over Culebra Cut at Empire was opened to the public at 5 o'clock on Saturday afternoon, July 31. The flags of Panama and the United States had been hung over the bridge at the point where the opening ceremony was held, and some red, white and blue bunting had been draped on the towers at either end. In the presence of a number of residents of Empire and Culebra, the Division Engineer of the Central Division, and the men who built the bridge, Mrs. A. S. Zinn, wife of the Resident Engineer, broke a bottle of champagne and declared the bridge open to traffic.

This is the first bridge to be constructed across Culebra Cut. Its primary purpose is to carry the compressed air and water mains over the Cut, and thus avoid moving them every time a steam shovel crosses their line. As a highway bridge it will give access to Las Cascadas plantation and the native farms on the east side of the Canal. It is a temporary structure and will be taken down as soon as the Canal is opened to navigation, as it is only 108.5 feet above the water line and would not clear the masts of larger vessels. The span is 600 feet, the length of cable from west to east anchorage 932 feet, and the roadway is broad enough for one wagon. The towers are made of creosoted timber and are 60 feet high. There are four 2 $\frac{3}{4}$ -inch steel cables anchored at the east end to old French rail embedded in 189 cubic yards of concrete, and at the west end to French rail in 270 cubic yards of concrete. Work was begun on March 11, 1909, and the manual labor was performed entirely by negroes.

Cristobal Sea Front.

A slight change has been made in the plan for protecting the shore front at Cristobal from inroads by the sea during the period of "northers." The new barrier of concrete blocks will extend practically all the way

from the dividing line between Cristobal and Colon, to Cristobal Point, and instead of being irregularly disposed along the beach, they are being placed in a symmetrical row, separated by spaces of about six inches which are half filled with concrete, with their sea face slightly higher than the land side to prevent the inrush of water. The extension of the barrier involves the use of about 100 additional blocks, making a total of 400 in all.

Ancon Quarry.

Steady progress was made on the Ancon Hill rock crushing plant of the Pacific Division during July. The heavy concrete retaining wall, which is to protect the crusher machinery from rock and earth slides, is practically completed. The foundations for the four secondary, or No. 6, crushers are in, the machinery is being put in place, while work on the foundation of the main, or No. 12, crusher will be started in a few days. The crushed material will be carried from the machines to the storage bins by a belt conveyor, and work has begun on the piers which will support the apparatus. The concrete floor of the bin structure has been completed, and the erection of the timber frames for the 12 bins commenced. A three-track yard is to be laid out just north of the crusher plant to be used by trains in hauling rock from the quarry, work on which has begun. Stripping was continued during July, and while there is considerable material still to be removed to uncover the rock surface in all parts of the quarry, enough is in sight to supply the crushers were they ready for operation. The steam shovels are continuing the work of excavating facings along the side of the hill to reach the different parts of the quarry. It is expected that the plant will be ready to start at the expiration of another month, or six weeks.

Gatun Dam.

A complete change was made during July in the appearance of the east portion of the territory that is to be included in Gatun Dam, due to the progress of the hydraulic fill. The surface of the pond in the dam is about six feet higher than at the beginning of July. The water so encroached on the old tracks of the Panama railroad, and the old office buildings along the tracks, that they were removed in order to make way for the labor gangs that are stripping the top soil from the land to be covered by the fill. The south rock toe has been broadened until it makes a connection with Spillway Hill, and the north toe is also steadily growing broader.

One of the 20-inch suction dredges that are making the hydraulic fill will be taken from the borrow pit north of the Dam during the next few days and set at work in the bed of the Chagres River and old French

NOTES OF PROGRESS.

(Continued.)

canal south of the Dam. The work already done in pumping from the borrow pits north of the Dam shows that the Chagres River deposits sand almost as fast as the dredges pump it out. This sand combined with the fine clay found south of the Dam site forms the best class of material for the hydraulic fill. After the first week in August the fill will be continued, therefore, by pumping from both north and south sides, one of the methods found satisfactory in the experimental dams. The effect of this method is to deposit the coarser material along the toes of the Dam and to place the finer material along the axis, forming an impervious core.

Additions to Compressed Air System.

On account of the heavy demand on the compressed air system made by the work in Culebra Cut, and at Pedro Miguel and Miraflores, twelve electric motors, eight forge fans, two compressed air reheaters and two 2,500 cubic foot air compressors have been ordered, and will be installed in the near future. The motors will be installed at the Rio Grande rock crushing plant and at the various small repair shops where compressed air is being used for motive power. They will range in capacity from five horse-power to thirty horse-power and will be driven by current supplied from the Empire electric light plant. The reheaters will be installed at Miraflores and Bas Obispo to increase the volume of air at those points. The motors and fans on order will have a capacity equal to the motive power from approximately two 2,500 cubic foot compressors.

The present system, which supplies air to the rock drills and for various motors along Culebra Cut, and at Miraflores and Pedro Miguel, extends from Bas Obispo to Miraflores Locks, a distance of about thirteen miles. The various mains aggregate about 70,000 feet of pipe, while the leads make a total of about 180,000 feet. Compressors are located at Rio Grande, Empire, and Las Cascadas. At each place there are two Rand and two Laidlaw-Dunn-Gordon compressors, with a total maximum rated capacity of 30,000 cubic feet of free air per minute. The two additional machines on order will increase the number to 14, and the rated capacity to 35,000 cubic feet of free air per minute.

On June 23, a test of the system was made and in the eight hours of work, 10,348,985 cubic feet (engine room readings) of free air were consumed. This air drove 17 engines; 175 piston drills, 3 3/8 inches; 128 Star drills; 8 pumps, varying in size from 7 by 7 by 12 inches, to 16 by 9 by 14 inches; 52 forges; 2 boring machines; two air brake testing machines, one water aerater at the Culebra distilling plant; and, in addition, was used at the Pedro Miguel engine house for cleaning locomotives. The number of drills available for use in the Central and Pacific divisions is 275 piston drills, 3 3/8 inches, and 115 Star drills. It is proposed to increase this number by 75 piston drills, and 37 Star drills. Considering the number of drills out of service owing to changing steel, resetting, repairs, and other causes, about

one-third of these drills will be in operation at one time, and they alone will require over 30,000 cubic feet of free air per minute. For economical operation the drills require a pressure of at least 85 pounds. In order to keep the excavating plant in continuous service it is necessary at present to operate the drills all day and part of the night in Culebra Cut. If this were not done the work of blasting rock in advance of the steam shovels could not be carried on rapidly enough to keep the shovels constantly at work.

Spillway of Gatun Dam.

In the spillway of Gatun Dam, the work at present consists in placing concrete in the retaining walls below the site of the spillway dam, facing the rock sides, and laying the floor south of the spillway dam. The height of the walls below the dam has been increased from 20 to 25 feet and the base from 8 to 12 feet. The facing of the rock sides of the spillway cut, south of the dam, has been commenced and the placing of the floor is about half completed. The floor is about one foot thick, as it will be subjected to pressure only from above. At its south end, it follows the sloping rock down until stiff blue clay is encountered. When the concrete work is completed, the trench for uncovering the sloping rock will be filled with impervious material, level with the remainder of the floor. The plans for the spillway dam are nearing completion.

Improvements at Gatun.

The new commissary, near the depot at Gatun, was opened on August 2. It was practically finished several days ago, with the exception of wiring the building, and com-

pleting the ice boxes. One of the two type-18, 24-room bachelor quarters is completed, and the other is well under way. A survey of the ground for the new Commission clubhouse was made on July 13. Landscape work is being done around the Gatun hotel, one of the features being the grouping of foliage plants to form, on a large scale, the letters "Q. M. D." The work of excavation at the site of the reservoir is in progress.

Changes at Old Station Sites.

The completion of the new station at Colon has made the old passenger shed of no further use, and it has been torn down to give additional space for park purposes. The new Colon park, which is steadily being improved, adjoins the site of the old shed on the east, and will be considerably enlarged by the additional space thus afforded. The spur railroad track that entered the shed from the north has been removed, and the concrete floor will be displaced to make room for a new concrete walk which will be laid along the west side of the park. The site will be bedded with plants, and otherwise beautified.

The old station at Cristobal will not be removed, but the buildings will be used by the Panama Railroad commissary as a vegetable and fruit market. A lateral portion of the concrete platform will be cut away, in order that a third railroad track can be laid, which will give a double freight track at this point. The rest house, which is across the road from the old station, will not be moved, as in its present position it is convenient for the women going to and from Cristobal, and also for women employes of the Commissary.

MAXIMUM RAINFALL.

The appended table shows the maximum rainfall for different periods of time, that has fallen on the Isthmus since observations began. It shows that the maximum rainfall for a period of five minutes is 0.75 inches, and that it occurred at Rio Grande, between 2.10 and 2.15 p. m., on July 24, 1908. The maximum for one hour is 5.86 inches, at Balboa, between 4 and 5 p. m., June 2, 1906. The maximum for one day is 8.82 inches, and occurred at Bobio, between 12.45 p. m., August 7, and 9.05 a. m., August 8, 1908.

STATION.	Period of observation—Years.	MAXIMUM RAINFALL.					
		For 5 minutes.		For 1 hour.		For 1 day.	
		Inches.	Date.	Inches.	Date.	Inches.	Date.
Ancon.....	4	.64 (5.40 to 5.45 p. m.)	Aug. 7, '08.	2.89 (5.35 to 6.35 p. m.)	Aug. 7, '08.	3.18 (9.30 p. m., 25, to 6.45 p. m., 26.)	June 25-26, '07.
Balboa.....	4	.63 (6.05 to 6.10 p. m.)	Aug. 7, '08.	5.86 (4 to 5 p. m.)	June 2, '06.	7.31 (12 m., 16, to 10 p. m., 17.)	Nov. 16-17, '06.
Pedro Miguel.....	1	.60 (11.45 to 11.50 a. m.)	Nov. 11, '08.	3.30 (1.28 to 2.26 p. m.)	Aug. 27, '08.	4.15 (1 to 6.20 p. m.)	Dec. 29, '08.
Rio Grande.....	3	.75 (2.10 to 2.15 p. m.)	July 24, '08.	2.57 (1.40 to 2.40 p. m.)	Oct. 16, '07.	5.58 (8.07 p. m., 2, to 10.17 a. m., 3.)	Dec. 2-3, '06.
Culebra.....	4	.64 (12.45 to 12.50 p. m.)	May 2, '08.	3.69 (1.15 to 2.15 p. m.)	Oct. 16, '07.	4.70 (9 a. m. to 4.45 p. m.)	June 21, '07.
Empire.....	4	.60 (2.45 to 2.50 p. m.)	July 25, '06.	2.79 (2.40 to 3.40 p. m.)	Oct. 17, '07.	6.15	Dec. 3, '06.
Bas Obispo.....	4	.53 (5.49 to 5.54 p. m.)	Nov. 14, '07.	3.14 (4.35 to 5.35 a. m.)	Aug. 27, '07.	4.53 (8 p. m., 26, to 2.20 p. m., 27.)	Aug. 26-27, '07.
San Pablo.....	1	.60 (1.33 to 1.38 p. m.)	Oct. 29, '08.	3.10 (1.20 to 2.20 p. m.)	Oct. 29, '08.	3.55 (1 to 8.20 p. m.)	Oct. 29, '08.
Tabernilla.....	1	.47 (2.05 to 2.10 p. m.)	Aug. 18, '08.	3.09 (2 to 3 p. m.)	Aug. 18, '08.	4.17 (1 to 7 p. m.)	Oct. 29, '08.
Bobio.....	4	.67 (1.53 to 1.58 p. m.)	June 16, '09.	4.51 (3.50 to 4.50 p. m.)	Aug. 7, '08.	8.52 (12.45 p. m., 7, to 9.05 a. m., 8.)	Aug. 7-8, '08.
Gatun.....	3	.61 (12.31 to 12.36 p. m.)	July 16, '08.	2.98 (12.16 to 1.16 p. m.)	July 16, '08.	10.48	Dec. 3, '06.
Cristobal.....	5	.44 (1.20 to 1.25 p. m.)	Aug. 10, '08.	4.59 (3.59 to 4.59 p. m.)	Nov. 3, '08.	8.47 (4.40 p. m., 2, to 8.24 a. m., 3.)	Dec. 2-3, '06.
Porto Bello.....	1	.64 (7.35 to 7.40 p. m.)	Aug. 7, '08.	3.77 (7.05 to 8.05 p. m.)	Aug. 7, '08.	6.78 (7.15 a. m. to 11 p. m.)	Nov. 20, '08.
Alhajuela.....	4	.50 (2.05 to 2.10 p. m.)	Oct. 24, '07.	2.98 (12.25 to 1.25 p. m.)	Aug. 10, '08.	8.19	Dec. 3, '06.

PACIFIC DIVISION WORK.

The Laying of Concrete at Pedro Miguel Locks Will Soon be Started.

It is expected that concrete work in the west chamber of the Pedro Miguel Locks will be started before September 1, 1909. The excavation in the west chamber has been completed, with the exception of digging the trenches for the lateral culverts. The culvert forms used at these locks will be largely of wood, and, as they are manufactured on the Isthmus, will be available on short notice.

The west storage trestle extending along the forebay of the locks has been completed, with the exception of laying the rail for the track along the deck of the trestle. The piling of the east storage trestle has been extended the full distance, and the deck construction is now under way. The Porter engines, which are to be used in hauling material from the mixing plant to the lock site, are ready for use, but the dump cars have not yet been assembled, although they are on the spot. A steam shovel is now engaged in finishing the work of cleaning up the floor of the forebay. A cypress tank, with a capacity of 50,000 gallons, is under construction on the west bank of the Canal, in close proximity to the handling plant. It will furnish all the water to be used in the lock construction and will be supplied with water pumped from the Rio Grande, a short distance away.

Excavation was continued at the Miraflores Locks, and considerable progress was made during July. The *Sandpiper* is still engaged in pumping material into the core of the west dam, but was laid up for repairs at times during the month. In soft material, the dredge can make good progress, but where it is now working, patches of rock are frequently encountered, often causing a breakdown. On Cocoli Hill, trenches are being dug to enable the hydraulic fill in the dam core to obtain a good anchorage. The west toe of the dam was raised several feet during the past month by dry fill. Cocoli Lake, the waters of which this dam impounds, remains stationary at about 35 feet above sea level, the surplus continuing to waste into the Rio Grande. The surface of the lake has been oiled to prevent the incubation of mosquitoes, but owing to decay of the vast amount of vegetable growth left standing when the lake filled, an offensive odor is emitted.

The cement shed, west of the Miraflores Locks, will be entirely completed by August 15, and is far enough advanced to receive the cement shipments coming to the Pacific Division. The concrete floor is practically finished, and the work of installing the handling cranes is in progress. The 87,144 bags of cement brought to the Isthmus by the steamer *Ancon*, arriving at Colon, July 31, will be stored at the Miraflores cement shed. The bulk of the shipment in bags will be taken by the Pacific Division, and that in barrels by the Atlantic Division. This will obviate the necessity of a barrel-burning plant in the Pacific Division.

At the Miraflores power house, work on the superstructure is well advanced, and the foundations for the fan gallery have been completed. The switchboard has been set up, and one turbo-generator is practically in place. The brick work in the two batteries

of boilers has been completed as far as the superheater.

The transmission system will consist of two pole lines, one extending to the Pedro Miguel Locks, a distance of one mile and a half, and the other, to the Ancon quarry site, a distance of 4½ miles. Each poleline will carry two 4-0 copper wires, over which a current will be transmitted, equivalent to 2,200 volts. The Pedro Miguel line is about completed, while the Ancon quarry line has been finished as far as the Panama railroad track to Balboa.

Sailing of Steamship "Ancon."

The Panama railroad steamship *Ancon* will sail for New York, from Pier No. 1, Colon, on Sunday, August 8, at 1 p. m. The attention of persons expecting to leave by this boat is especially called to the fact that it will sail at 1 p. m., instead of at the usual hour of 3 p. m.

Vacation Leave and Medal Service.

THE CANAL RECORD:

Will you kindly answer these questions for me?

If a man wishes to resign his position at the end of his second vacation, while in the States, does his resignation take effect at the end of the six weeks while he is only paid for five weeks, or are the seven days consumed in returning taken from his time served as well as from his pay?

Is his vacation counted as time in earning a medal and can he receive his money and medal in the States? EMPLOYE.

Cristobal, July 25, 1909.

[If an employe desires to resign at the expiration of his second vacation, while in the United States, his resignation takes effect at the expiration of the full period of the six weeks granted him, but he is paid only for the period of his leave, minus 7 days. He is, however, given time for the full period of his leave in calculating his service for a Canal Medal. If, at the expiration of his leave, he has been in the service two years, he may be paid for the period of his leave, minus 7 days, in the United States, and his name will be entered on the list for a Canal Medal.]

Launch Service to Taboga.

The steamer *Sanidad* leaves the dredge landing at Balboa at 9 o'clock Tuesday, Thursday and Saturday mornings. On the return trip it arrives at Balboa about 4.30 p. m. in time to make connections for the 5.30 train at Panama.

EXECUTIVE ORDER.

Administration of Estates.

By authority of the President of the United States it is ordered:

That the authority of the Collector of Revenues under act No. 24 of the laws of the Canal Zone, entitled "An act providing for an inexpensive method of Administration upon the Estates of employes of the Government of the Canal Zone, or of the Isthmian Canal Commission, who are citizens of the United States and who die in the Canal Zone, Isthmus of Panama, leaving estates of small value upon which regular administration is deemed inadvisable," enacted by the Isthmian Canal Commission, March 1, 1905, be, and the same is hereby extended to include all estates of the character described in said act as amended by the Executive Order of June 22, 1907, which do not exceed in value the sum of \$1,000.

J. M. DICKINSON,
Secretary of War.

WAR DEPARTMENT,
WASHINGTON, D. C.,
July 21, 1909.

New Steamship Service of the United Fruit Company.

The new steamship *Atenas* of the United Fruit Company is expected to sail from New Orleans on August 21. This ship, together with the *Abangarez* and *Turrialba*, will constitute a direct line of steamers between New Orleans and Colon, sailing from New Orleans every Saturday at 11 a. m., arriving at Colon on Thursdays at 7 a. m., sailing from Colon on Tuesdays at 3 p. m., arriving at Limon on Wednesdays at 6 a. m., whence they sail at 8 p. m. the same day, arriving at New Orleans on Mondays at 8 a. m.

Effective August 3, 1909, the United Fruit Company instituted a new service between New Orleans and Central American ports. The steamships *Cartago*, *Heredia* and *Parismina* will sail from New Orleans every Tuesday for Bocas del Toro via Belize, Porto Barrios and Limon, and will carry mail and passengers for Belize, Porto Barrios, Limon and Bocas del Toro, and freight for Limon and Bocas del Toro. Returning via Limon, Porto Barrios and Belize with mail and passengers from all points, and carrying any passengers left at Limon by steamers from Colon on Wednesdays for Porto Barrios and Belize.

STATEMENT OF CLASSIFIED EXPENDITURES TO MAY 31, 1909.

The following table shows expenditures for Canal work, classified monthly, since July 1, 1908. The figures give only expenditures which have been located. In addition, there have been some disbursements, such as purchasing material, etc., which it will not be possible to locate to a specified account until their use has been finally determined:

Period.	Department of Civil Administration.	Department of Sanitation.	Department of Construction and Engineering.	Municipal Improvements.	Plant Account.	Total.
Prior to July 1, 1907.	\$1,446,407.73	\$4,636,630.37	\$13,410,795.01	\$4,296,732.98	\$19,345,697.87	\$43,136,263.96
Fiscal year 1908.	704,610.15	2,310,212.01	16,680,660.46	1,494,956.41	11,684,215.15	32,874,654.18
Fiscal year 1909:						
July, 1908.	84,898.15	197,963.07	1,452,698.88	91,901.17	544,083.23	2,371,544.50
August, 1908.	77,019.80	145,870.37	1,599,556.90	60,798.76	517,046.09	2,400,291.92
September, 1908.	69,867.03	129,725.40	1,636,253.17	52,809.20	703,633.09	2,592,287.89
October, 1908.	59,612.51	155,676.68	1,448,614.64	67,696.17	727,544.14	2,459,144.14
November, 1908.	59,374.12	147,957.24	1,369,805.86	77,406.64	480,139.10	2,134,682.96
December, 1908.	65,526.32	166,321.70	1,500,404.77	70,936.43	893,337.24	2,696,526.46
January, 1909.	51,416.82	164,605.80	1,550,843.72	65,209.51	1,418,185.90	3,250,261.75
February, 1909.	60,782.04	139,368.18	1,453,781.43	54,105.63	596,564.67	3,204,601.95
March, 1909.	60,130.85	127,669.50	1,611,343.85	39,267.70	776,821.41	2,615,233.31
April, 1909.	66,846.14	146,515.18	1,480,566.68	56,617.86	1,072,221.29	2,822,767.15
May, 1909.	63,161.61	136,521.29	1,604,437.10	48,168.74	667,335.95	2,519,624.69
Total.	2,869,653.27	8,605,036.79	46,799,762.47	6,476,607.20	39,426,825.13	104,177,884.8

COLON PASSENGER STATION.

New Concrete Terminal Building Recently Completed.

The new terminal passenger station of the Panama Railroad Company at Colon, was opened on Friday, July 23. It is located on Front street, between Seventh and Ninth streets, about midway between the old Colon and Cristobal stations, and extends over the greater part of two blocks, with the main entrance on Eighth street. The structure consists of the station proper, 19 feet by 442 feet, 22 feet high, with a tower at Eighth street, 20 feet by 40 feet, 43 feet high; a covered platform 20 feet by 720 feet, and an open platform 10 feet by 700 feet. Ten feet of the 20-foot covered platform for its entire length, 720 feet, and 420 feet of the 10-foot open platform, together with 1,140 feet of track, are enclosed by an 8-foot iron picket fence, providing room within the enclosure for a train consisting of an engine and fifteen 70-foot coaches. A picket gate at each end of this enclosed train yard controls the entrance and exit of trains. Passengers alighting from trains reach the station or street through turnstile exits in the fence, and passengers boarding trains enter from the station through four gates, where their tickets are punched by gate tenders.

In general, the style of architecture is old English, the type being pronounced in the castellated battlements which crown the cornice at both ends of the building, and in the center of the south and longest section. The construction is permanent throughout. The tower, including the interior arches, is of reinforced concrete. The walls of the main building are made of concrete blocks 9 inches high, 31 inches long, and 12 inches wide, resting on a concrete foundation and wall four feet high. The roof of the building proper is arched, being built of semicircular steel trusses and steel purlines. The dome in the tower consists of a half cylinder with axis parallel to that of the station and intersected at right angles at each end by a quarter cylinder of the same diameter. The cornice work and trimmings throughout are of concrete. The total floor space within the station proper, is 7,375 square feet. Lettered on the frieze of the main façade are the words "Panama Railroad Company," and in the center underneath, the year "1909."

The street entrance for passengers consists of two arched openings, 9 feet wide and 19 feet high, leading to the vestibule, 20 feet by 40 feet, located in the base of the tower. The south entrance is for first-class, and the north entrance for second-class passengers. In the vestibule, on the side next to the track, is the ticket office, the approach to which is guarded by iron railing regulating the movements of first and second-class passengers. In the southeast corner of the room is an office for the sale of steamship tickets. The news stand will occupy a space between the two main entrances.

Passenger trains are made up on the Panama Railroad with first-class coaches in front and second-class in the rear. On outgoing trains, this places the first-class coaches at the south end of the train. The waiting room for first-class passengers was therefore located south of the entrance, so as to be nearest to that part of the train,

while on incoming trains, passengers in the first-class coaches will detrain close to the carriage exits.

Both the first-class and second-class waiting rooms are connected with the vestibule by high arched entrances. Both waiting rooms are identical in size, 45 feet by 17 feet, and both have ample toilet accommodations. The first-class waiting room contains one single and three double high-backed seats, accommodating 40 persons, while the room for the second-class passengers contains one single and five double seats. The rooms are well lighted, there being eight windows on the street side in the first-class, and nine in the second-class. The walls in these rooms, as well as in the vestibule, are kalsomined a shade of blue, with a dark brown base border.

The baggage room is 197 feet 6 inches long, and occupies the south end of the depot. A commodions locker is located in one end for express and other valuable packages, and there is a long row of shelving on each side for hand baggage and parcels. Two double sliding doors open on the station platform. Business with the general public is transacted through a counter window, 15 feet long, about midway of the room. The baggage section is lighted by 20 windows on the street side, two at the south end, and 14 on the track side. The north portion of the station is occupied by the Central & South American Cable Company, who have a space 88 feet long.

The station platform is of concrete construction, 20 feet wide, and extends a distance of 720 feet, or from Seventh street to Ninth street. The roof of the platform is of "butterfly" type, commonly used in train shed construction, the eaves being uptilted at an angle of 21 degrees. This is to prevent dripping from the eaves, the water during rains wasting into a gutter in the center of the roof. From the south end of the station platform, a 10-foot concrete walk continues all the way to the Eleventh street crossing at Cristobal, and will serve to divert a portion of the foot traffic from the crowded east side of Front street. Entrance to the train shed is through four gates in the picket fence, directly opposite the Eighth street entrances, while exits are made through six turnstiles, three double turnstiles near the north end of the station opening on the carriage yard, one at the end of the passenger shed at Seventh street, one opening on Sixth street, and a single turnstile at the end of the picket fence enclosure near Fifth street.

The track space in the train yard is 14 feet wide, and is separated from the two freight tracks on the west by the 8-foot iron picket fence mentioned above, which also encloses 10 feet of the platform.

The space allotted to carriages occupies a recess in the curb lines at the north end of the station, near Seventh street, and is 23 by 183 feet. The cart yard is located at the south end, near Ninth street, convenient to the baggage room, and occupies a similar recess, 18 feet by 100 feet. An agreement has been reached between the municipal authorities of Colon and the Panama Railroad Company, whereby traffic on Front street will only be allowed to move northward. All carts and vehicles going southward must use Bolivar street, or Bottle Alley, and if they have business on Front

street they must reach their destination by one of the cross streets.

The station is lighted by 115 Tungsten electric lamps, 25-watt. On the outside, above the lettering on the main façade, there is a row of 26 lights, 18 inches apart, running along the cornice. Around the inside of the vestibule there is a similar row. The station platform is lighted by 23 lights, six of which burn all night.

Aliens Going to the States.

The Department of Commerce and Labor has called the attention of the Panama Railroad Steamship Company to the circulars published herewith. The General Manager of the company has directed all ticket agents to be careful to see that the requirements of the Immigration Service are complied with. The circulars follow:

DEPARTMENT OF COMMERCE AND LABOR,
IMMIGRATION SERVICE,
OFFICE OF THE COMMISSIONER,
NEW YORK, N. Y., June 10, 1909.
TO ALL STEAMSHIP LINES BRINGING ALIENS TO THE
PORT OF NEW YORK:

In certain rare instances the Department of Commerce and Labor may hold that special reasons exist why an alien afflicted with tuberculosis, or a loathsome or dangerous contagious disease, should be allowed to land solely for the purpose of receiving medical treatment in the United States. But any steamship company which contemplates bringing an alien to the port of New York for such purpose must, if it desires to avoid incurring the fine of \$100 referred to in section 9 of the Immigration Law, apply to the Department for permission in advance of its proposed action. Such application must be made through the Commissioner of Immigration at Ellis Island, and as a part thereof there must be stated with precision the precautions which will be taken to isolate the diseased alien on the voyage and to prevent the spread of contagion amongst the other passengers. Unless satisfactory assurances accompany the application, it will be futile to make it, and if assurances be given which are not carried out, the fine of \$100 will be imposed, even though the Department, for humanitarian reasons, may decide that the alien should be allowed to land and receive treatment.

WILLIAM WILLIAMS, Commissioner.

NOTICE CONCERNING INDIGENT IMMIGRANTS.

NEW YORK, N. Y., June 28, 1909.

Certain steamship companies are bringing to this port many immigrants whose funds are manifestly inadequate for their proper support until such time as they are likely to obtain profitable employment. Such action is improper and must cease. In the absence of a statutory provision no hard and fast rule can be laid down as to the amount of money an immigrant must bring with him, but in most cases it will be unsafe for immigrants to arrive with less than \$25 (besides railroad ticket to destination), while in many instances they should have more. They must in addition, of course, satisfy the authorities that they will not become charges either on public or private charity.

Only in instances deemed by the Government to be of exceptional merit will gifts to destitute immigrants after arrival be considered in determining whether or not they are qualified to land, for, except where such gifts are to those legally entitled to support (as to wives, minor children, etc.), the recipients stand here as objects of private charity, and our statutes do not contemplate that such aliens shall enter the country.

WILLIAM WILLIAMS, Commissioner.

Allen is Acquitted.

The trial of Charles P. Allen, of Empire, charged with the killing of Eugene H. Kingsley, on the night of June 12, 1909, was held in the court of the Second Judicial Circuit at Empire, before Judge Wesley M. Owen, on July 28 and 29. The case was given to the jury at 6.15 p. m., on the 29th, and at 11.50 p. m., a verdict of "not guilty" was returned.

LOST—In Empire, on Friday, July 30, a string of gold beads. A reward will be paid for its return to Miss Harriet Richardson, House 25, Empire, C. Z.

ANCON INSANE ASYLUM.

Additions to Ancon Hospital Wards for the Insane.

The steady increase in the number of inmates at the Ancon insane asylum has made an enlargement of the institution necessary. Plans have been prepared, approved, and the contract awarded, for two new wards for the male patients, a dining room, and attendants quarters. The asylum originally provided for 200 patients, but this number has been greatly exceeded. The supplementary wards will take care of 104 additional patients, making the total ward capacity of the institution, when the new improvements are completed, approximately 305.

The new buildings, with the exception of the attendants quarters, are to be located on the lower side of the Ancon road, opposite, but a little to the east of the present grounds, and only a few hundred feet distant from the new corral site. The attendants quarters will be built on the upper side of the road, adjacent to, and east of the fenced enclosure. Both ward buildings are to be of two stories, and in construction, the usual type of Commission architecture will be followed. Between the two buildings, and connected with them by a covered and screened passageway, will be a one-story building, part of which will be used as a dining room for the inmates, and the rest as an office and sleeping quarters for the head nurse.

Each of the ward buildings will be 78 feet long by 24 feet wide, and will have a 7½ foot veranda extending from both floors on the front and rear sides, and the outward end. There will be two stairways to each building, an end stairway for the ordinary use of patients and attendants, leading from the first to the second floor inside the veranda space, and an outside emergency stairway in front. Access to the latter stairway will be gained through doors opening on platforms extending from each floor. The upper dormitories will have 21 windows each, opening on the verandas, and two doors, one opening to the regular, and the other, to the emergency stairs. The lower dormitories have the same number of windows as the upper, with one door opening on the emergency stairs, and the other for passing out to the dining room. Each of the four dormitories will have room for 26 beds, and on each floor there will be a toilet room 10½ by 18¾ feet, containing two shower baths, and a linen room 10½ by 5½ feet, fitted with shelves.

The one-story building containing the dining room will be 60½ feet long, and 31½ feet wide, with a 7½ foot veranda in front. The dining room will be 40 feet long, 31½ feet wide, and will accommodate eight tables, around which 130 persons will be able to sit at one time. The office, and sleeping quarters for the head nurse, which will occupy one end of the building, will be identical in size, 15¾ by 14¾ feet. In addition, there will be a linen room, toilet, and shower bath, while a specially constructed drug cabinet will be installed on one side of the office.

The attendants quarters will be a one-story building, 95 feet long, and 20 feet wide, with a 5½ foot veranda in front. The

dormitory will have 16 windows, and provision has been made for 30 beds. There will also be two store rooms, each 7¾ by 8 feet in size, and a toilet room with shower baths in the rear. Entrance will be by a flight of steps at the end of the building looking toward the present grounds.

A type-17 house, for use of the physician in charge, located on a knoll in front of, and across the road from the asylum buildings, is now under construction, and will be completed within the next 10 days. The contract for erecting the new ward buildings, dining room, and attendants quarters was awarded, by the Quartermaster's Department, to Herman Bolten at \$5,484, the Commission furnishing all materials at the site, and the contractor providing all labor. The grounds surrounding the new ward buildings will be enclosed with a 9-foot wire fence, and it is contemplated to eventually construct a bridge over the road, thus connecting the old with the new reservation. The total number of buildings belonging to the institution, when the new ones are completed, will be 19.

On April 15, 1905, when the temporary hospital for the insane was opened at Miraflores, the list of patients numbered only 18. On October 24 and 25, 1907, when the transfer from Miraflores to the present site at Ancon took place, the number of the inmates had increased to 120. The greatest increase for any twelvemonth was during the fiscal year ending June 30, 1908, when an even 100 patients had been added. Of the 120 transferred from Miraflores, 73 were still at the asylum on June 30, 1909, while 47 had been discharged, or deported, or had died. Out of the number discharged, 10 recoveries were reported. The record of inmates at the close of each fiscal year since the asylum was organized, is as follows:

DATE.	Number.	Place.
June 30, 1905.....	28	Miraflores.
June 30, 1906.....	65	Miraflores.
June 30, 1907.....	79	Miraflores.
June 30, 1908.....	179	Ancon.
June 30, 1909.....	254	Ancon.

During the month of June, 1909, there were 21 admissions, and 10 discharges. The system of dividing the patients into classes, in vogue at the main hospital, is also employed at the asylum. These classes are known as 1, 2, 3, 4, and 7. Class 1 is confined to employes engaged for the Isthmian service in the United States, and there were none of these at the asylum on June 30. There were 29 patients belonging to Class 2, which included gold and silver men employed by the Commission on the Isthmus, both white and colored. There were 7 inmates included in Class 3, which applies to Panama railroad employes. Class 4 refers to pay patients, and included 142 inmates paid for by the Panama Government, 5 private pay cases, and 6 miscellaneous, a total of 153. Class 7 includes Zone charity patients, which numbered 65 at the end of June.

Under the "Taft Agreement," of December 3, 1904, the United States agreed to accept for treatment at hospitals to be established on the Isthmus, insane and leprosy persons, and the indigent sick of the Republic of Panama, when the request for admission was made through the proper official channel. Under this arrangement 142 persons were being cared for at the An-

con insane asylum on June 30, 1909, at the rate per day of 75 cents gold per capita. This amount covers medical treatment, care and subsistence, and the small quantity of clothing the patients require. A monthly report of these pay patients is made on a form furnished for the purpose by the Panama authorities, and settlement is made accordingly. Requests for admission of patients usually come only through the alcaldes of Panama and Colon, and the governors of the various provinces.

By far the greater number of the inmates are natives, either of the Republic of Panama, or of the West Indian islands. Some effort has been made to deport charity patients to the countries from which they came, but without much success. There was no difficulty in getting them off the Isthmus, but in most instances, the countries for which they were destined refused them entry. There have been some cases, however, where the countries have consented to the patient's return, even though domiciled here prior to February 26, 1904. Americans are sent back to the United States with as little delay as possible. The following table shows the nationality and sex of the asylum inmates, as of June 30, 1909:

Country.	Male.	Female.	Total.
Panama.....	26	35	56
Jamaica.....	51	30	86
Barbados.....	21	9	30
Martinique.....	9	7	16
Spain.....	14	1	15
Colombia.....	10	4	14
St. Lucia.....	3	4	7
St. Vincent.....	3		3
Venezuela.....		1	1
Guadeloupe.....	3	1	4
D. W. Indies.....	2		2
Antigua.....		1	1
Italy.....	1		1
Russia.....		1	1
China.....	1		1
England.....	1		1
Bolivia.....		1	1
Nassau.....	1		1
Grenada.....	2		2
Curacao.....		1	1
Trinidad.....	1		1
Nevis.....	1		1
Holland.....	1		1
Mexico.....	1		1
France.....		1	1
Greece.....	1		1
Ireland.....	1		1
Japan.....	1		1
Norway.....	1		1
United States.....	2		2
Total.....	157	97	254

There were 116 inmates that had been in the asylum for more than one year. Most of these cases show a chronic tendency, although some of the long-time patients eventually improve sufficiently to leave the asylum. The mildly insane are permitted to go about the grounds, the men being employed at cutting grass, and doing other odd jobs, while the women perform the rougher part of the laundry work. Last year the patients maintained a garden from which a fair crop of vegetables was raised. This year the climatic conditions have been unfavorable. The age of the inmates, according to decades, was as follows:

Age.	Number.
From 10 to 20 years.....	9
From 20 to 30 years.....	96
From 30 to 40 years.....	84
From 40 to 50 years.....	45
From 50 to 60 years.....	13
From 60 to 70 years.....	3
From 70 to 80 years.....	4
Total.....	254

The oldest inmate in the hospital, on June 30, was 80 years of age, and the youngest, 14.

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The Gatun Woman's Club has received a gift of 64 books for a children's library, from the Woman's Club of San Antonio, Texas. Among them are books of essays, poems, and standard story books for the older children; biographies, stories of adventure, and a number of fairy books for smaller readers. The library will be kept in the schoolhouse and opened twice a week for exchange of books, under the supervision of the president of the club or her assistant.

This is the second children's library to be opened by the women's clubs, the first having been established in Cristobal in 1908. In May of the present year, the Las Cascadas club donated a sum of money for the purchase of a library for the benefit of the children of the town. Several of the public schools have libraries, the money for the purchase of which has been raised by entertainments given by the children; there are also libraries in connection with the Protestant Sunday schools in Ancon and Panama.

The Ancon Woman's Club has purchased a number of books from the nurses' library at Ancon Hospital. A number of books have been donated and these, together with the purchase just made, increase the number of volumes to 300.

At a special meeting of the Pedro Miguel Woman's Club on Wednesday July 28, the following officers were elected to fill vacancies caused by removals from the Isthmus: Mrs. Walter Jennings, vice-president; Mrs. E. L. Brown, secretary; Mrs. Mark White, treasurer. The business meeting of the club will take place on the afternoon of August 4, when a full attendance is desired. The next social meeting is scheduled for August 11.

A board meeting of the Cristobal club was held at the call of the president, Mrs. H. J. Slifer, on Monday afternoon, July 26, when the work for the year was outlined and discussed. A calendar committee was appointed to prepare the year-book. The home department will hold a Christmas bazaar, early in the season, for the sale of inexpensive novelties for the holidays.

The first exhibit of the Cristobal Camera Club was opened at the Commission clubhouse in Cristobal, on Friday evening, July 23, and continued several days. Between 250 and 300 photographs were exhibited, and included views of the Isthmus from Taboga to Porto Bello. The Camera Club was organized in April, 1909. The executive committee is composed of the following members: Leroy E. Burdge, instructor and director; J. W. Dibrill, secretary; Wm. J. Owens, treasurer; Mrs. J. D. Williamson, Mrs. L. E. Burdge, M. J. Stickel, and L. B. Cundiff. The club has a membership of 79. Women are admitted free. Excursions to historical and interesting points on the Isthmus form the social feature of the club.

The semiannual meeting of the Isthmian Sunday School Association, with election of officers, was held in the Gorgona clubhouse on the afternoon of Sunday, July 18. Representatives from the twelve Sunday schools operated under the organization were present. The following officers were chosen:

S. H. Harrison, Corozal, president, (re-elected); J. C. Foreman, Empire, vice-president; L. C. Vannah, Corozal, secretary; H. McConaughey, Gorgona, treasurer. A teachers' training course will be instituted, and Mr. J. F. Warner of Culebra was selected to organize and superintend the work.

Mr. J. Wesley Holland, monologist and impersonator, gave an entertainment at the Cristobal clubhouse on Tuesday evening, August 3. Mr. Holland recently gave an evening's program in the dining room of the Commission hotel at Corozal, under the auspices of the Sunday school, which was largely attended.

PERSONAL.

Mr. Howard H. Jackson and Miss Aimee J. Moore were married at St. Luke's church, Ancon, at 4.30 p. m., on Saturday, July 31. The Rev. Wm. Cross officiated.

Obituary.

Joseph Hague, of New York City, died of heart disease at Empire on Tuesday, July 27, 1909. He was unmarried, had been on the Isthmus two months, and lived at Empire. His sister, Mrs. N. DuBois lives on Sherman Avenue, Fort Wadsworth, New York City.

Missing Men.

Information is desired in regard to the following men:

Anson A. Perley, of Troy, N. Y., who was last heard from at Hoboken, N. J.

George Edward Harvey, 20 years old, who left home March 10, 1909, stating he was going to Panama. His mother, Mrs. Francis Trip is anxious to locate him.

George J. Allen, who is believed to be employed on the Isthmus. His father has recently died, and his sister wishes to communicate with him.

Anyone having knowledge concerning any of these men is requested to communicate with the American Minister at Panama.

Entertainment at Ancon Lodge Hall.

The Rev. J. H. Holland will give a reading at the Ancon lodge hall, on Saturday evening, August 7, under the auspices of the Pacific Masonic Club. There will be no charge for admission, and a cordial invitation is extended to residents of Ancon and vicinity.

Independent Order of Panamanian Kangaroos.

Cristobal Court No. 8, Independent Order of Panamanian Kangaroos, held an entertainment and reception for its members, their families and friends, at the Cristobal Lodge Hall, on Friday evening, July 30. Entertainment was furnished by Mr. Richard Coleman, of Panama, assisted by various members and visitors. After refreshments had been served, the reception closed with an address on "Kangarooism," by L. D. Drake.

Oil Company Moves Office.

The local office of the Union Oil Company has been moved from the building, corner of Avenue A and Sixth street in the city of Panama, to the company's plant at Petrolia. A section of a portable building formerly at the Mount Hope plant has been brought across the Isthmus, and will be the new office quarters.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

The "College Girls Trio" a musical organization from Boston, brought to the Canal Zone by the Y. M. C. A., returned to the States on Friday, July 30. The company appeared before Isthmian audiences fourteen times, seven concerts being given in Commission clubhouses, and entertainments at Porto Bello, Gatun, Camp Elliott, Paraiso, Pedro Miguel, and Ancon. About three thousand people attended the concerts.

The next attraction that will be brought from the States will be the "Hearons Sisters." The company, consisting of four young ladies, will arrive about September 1, and will give a program made up of orchestra numbers, readings, violin solos, string quartet numbers, Japanese sketch, etc.

EMPIRE.

The Gorgona Dramatic Club will present at the Empire Y. M. C. A., on Tuesday evening, August 17, the three act farce comedy entitled "Captain Racket." Members, admission complimentary; general admission, 50 cents. Reserved seats will be on sale, Tuesday, August 10.

The July duck pin tournament resulted as follows: First high average, George Herring, 92.25; second high average, Frank Cohen, 90.25. Winner of tournament, G. E. Gustafson, 15 games; second place, F. L. Gorham, 13 games. Sixteen players were entered in the tournament, and each man played sixteen games.

The boys' department of the Empire and Culebra Y. M. C. As. made a trip to the Mandinga River, on Monday, July 26, and spent the day in fishing, swimming, and other outdoor sports. About thirty boys constituted the party, in charge of Secretaries Ludwig and Kramer.

Will any person finding a gold bead necklace please return same to the secretary of the Empire Y. M. C. A.

GORGONA.

The medals for the duck pin tournament have arrived and have been presented to the following:

First prizes—Gold medals: F. G. Swanson, H. A. McConaughey.

Second prizes—Silver medals: W. J. Humphreys, H. A. McConaughey.

Third prizes—Bronze medals: H. D. Burnham, Ray King.

The following medals has been presented to winners of the pool tournament: Gold medal—E. A. McInerney; silver medal—L. P. Robitoy; bronze medal—J. H. Reichard.

The game of indoor baseball between Culebra and Gorgona, Saturday night, July 31, resulted in a victory for Gorgona, the score being 16 to 21.

The Gorgona Dramatic Club will give a farce comedy in three acts entitled "Captain Racket," on August 14. The cast is as follows:

Capt. Robt. Racket, A. J. Sweet; Obadiah Dawson, D. E. Hayes; Timothy Tolman, F. M. Chelf; Mr. Dalroy, D. G. Hayes; Holson, Henry Snyder; Clarice, Mrs. Henry Snyder; Mrs. Tolman, Mrs. D. E. Hayes; Katy, Mrs. O. H. Kunce.

The Club will give entertainments as follows: Empire, August 17; Culebra, August 20; Camp Elliott, August 23; Cristobal, August 28. The Club expects to appear at Ancon also, but the date has not yet been decided on.

Concert by I. C. C. Band.

CULEBRA, C. Z.,

Sunday, August 8, 1909, at 5.30 p. m.

PROGRAM.

- 1 March—Second Conn.....Reeves
- 2 Selection—A Stubborn Cinderella.....Howard
- 3 Waltz—Die Grafenberger.....Gungl
- 4 Dance of the Nile Maidens.....Losey
- 5 Selection—The Merry Widow.....Lehar
(By request.)
- 6 { a—Anvil Chorus (by request).....Verdi
b—La, La, La.....Scotto
- 7 Porto Rican Dance—Rosita.....Missud
- 8 Selection—The Grand Mogul.....Luders
(By request.)
- 9 Medley—Glow Worm.....La Farge
- 10 March—Festal Day.....Roux

OLIVER KIMBALL, Director.

The next concert will be given at Cristobal, Wednesday, August 18.

Commissary Hours.

The hours during which commissaries are open are as follows:

- Cristobal, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.
- Culebra, 8 a. m. to 12.30 p. m.; 2.30 p. m. to 7 p. m.
- All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

OLD AND NEW GATUN.

Last Vestiges of Former Village Disappear as Operations Advance.

The last traces of the village of Gatun, as it existed when the Americans came to the Isthmus in 1904, are being wiped out, as the building of Gatun Dam advances. The office building along the old line of the Panama railroad was razed about the middle of July by the laborers who are stripping the ground in advance of the hydraulic fill, and the water in the fill is rapidly rising toward the houses in the negro settlement, between the storage piles and the old railroad station. This hamlet is within the limits of the Dam, and its site will eventually be covered. As the old village disappears, the new Gatun on the hills overlooking the site of the Dam and Locks grows larger. It is now one of the largest settlements in the Canal Zone.

The native village of Gatun was located on a peninsula formed by a big loop which the Chagres River formerly made at that place. It was a well known landing place for boats navigating the Chagres. At the time the surveys were made for the Harrison map, the village was protected by a fort located on the hill that rises to 120 feet above sea level just south of the spillway of Gatun Dam. On the Panama railroad map, published in 1855, Gatun is shown as a hamlet of about a hundred houses. The railroad station and a few shacks alongside it had also been erected at that time on the east bank of the river.

Dr. F. N. Otis in his Handbook of the Panama Railroad, written in 1861, says: "On the opposite shore of the river stands the ancient native town of Gatun, which is composed of forty or fifty huts of cane and palm, and situated on the edge of a broad savanna that extends back to a range of hills a mile or two distant. This place is worthy of mention as a point where, in the days by-gone, the bongo-loads of California travelers used to stop for refreshment on their way up the river; where 'eggs were then sold four for a dollar, and the rent for a hammock was two dollars a night.'"

In 1881, the French began operations at Gatun, setting dredges and excavators at work, and erecting a machine shop. A laborers' village was established, with quarters for five hundred men, and later, Gatun was made a residency.

When the Americans arrived in 1904, Gatun was the center of a comparatively large river trade. Bananas and other produce from the Gatun, Trinidad, and Chagres Rivers were brought there for transshipment by rail, and for sale. Once a week, a shipment of from seven to nine carloads of bananas was made, and on the shipping day, as many as a hundred cayucas would tie up at Gatun. The village on the island consisted of a dozen stores, a church, and seventy or more native huts. The negro settlement near the railroad station, known as the "Cite de Lesseps" numbered about 50 shacks, and there were nine other buildings near the station. The only vestiges of the French village were the negro shacks and one house constructed of French material, and later occupied as an office by the Americans.

The new Gatun commands a view of the Lock and Dam sites on the west, and on the north looks out toward Limon Bay, giving a glimpse of the shipping in the harbor and

the dredges at work in the north entrance to the Canal. In construction it is a typical Canal village. In addition to the hotel, post-office, office buildings, fire station, meeting hall, hospital, school and corral, it includes 25 family quarters for one family each; 24 quarters for four families; 11 bachelor quarters of 8 rooms each; 5 bachelor quarters of 24 rooms each; 33 barracks for laborers; 6 family quarters for laborers.

Stages of the Chagres.

Maximum height of Chagres River above mean sea-level for the week ending midnight Saturday, July 31, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gambosa.	Bohio.	Gatun (Canal).	Gatun (W. D.)
Height of low water ab. m. an sea-level, ft.	125	92	46	1	0	0
Maximum height ab. mean sea-level, feet:						
Sunday, July 25	127.0	93.9	49.7	7.5	3.6	3.1
Monday, July 26	128.6	94.9	50.4	6.7	3.0	2.5
Tuesday, July 27	128.4	94.8	50.2	7.7	3.0	2.7
Wednesday, July 28	127.2	94.2	50.0	8.3	3.5	3.1
Thursday, July 29	127.5	94.1	49.3	7.2	3.5	3.1
Friday, July 30	129.6	95.4	50.6	7.7	3.2	2.4
Saturday, July 31	133.4	98.0	53.8	11.0	4.5	3.8

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 11, 1909 (75th meridian time):

DATE.	Low.		High.	
	A. M.	P. M.	A. M.	P. M.
August 5	.....	6.04	12.23	6.28
August 6	12.37	6.50	1.15	7.11
August 7	1.32	7.39	2.01	8.07
August 8	2.26	8.30	2.57	8.58
August 9	3.19	9.26	3.56	10.01
August 10	4.23	10.29	5.02	11.14
August 11	5.31	11.40	6.11	.....

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Rainfall, July 1 to 31, 1909, Inclusive.
(MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Atlantic Division</i> —			
Cristobal	2.30	16	12.83
Brazos Brook	1.65	16	12.23
Gatun	1.90	15	11.46
Bohio	1.34	22	11.07
<i>Central Division</i> —			
Tabernilla	2.41	20	10.78
San Pablo	1.85	15	10.63
Gorgona	3.86	16	11.16
Gambosa	2.17	15	11.59
Empire	2.23	20	8.27
Camacho	2.41	20	8.68
Culebra	2.29	20	7.95
<i>Pacific Division</i> —			
Rio Grande	1.99	20	8.13
Pedro Miguel	1.95	20	9.19
Balboa	3.51	10	14.92
Ancon	2.13	10	9.01
<i>Atlantic Coast</i> —			
Porto Bello	3.21	15	26.33
Nombre de Dios (July 1 to 24)	4.37	11	15.03
<i>Upper Chagres</i> —			
El Vigia	2.57	20	14.09
Alhajuela	2.32	20	13.64

The following steamers have recently arrived at Balboa: July 25, *Ecuador*, from Guayaquil; July 26, *Limari*, from Southern ports; July 28, *Quito*, from intermediate ports; July 29, *Washtenaw*, from Port Harford, Cal. Departures were: July 25, *Barracoula*, for Central America; July 27, *Aysen*, for Southern ports; July 30, *Washtenaw*, for Port Harford, Cal.

OFFICIAL CIRCULARS.

Shipments to Employees.

CULEBRA, C. Z., July 27, 1909.

CIRCULAR No. 186E:

In future, the instructions on Form 164 C. E., Revised, respecting the entry free of customs duty of shipments consigned to employees, will be strictly enforced.

Employees who receive shipments without having previously presented a formal request for their free admission on Form 164 C. E., may leave them in the hands of the transportation company until a request on that form is approved by the Panama Government, but if duty is paid on them, either by the employee or the transportation company, the Panama Government will not be asked to make a refund.

GEORGE W. GOETHALS,
Chairman and Chief Engineer.

Longevity Increases.

CULEBRA, C. Z., July 26, 1909.

CIRCULAR No. 258A:

The rate per cent of longevity increases allowed to any employee of the Commission as of June 30, 1909, will be allowed him in any position to which he may after June 30, 1909, be assigned by change of status or transfer, so long as his service remains continuous in positions heretofore carrying longevity.

GEORGE W. GOETHALS,
Chairman and Chief Engineer.

Acting Executive Secretary.

DEPARTMENT OF CIVIL ADMINISTRATION,
ANCON, C. Z., July 27, 1909.

EXECUTIVE OFFICE CIRCULAR No. 88:

During the absence on leave of Mr. H. D. Reed, Executive Secretary, Mr. George A. Ninas is designated Acting Executive Secretary.

JO C. S. BLACKBURN,
Head of Department of Civil Administration.

Proposals for Buildings.

Contract buildings. Sealed proposals, for labor only, will be received at the office of the Constructing Quartermaster, Culebra, until 3 p. m., August 4, 1909, and then opened, for the erection by contract of a schoolhouse and a market at Gatun. Plans and specifications can be obtained from the Constructing Quartermaster by making a deposit of \$5. Fifty dollars must be deposited with the proposal and \$200 when the contract is signed.

C. A. DEVOL,
Chief Quartermaster.

Supplies for Canal Work.

The following steamers arrived at the ports of Cristobal and Colon during the week ending July 31, with supplies for the Isthmian Canal Commission:

Panama, July 25, from New York, with 180 kegs track bolts; 128 rolls wire netting; 170 kegs rivets; 56 ranges; 1,000 garbage cans; 3,000 barrels cement; for stock; 137 steel forms for Pacific Division; 200 tower knuckles for Division of Motive Power and Machinery; and a miscellaneous cargo aggregating 5,809 packages, weighing 940 tons.

Prinz Aug. Wilhelm, July 27, from New York, with 2,000 gallons cylinder oil, 100 barrels flour; 6,000 pounds sal soda, for stock; and a miscellaneous cargo aggregating 205 packages, weighing 23 tons.

Mercian, July 28, from Liverpool, with 250 barrels carbolic acid for manufacture of larvacide.

Abangarez, July 29, from New Orleans, with 12 cables for unloaders; 7 cables for steam shovels; 40 cases steel for drills at Porto Bello; 11,385 feet B. M. lumber for car repairs; 15,450 gallons kerosene oil; 18,603 feet B. M. lumber; 50 sets dump cart harness; 76½ tons hay; 55 reels wire rope; 2,500 gallons dynamo oil; 3 packages pipe fittings, for stock.

Ancon, July 31, from New York, with \$7,144 bags cement for Pacific Division; 21,348 barrels cement for Atlantic Division.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., August 4, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

- | | |
|---------------------|-------------------------|
| Bettley, Mrs. W. J. | Leonard, Corp'l Jos. J. |
| Brown, John | MacGiagan, Mr. |
| Corpus, John D. | Matthews, Robert |
| Downs, Sylvester | Miller, M. N. |
| Finley, Mrs. C. M. | Narcross, Dr. D. N. |
| Hak, Nosirul | Remer, Eugene |
| Heald, Paul | Riddick, W. M. |
| Jackson, William | Ryan, Thomas |
| Jaspe, M. A. | Smith, H. G. |
| Johnson, J. H. | Stewart, George |
| Keator, E. O. | Trell, John |
| Lambert, W. R. | Wilson, Chas. A. |

CANAL DIRECTORY.

ISTHMIAN CANAL COMMISSION.

Lieut.-Col. Geo. W. Goethals, U. S. A.,
Chairman, Culebra.
Lieut.-Col. H. F. Hodges, U. S. A., Culebra.
Lieut.-Col. D. D. Gaillard, U. S. A., Empire.
Maj. Wm. L. Sibert, U. S. A., Gatun.
Civil Engineer H. H. Rousseau, U. S. N.,
Culebra.
Mr. Jo C. S. Blackburn, Ancon.
Col. W. C. Gorgas, U. S. A., Ancon.
Mr. Joseph Bucklin Bishop,
Secretary, Ancon.

DEPARTMENTS.

Construction and Engineering.

Headquarters, Culebra.
Lieut.-Col. Geo. W. Goethals, Chairman
and Chief Engineer.
William Howard May, Secretary to the
Chairman.
M. E. DePutron, Assistant to the Chairman.
C. A. McIlvaine, Chief Clerk.
John K. Baxter, Assistant Chief Clerk.
H. S. Farish, Surveying Officer.
Caleb M. Saville, Assistant Engineer.
Lieut.-Col. H. F. Hodges, Assistant Chief
Engineer.
C. O. Carlson, Secretary.
Edward Schildhauer, Electrical and Mechanical
Engineer.
Henry Goldmark, L. D. Cornish, H. F. Tucker
T. B. Mönliche, Edward C. Sherman, De-
signing Engineers.
Civil Engineer H. H. Rousseau, Assistant
to the Chief Engineer.
J. C. Parsons, Secretary.
A. B. Nichols, Office Engineer.

Central Division.

Headquarters, Empire.
Lieut.-Col. D. D. Gaillard, Division Engi-
neer.
Louis K. Rourke, Assistant Division Engineer.
A. E. Bronk, Chief Clerk.
A. S. Zinn, Resident Engineer.
Mark W. Tenny, Assistant Engineer.
R. W. Hebard, Assistant Engineer.
W. L. Thompson, Assistant Engineer.
Geo. H. Ruggles, Assistant Engineer.
Fred A. Potts, Assistant Engineer.

Atlantic Division.

Headquarters, Gatun.
Maj. Wm. L. Sibert, Division Engineer.
Maj. Chester Harding, U. S. A., Assistant Divi-
sion Engineer.
R. M. Sands, Chief Clerk.
Maj. Edgar Jadwin, U. S. A., Resident Engineer.
Maj. J. P. Jervey, U. S. A., Resident Engineer.
Capt. G. M. Hoffman, U. S. A., Assistant En-
gineer.
Capt. Horton W. Stickle, U. S. A., Assistant En-
gineer.
L. G. Thom, Assistant Engineer.
F. C. Stanton, Assistant Engineer.
R. B. Smith, Superintendent of Dredging.

Pacific Division.

Headquarters, Corozal.
S. B. Williamson, Division Engineer.
John M. G. Watt, Assistant Division Engineer.
J. C. Keller, Chief Clerk.
W. G. Comber, Resident Engineer.
A. I. Campbell, Resident Engineer.
H. O. Cole, Assistant Engineer (Office).
Wm. F. M. Acheson, Assistant Engineer.
James MacFarlane, Superintendent of Dredging.

Mechanical Division.

Headquarters, Culebra.
Geo. D. Brooke, Superintendent of Motive
Power and Machinery.
F. W. Doty, Chief Clerk.
Earle J. Banta, Mechanical Engineer.
A. L. Robinson, Electrical Engineer, and Mas-
ter Mechanic, Gorgona Shops.
W. O. Johnson, Master Mechanic, Empire
Shops.

Subsistence.

Headquarters, Cristobal.
Maj. Eugene T. Wilson, U. S. A., Subsistence
Officer.
Lieut. Frank O. Whitlock, U. S. A., Assistant
Subsistence Officer.
W. F. Shipley, Chief Clerk.

Quartermaster's.

Headquarters, Culebra.
Maj. C. A. Devol, U. S. A., Chief Quarter-
master.
Lieut. R. E. Wood, U. S. A., Assistant Chief
Quartermaster.
Lieut. Walter D. Smith, U. S. A., Constructing
Quartermaster.
C. H. Mann, Chief Clerk.
Capt. Courtland Nixon, U. S. A., Depot Quar-
termaster, Mount Hope.
Wm. H. Macfarlane, Inspector of Construction
and Repairs.
C. L. Parker, C. C. McColley, Inspectors.

District Quartermasters.

B. C. Poole, Ancon and Balboa.
C. E. Heisey, Bas Obispo.
A. R. Bennett, Corozal.
Ira A. Giles, Cristobal.
John M. King, Culebra.
Walter G. Ross, (acting), Empire.
R. M. Gamble, Gatun.
R. C. Shady, Gorgona.
J. B. Jeffries, Las Cascadas.
Roy R. Watson, Pedro Miguel and Paraiso.
M. D. Smith, Porto Bello.
J. H. Humphrey, San Pablo and Tabernilla.

Civil Administration.

Headquarters, Ancon.
Jo C. S. Blackburn, Head of the Department.
H. D. Reed, Executive Secretary.
G. A. Ninas, Chief Clerk.
Tom M. Cooke, Chief, Division of Posts, Cus-
toms and Revenues, Ancon.
Herman A. Gudger, Deputy Collector, Ancon.
E. Lewis Baker, Deputy Collector, Cristobal.
George M. Shontz, Prosecuting Attorney, Ancon.
Grosvenor A. Porter, Chief of Police, Ancon.
D. E. McDonald, Chief Clerk.
C. E. Weidman, Fire Chief, Cristobal.
Geo. L. Campen, Supt of Public Works, Ancon.
C. R. Sargent, Chief Clerk.
J. J. Reidy, Asst. Supt. Public Works, Cristobal.
H. L. Smith, Superintendent of Schools, Ancon.
Edgar P. Beck, Treasurer of Canal Zone, Empire

Canal Zone Judiciary.

Headquarters, Ancon.
Supreme Court—H. A. Gudger, Chief Justice.
Walter Emery, Clerk, Ancon.
Lorin C. Collins, Associate Justice, Cristobal.
Wesley M. Owen, Associate Justice, Empire.
Circuit Court, First Circuit—H. A. Gudger,
Judge, Ancon.
Walter Emery, Clerk.
Circuit Court, Second Circuit—Wesley M. Owen,
Judge, Empire.
Elbert M. Goolsby, Clerk.
Circuit Court, Third Circuit—Lorin C. Collins,
Judge, Cristobal.
Nelson R. Johnson, Clerk.
M. C. Reddell, Senior District Judge, Cristobal.
S. E. Blackburn, District Judge, Ancon.
Edgar S. Garrison, District Judge, Empire.
J. B. March, District Judge, Gorgona.
Thomas E. Brown, Jr., District Judge, Cristobal.

Law.

Headquarters, Washington, D. C.,
Richard Reid Rogers, General Counsel,
Washington, D. C.
George M. Shontz, Attorney for Isthmian Canal
Commission and Panama Railroad Company,
Ancon.
George H. Bartholomew, Assistant Attorney.

Sanitation.

Headquarters, Ancon.
Col. W. C. Gorgas, Chief Sanitary Officer.
Lieut.-Col. John L. Phillips, U. S. A., Assistant
Chief Sanitary Officer.
Capt. Robert E. Noble, U. S. A., General In-
spector.
Harry E. Bovay, Chief Clerk.
H. R. Carter, Director of Hospitals, Ancon.
Maj. Charles F. Mason, U. S. A., Superin-
tendent Ancon Hospital, Ancon.
Surgeon J. F. Leys, U. S. N., Superintendent
Colon Hospital, Cristobal.
Surgeon, J. C. Perry, P. H. and M. H. S., Chief
Quarantine Officer, Ancon.
Surgeon Claude C. Pierce, P. H. and M. H. S.
Quarantine Officer, Colon.
Dr. Fleetwood Gruver, P. H. and M. H. S., Quar-
antine Officer, Panama.
Joseph A. LePrince, Chief Sanitary Inspector,
Ancon.
Dr. A. E. Mayner, Acting Health Officer, Pan-
ama.
Dr. M. E. Connor, Health Officer, Colon.
C. J. Stockelberg, Superintendent of Plum-
bing, Culebra.

Disbursements.

Headquarters, Empire.
Edward J. Williams, Disbursing Officer.
Wm. M. Wood, Assistant Disbursing Officer.

Examination of Accounts.

Headquarters, Empire.
W. W. Warwick, Examiner of Accounts.
T. L. Clear, Assistant Examiner of Accounts.

Purchasing Department.

Headquarters, Washington, D. C.
Capt. F. C. Boggs, U. S. A., General Pur-
chasing Officer.
C. E. Dole, Chief Clerk.
Capt. Courtland Nixon, Purchasing Agent on
the Isthmus.
Maj. Wendell L. Simpson, U. S. A., Purchas-
ing Agent, 24 State Street, New York City.
F. C. Nordsiek, Assistant Purchasing Agent, 24
State Street, New York City.
Lieut.-Col. Geo. B. Davis, U. S. A., Assistant
Purchasing Agent, Custom House, New
Orleans, La.

Panama Railroad Company.

Headquarters, Colon.
(New York office, 24 State Street.)
H. J. Slifer, General Manager, Colon.
G. E. Geer, Assistant to the General Manager.
R. Fudd, Chief Engineer.
J. A. Smith, Superintendent.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Pan-
ama Railroad Steamship Company, of the Royal Mail
Steam Packet Company, of the Hamburg-American
Line, and of the United Fruit Company's Line, the
Panama Railroad Company's dates being subject to
change:

NEW YORK TO COLON.

Allianca.....	P. R. R. Friday	.....	July 30
Prinz Joachim.....	H. A.	Saturday.....	July 31
Colon.....	P. R. R. Tuesday	.....	Aug. 5
Cristobal.....	P. R. R. Friday	.....	Aug. 6
Thames.....	R. M.	Saturday.....	Aug. 7
Panama.....	P. R. R. Wednesday	.....	Aug. 11
Prinz Aug. Wilhelm.....	H. A.	Saturday.....	Aug. 14
Advance.....	P. R. R. Tuesday	.....	Aug. 17
Ancon.....	P. R. R. Thursday	.....	Aug. 19
Magdalena.....	R. M.	Saturday.....	Aug. 21
Allianca.....	P. R. R. Monday	.....	Aug. 23
Prinz Joachim.....	H. A.	Saturday.....	Aug. 28
Colon.....	P. R. R. Saturday	.....	Aug. 28
Cristobal.....	P. R. R. Thursday	.....	Sept. 2

Persons desiring to meet steamers at Cristobal
should apply in advance of arrival at the Customs
office, room 8, building No. 1, Cristobal, for customs
line permits, which are necessary to obtain admit-
tance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and
Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Panama.....	P. R. R. Friday	.....	July 30
Prinz Aug. Wilhelm.....	H. A.	Tuesday.....	Aug. 3
Advance.....	P. R. R. Thursday	.....	Aug. 5
Ancon.....	P. R. R. Friday	.....	Aug. 8
Allianca.....	P. R. R. Wednesday	.....	Aug. 11
Magdalena.....	R. M.	Wednesday.....	Aug. 11
Colon.....	P. R. R. Tuesday	.....	Aug. 17
Prinz Joachim.....	H. A.	Tuesday.....	Aug. 17
Cristobal.....	P. R. R. Thursday	.....	Aug. 19
Panama.....	P. R. R. Monday	.....	Aug. 23
Orinoco.....	R. M.	Wednesday.....	Aug. 25
Advance.....	P. R. R. Saturday	.....	Aug. 28
Prinz Aug. Wilhelm.....	H. A.	Tuesday.....	Aug. 31
Ancon.....	P. R. R. Thursday	.....	Sept. 2

NEW ORLEANS TO COLON.

Parismina.....	U.F.C.	Saturday.....	July 31
Turrialba.....	U.F.C.	Saturday.....	Aug. 7
Abangarez.....	U.F.C.	Saturday.....	Aug. 14
Parismina.....	U.F.C.	Saturday.....	Aug. 21
Turrialba.....	U.F.C.	Saturday.....	Aug. 28

COLON TO NEW ORLEANS.

Ahangarez.....	U.F.C.	Tuesday.....	Aug. 3
Parismina.....	U.F.C.	Tuesday.....	Aug. 10
Turrialba.....	U.F.C.	Tuesday.....	Aug. 17
Ahangarez.....	U.F.C.	Tuesday.....	Aug. 24
Parismina.....	U.F.C.	Tuesday.....	Aug. 31

COLON TO BARBADOS, CALLING AT TRINIDAD.

Clyde.....	R. M.	Tuesday.....	Aug. 3
Thames.....	R. M.	Tuesday.....	Aug. 17

Sailings of the French line (Cie. Générale Trans-
atlantique) for Venezuela ports, Martinique and
Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line will be as
follows: *Cuban* for New Orleans, via Kingston, Ja.,
on or about August 9.

The steamer *David* of the National Navigation
Company, will leave Panama, for David, province
of Chiriqui, and intermediate points, on Thursday,
August 5.

CANAL



RECORD

Volume II.

ANCON, CANAL ZONE, WEDNESDAY, AUGUST 11, 1909.

No. 50.

The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Canal Medals.

A letter from the Washington office of the Commission states that the first of the Canal medals will be ready for distribution late in August, or early in September.

Canal Work in July.

The grand total of Canal excavation during the month of July was 2,843,260 cubic yards, which is 52,533 cubic yards less than the total for June, and 1,037,077 less than the highest record, that of March, 1909. Of the 2,843,260 cubic yards, 2,792,477 were charged to "Work" construction and 50,783 to "Plant." The amount removed from the Canal prism was 2,779,559 cubic yards. There were taken out by steam shovels 1,684,663 and by dredges 1,107,814 cubic yards. There were 26 working days during the month, the same as in June. The mean rainfall for the month in the territory in which excavation was in progress was 10.66 inches as compared with 11.85 inches the previous month.

In the Atlantic Division the total excavation was 469,887 cubic yards, 124,775 more than were removed in June. Of this total 121,436 cubic yards were removed by steam shovels and 348,451 by dredges. In addition to the latter amount the dredges in this division worked in deepening the channel and approaches to the docks of the Panama Railroad Steamship Company at Cristobal, which is not counted as Canal excavation. There were 6,330 cubic yards of concrete laid in the spillway during the month.

The total excavation in the Central Division was 1,443,094 cubic yards, 77,881 less than were removed in June. Of this total 1,195,173 cubic yards were taken from the Culebra Cut, 233,897 from the Canal prism elsewhere than in the Cut, and 5,655 from the Obispo Diversion, which is outside the Canal prism.

In the Pacific Division the total excavation was 930,279 cubic yards, 99,427 less than were removed in June. Of this total

121,239 were removed by steam shovels and 759,363 by dredges.

The detailed statement of excavation in the three divisions follows:

ATLANTIC DIVISION.

LOCALITY.	"Work." Excavation.	"Plant." Excavation.	Total excavation
	cu. yds.	cu. yds.	cu. yds.
Dry excavation—			
Locks, Dam and Spillway.....	39,058		39,058
Mindi.....	82,378		82,378
Total.....	121,436		121,436
Wet excavation—			
Atlantic entrance.....	348,451		348,451
Locks, Dam and Spillway.....			
Total.....	348,451		348,451
Total wet and dry excavation.....	469,887		469,887

CENTRAL DIVISION.

All dry excavation—			
Culebra Cut.....	1,195,173	2,712	1,197,885
Chagres section.....	233,897	5,657	239,554
Obispo Diversion.....	5,655		5,655
Total.....	1,434,725	8,369	1,443,094

PACIFIC DIVISION.

Dry excavation—			
Locks, Dams and Spillway.....	121,239	42,414	163,653
Diversions.....	7,263		7,263
Total.....	128,502	42,414	170,916
Wet excavation—			
Pacific entrance.....	733,181		733,181
Miraflores Locks.....	26,182		26,182
Diversions.....			
Total.....	759,363	42,414	759,363
Total wet and dry excavation.....	887,865	42,414	930,279

TOTAL CANAL EXCAVATION.

Dry excavation.....	1,684,663	50,783	1,735,446
Wet excavation.....	1,107,814		1,107,814
Total.....	2,792,477	50,783	2,843,260

Mean rainfall along Canal (twelve stations) 10.66 inches.

By "Work" Excavation is meant excavation actually made for one of the constituent parts of the Canal, such as Prism, Diversions, or Locks, etc.; that is, it represents material taken from the area to be occupied by the Canal, and constitutes excavation useful for the completed Canal.

By "Plant" Excavation is meant excavation outside of any of the constituent parts of the Canal, such as Prism, Diversions, or Locks, etc. It includes material necessary to be excavated for construction purposes only and is chargeable against the particular plant item for which it is performed, such as Prism, Diversions, Locks, etc.

New Bread Ovens at Cristobal Bakery.

The ovens recently installed at the Cristobal bakery for the baking of French, Vienna, or rye bread were built by the Dnlrkoop Oven Company, of New York City, and are being operated at their full daily capacity with satisfactory results. The brick-work is 17½ feet wide, 32½ feet long, 8½ feet high, and rests upon a solid concrete base level with the second floor of the bakery, supported by piers of reinforced concrete.

The ovens are faced with white enameled brick, the other sections being constructed of ordinary brick, painted white, and are equipped with two baking chambers, 12½ by 14 feet in size, surrounded by five air-

tight chambers, which furnish an even distribution of heat. These chambers are in turn heated by a system of hot air flues which radiate from the furnace to various parts of the ovens. Steam from the power plant, used to prevent undue drying of the bread, and to give the Vienna loaves their familiar glossy appearance, is conveyed into the baking compartments by means of pipes.

The capacity of the new ovens is 740 loaves of French, or Vienna bread, at one baking. They are also largely used in the making of the native style of bread, 1,215 loaves of which can be handled at one time. It requires about 25 minutes for the baking process, so that the capacity for the entire day of eight hours is approximately 12,000 loaves of French, or Vienna bread, and about 19,500 loaves of the native bread. The French and Vienna bread is supplied to the commissaries and Commission hotels, while the native bread is furnished to the mess kitchens for European and West Indian laborers.

In addition to the new ovens, the two reel ovens which were placed in the plant when it was first established, are still turning out their day's quota of pan bread. They each have a capacity of 816 loaves at one baking, or a combined total of about 25,000 loaves per day.

New Public Market at Gatun.

A public market will be built at New Gatun, which will be practically of the same size and general appearance as the one at Cristobal. The building will be of lattice work construction, 16 feet long and 64 feet wide, surrounded by a cement walk, nine feet wide. There will be 16 stalls, each 8 by 8 feet in size. The openings will be provided with sliding doors, moving up and down. There are eight markets in the Canal Zone at the present time, the new one at Gatun making the ninth.

Money for Canal Construction.

The tariff act, which was approved by the President on August 5, authorizes a bond issue of \$290,569,000, in addition to the \$84,631,900 heretofore issued for Canal construction. The Urgent Deficiency Act approved the same day authorizes the President to enter into such contracts, not exceeding the amount of the bond issue authorized, as may be necessary to complete the Canal and harbors.

The act of June 28, 1902, authorizing the construction of an Isthmian Canal, provided for the issue of \$130,000,000 worth of bonds, and also limited the amount that could be appropriated for the Panama Canal to \$135,000,000, in addition to \$10,000,000 for preparatory work, \$40,000,000 for the property of the New Panama Canal Company, and a sum to be agreed upon to be paid to the Republic of Colombia. Under this authority there had been expended for Canal

NOTES OF PROGRESS.

(Continued.)

work up to May 31, 1909, \$104,177,884.86, and in addition, the \$40,000,000 had been paid to the New Panama Canal Company, and \$10,000,000 to the Republic of Panama, a total of \$154,177,884.86. The appropriations available up to June 30, 1909 amounted to \$176,332,468.58, and the amount appropriated for the current fiscal year is \$33,638,000. Expenditures for Canal work have been paid from bonds aggregating \$84,631,900, and money advanced from the miscellaneous funds of the Treasury.

The bond issue authorized by the law of August 5, 1909 brings the amount authorized for Canal work up to \$375,200,900. The amount estimated by the Commission in December, 1908, as necessary to complete the lock level canal, was \$375,201,000.

Recreation Hall at Corozal.

Plans have been prepared and approved for a recreation hall at Corozal, which will be a one-story building, 90 feet long, and 28 feet wide, with a small addition in the rear, 10 by 12 feet in size, to be used as a store room. The site has not been fully determined, but the committee in charge of the matter will recommend a location a short distance back of the Panama railroad station, on the Corozal-Panama wagon road.

The building will rest on wooden piers with concrete bases, and in order to secure more privacy, the floor will be five feet from the ground, instead of three feet, the regulation height. The hall plans follow the open pavilion style of construction, with walls extending only three feet from the floor, the rest of the space being merely screened in. There will be no veranda, and the roof will have a 10½-foot projection all around.

A section of the front end of the hall, 16 by 28 feet in size, will be partitioned off for use as a reception hall and sitting room. Two entrances, provided with folding doors, will open from this room into the assembly hall, at the far end of which will be a stage. The hall has a length of 55 feet to the stage and is 28 feet wide. The stage has a depth of 13 feet, and is three feet from the floor, with a row of footlights in front. Entrance to the hall from the outside will be through a doorway opening on a flight of steps. There will be a ladies' room at one side, back of the stage, and a kitchen on the opposite side. Entrance to these rooms will be gained either directly from the stage, or by steps leading up from the assembly hall to doors opening into them, one on each side of the stage. There will also be a doorway from the kitchen into the store room, which will have an outside entrance as well.

Triangulation Survey.

A triangulation survey of the Canal Zone has been authorized, and will be made by the Third Division of the Chief Engineer's office. The triangulation work already done at various points along the line of the Canal, will be utilized as far as possible. A series of triangles was run some time ago from Limon Bay to Gatun, another series from Panama Bay to Pedro Miguel, and some triangulation has been done in the territory of the Central Division. It is proposed to spread a primary net across the Isthmus, consisting of a series of triangles and quad-

rilaterals. From the lines thus established, a number of secondary points will be located at intervals along the Canal Zone.

Precise levels were run across the Isthmus in the summer of 1908. Final adjustment of these will be made about September 1, 1909, when a sufficient automatic tidal record will be available.

Soap Making at Ancon Laundry.

A soap making branch has been added to the Ancon laundry. Heretofore, the laundry has used white chipped soap imported in barrels, at a cost of about \$14.40 per barrel. Under the new arrangement tallow is produced from the meat scraps collected at the Ancon Hospital kitchen, to which is added caustic soda in the proportion of 30 pounds of soda to 90 pounds of grease. This mixture is placed in a vat over a steam coil and reduced to the proper gelatinous consistency. It is then run into other vats where water, double in quantity to that of the mixture, is added. The finished product when cooled becomes hard, and in color, perfectly white, making an excellent soap for white clothes. It has not yet been made into bars, but this will be done as soon as moulds are manufactured. The cost of installation was small, and with the present facilities it is possible to make 200 gallons of soap at one time, enough, not only to keep the laundry supplied, but to furnish the entire hospital demand as well. Concentrated lye can be used in lieu of caustic soda, but the latter is somewhat cheaper in price and better adapted to soap making. The value of the soap used at the laundry was formerly \$6 per day. Under the new arrangement, the quantity of soap used daily costs but \$1, representing a daily saving of \$5.

Changes at Ancon Laundry Plant.

The 90-horsepower locomotive type Nagel boiler, formerly a part of the motive equipment used by the old Division of Building Construction in the operation of its Ancon wood working plant, has been moved to the west side of Ancon laundry. In its former position, the boiler supplied steam for the laundry, but owing to loss in the pipes on account of condensation, a change in location was decided upon. The boiler also furnishes steam to the Ancon Laboratory, and for the operation of the Quartermaster's sawmill.

Colored Young Men's Institute.

The new rest house at Culebra for colored employes, mentioned in THE CANAL RECORD of July 7, will be known as the Colored Young Men's Institute, and is to be located on the west side of the Panama railroad, near the negro church. It will be a one-story frame building, 31½ feet long and 50 feet wide, and will contain a recreation room, 20 by 31½ feet in size, a billiard room, 15 by 20 feet, a reading room, 16 by 20 feet, and janitor's quarters consisting of two rooms with toilet. The furnishing of the building is provided for.

Additional Dump Cars.

One hundred new Western dump cars have arrived on the Isthmus, for use by the Atlantic and Pacific Divisions, and on the relocation of the Panama railroad. They will be erected at the Panama railroad shops in Cristobal. These cars are of the same type as the 200 recently delivered on the Isthmus, and embody the improvements

suggested by work on the Canal. Their rated capacity is 12 cubic yards, but for purposes of car measurement they are considered as 10-yard cars on the Canal work.

A New Larvacide.

In its work of destroying mosquito larvæ the Department of Sanitation has begun the manufacture of a larvacide and disinfectant which can be made at less cost than the patent "oil" or larvacide that is now used, and by actual test has been found more uniform in results than the preparation purchased in the States. The equipment for manufacture consists of a mixing tank containing a steam coil, a boiler for supplying steam, and a storage for chemicals. Crude carbolic is the base and it is mixed with water, caustic, and other chemicals which are dissolved in the steam heated tank. The cost of production including materials, fuel, and labor is about 16½ cents a gallon, as compared with from 30 to 40 cents paid for the larvacide purchased in the States. The new larvacide is applied by sprinkling over the surface of the water. It has the same advantage over oil as the larvacide now used, in that it mixes with the water and so cannot be blown over the surface.

Rise in Rio Grande Reservoir.

The first notable rise in the Rio Grande reservoir during the present rainy season resulted from the heavy rain in the afternoon of July 20, which extended practically over the entire watershed. The elevation of the surface of the water in the reservoir was 220.79 feet above sea-level in the forenoon of July 20, and on July 21 the water was at an elevation of 223.37 feet, an increase of 2.58 feet and of approximately 26,000,000 gallons. Heretofore during the season, although there have been frequent showers over the watershed, they have not been of sufficient extent to add materially to the height of water in the reservoir. There has been a slow rise, however, since June 18, when the elevation was 218.08 feet above sea-level, the lowest stage of the year. The low stages of all years in this reservoir since 1906 are as follows:

Date.	Elevation.
June 10, 1907.....	213.95
May 1, 1908.....	223.97
June 18, 1909.....	218.08

Removal of District Quartermaster's Office.

The office of the District Quartermaster at Cristobal has been moved from building No. 12, opposite the commissary, to building No. 304, in the same building with the Quartermaster's storehouse, about 300 yards south of the Cristobal commissary on the main line of the Panama railroad. The building formerly used by the District Quartermaster will be converted into family quarters.

Negro Laborers for Canal Work.

An order has been sent to the recruiting agent in Barbados to have 1,200 negro laborers ready to sail for the Isthmus on the cement ship *Ancon* which is scheduled to leave New York on August 19.

French Rail at Bohio.

More than two thousand 60-pound French rails have been picked up and stored along the bank of the Chagres River at and near Bohio. They have been collected for use in reinforcing the concrete in Gatun Locks.

COMMISSION ACTION.

Questions Determined at the Meeting on August 6.

At the meeting of the Isthmian Canal Commission on August 6, the following action was taken:

FAMILY QUARTERS OF EMPLOYEES ON LEAVE.

Family quarters may be held, with the approval of the Chairman, for the full period of any extended leave of absence with pay which may be granted to the employe to whom quarters are assigned; and that family quarters may be held for 56 days during the absence, either of the employe to whom they are assigned, or his family, or of both simultaneously, provided that this privilege shall not be granted for more than one period of 56 days in any service year. If vacated the second time during the service year either by the employe, his family, or both simultaneously, quarters will be held for not more than 42 days. This rule supersedes in part the rules governing the assignment of married quarters adopted by the Commission at its 130th meeting.

RULES FOR LEAVE OF ABSENCE.

It was decided that any employe whose resignation is accepted to take effect at the expiration of a leave of absence with pay, and who shall have completed two years satisfactory service on that date, may be paid for such leave, less seven days, regardless of where such leave may be spent. The resolution of the Commission adopted at its 129th meeting was amended accordingly.

The case of a clerk, who had been granted leave of absence for 42 days, and was prevented from reporting for duty within 15 days after the expiration of his leave owing to the delayed departure from New York, change in route so as to stop at Barbados, and detention in quarantine of the steamer *Cristobal*, was considered. It was decided that the case was not one which warranted an exception to the regulations, which provide:

Employes are expected to report for duty on the expiration of their authorized leave; the additional fifteen days, return within which will preserve their right to pay during leave, being intended to cover all contingencies, and not to be considered additional leave without pay.

PAY FOR OVERTIME WORK.

That, effective September 1, 1909, hourly employes who are citizens of the United States will be paid time and one-half for work over the eight hour day; all other hourly employes will be paid time and one-half for work over ten hours in one day. All hourly employes will be paid time and one-half for all work on Sundays and holidays.

NO HOLIDAY PAY FOR SILVER EMPLOYEES.

The Chairman called attention to the fact that, by resolution adopted by the Commission at its 118th meeting, American employes in skilled trade occupations and paid on an hourly basis were allowed pay for certain holidays, in accordance with the practice prevailing in the Government service of the United States with respect to employes similarly employed. By resolutions adopted by the Commission at its 129th meeting, this gratuity pay was extended to all employes, including laborers, whose compensation is fixed on an hourly basis.

After discussion, in which it was pointed out that the gratuity pay to hourly men on the silver roll alone amounts to about two

hundred and twenty thousand dollars per annum, the following resolution was adopted:

That hereafter all hourly employes on the so-called silver rolls, who are not citizens of the United States, will not be allowed gratuity pay for holidays. The resolution of the Commission adopted at its 129th meeting is amended accordingly.

Old Ruins in Cocoli Lake.

Standing out of the submerged area covered by Cocoli Lake, about 300 yards from the west toe of the Miraflores Dam, are the ruins of an old building, similar to the ruins of the church of Santo Domingo in Panama, and to those of the ancient cathedral in old Panama. The roof of the structure is entirely gone, but a portion of the walls still remains, reaching in some sections to a height of 15 or 18 feet. The building has the appearance outwardly of having been used as a monastery, and the people in the vicinity speak of it as such. Grape vines have been found on the lands adjacent to the ruins which have tended to this belief, as it is known that in the sixteenth century monks transplanted the vine from Spain, but with poor success. There is nothing in the ecclesiastical records of the bishopric of Panama to indicate that a monastery was ever established at this point, and Padre Antonio Sanguillen, the Presbyterian, states that he never heard of it during his long period of service here. Within comparatively recent times, the lands surrounding the ruins became the property of a Scotchman named Mackenzie, who, it is stated, set out the extensive grove of mango, orange, and other fruit trees, which the waters of Cocoli Lake have now partly submerged.

P. R. R. Steam Shovels.

The steam shovels at work on relocation of the Panama railroad are handicapped, so far as making high records is concerned, because they are doing pioneer work, and also because the equipment for hauling away the spoil has not been sufficient to work the shovels at their full capacity. A statement of the work performed by the steam shovels during the past nine months follows:

PERIOD.	Total output.		Average No. steam shovels.	No. of working days.	OUTPUT PER SHOVEL.	
	Cu. yds.	Cu. yd.			Per day.	Per month.
November, 1908....	37,625	2.92	24	537	12,885	
December, 1908....	43,137	2.77	26	600	15,591	
January, 1909.....	57,356	3.45	25	665	16,625	
February, 1909....	65,128	4.35	23	651	14,972	
March, 1909.....	66,381	3.41	27	722	19,467	
April, 1909.....	75,571	4.96	25	600	15,236	
May, 1909.....	91,577	4.01	25	912	22,809	
June, 1909.....	65,170	4.94	26	507	13,192	
July, 1909.....	108,017	4.92	26	844	21,955	

Removal of Sunken Lighter.

Ash lighter No. 4, of the Pacific Mail Steamship Company, was sunk on June 15 last, in the Canal channel at Balboa, parallel to, and about 50 feet away from caisson No. 5 of the angle wharf. The vessel was lying in 17 feet of water at low tide with one end buried in the mud, forming an obstruction to the prosecution of operations in the Canal prism. Under the Act of Congress, 30 days are allowed shipowners to remove sunken vessels that may have become a menace to navigation. The time having elapsed in the present instance, the Pacific Division undertook the work of raising the boat, which was successfully accomplished

on Wednesday, July 28. The boat was about 60 feet long, and had been in use for many years. Her plates were so badly rusted that they came away when subjected to the strain of the hawser, and in one of the vessel's water compartments growing oysters were found. The lighter was disposed of by towing it about 200 yards, and again sinking it near the Naos Island breakwater.

Col. J. R. Shaler.

THE CANAL RECORD:

There are a large number of old-time employes with the Panama Railroad Company, who from time to time, ask after Col. J. R. Shaler, who for a number of years was General Superintendent of the railroad company. We have just received the following information from Colonel Shaler's brother, and I would be obliged if you will kindly print it for the information of the various people with whom Colonel Shaler was associated in the past.

H. J. SLIFER.

Colon, August 6.

I write to thank you for the information you sent me as to my brother's connection with the Panama Railroad Company, and also, for the kind inquiries about him. He generally lives near me in Indianapolis, Ind., but just now is staying in Ocean City where I make my summer home. He suffers from sclerosis of the arteries, another name, I suppose, for old age, as he is in his 79th year. He is unable to walk without assistance, but is up and dressed every day, has a good appetite, sleeps well and seems cheerful. His memory, except for events in his early life, is entirely gone. His wife died on December 29th last; he did not know it at the time, and does not realize it now. Fortunately he is cheerful and is able to communicate his wishes to us generally, although at times it is difficult for him to do so.

I am told that he may live some time, but might at any time yield to some ailment that, except for his age and condition, would be trifling.

Postal Employes Meet.

The postal employes of the Canal Zone to the number of 46 held a reunion at Ancon on Sunday, August 8. All of the 17 Canal Zone postmasters and postmistresses were present, with one exception, that of the postmistress at Porto Bello. Before the gathering broke up the members of the party were grouped in front of the court of the new Administration building at Ancon and photographed.

Gamboa Engine House and Yard.

Work was started on Monday, August 9, on the new engine house and yard to be located on the Gamboa dump, about 1,000 feet east of the Gamboa bridge. The contract for the construction of the engine house, oil house, cinder pit, and coaling platform has been awarded to James Wilson, who is to furnish all labor, and the Commission all material.

The steamer *Cristobal*, made its first voyage from Colon to New York in 6 days and 15 hours. It left Colon on July 15.

Tug Service Porto Bello and Nombre de Dios

Effective, August 8, 1909: The following is the schedule for tug service between Cristobal, Porto Bello and Nombre de Dios:

Sunday: Leave Dock 13, Cristobal, 6.30 p. m. for Porto Bello only; returning same day.

Monday: Leave Dock 13, Cristobal, after arrival of Train 2, for Porto Bello and Nombre de Dios; returning same day.

Tuesday: Leave Dock 13, Cristobal, after arrival of Train 2, without tow, for Porto Bello only; returning, leave Porto Bello 2.15 p. m., without tow.

Wednesday: Leave Dock 13, Cristobal, after arrival of Train 2, for Porto Bello and Nombre de Dios; returning same day.

Friday: Leave Dock 13, Cristobal, after arrival of Train 2, for Porto Bello and Nombre de Dios; returning same day.

Saturday: Leave Dock 13, Cristobal, after arrival of Train 2, for Porto Bello only; returning, leave Porto Bello 5.30 p. m.

RECORD OF EXCAVATION SINCE AMERICAN OCCUPATION.
MONTHLY TOTALS BY CUBIC YARDS, PLACE MEASUREMENT.

ATLANTIC DIVISION.

COLON—STREAM SHOVELS.

Months.	1907*		1908*		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	62,835	45,664	62,835	45,664	62,835	45,664
February.....	65,632	46,046	65,632	46,046	65,632	46,046
March.....	81,850	70,713	81,850	70,713	81,850	70,713
April.....	67,436	74,368	67,436	74,368	67,436	74,368
May.....	54,333	71,407	54,333	71,407	54,333	71,407
June.....	54,332	80,101	54,332	80,101	54,332	80,101
July.....	731	82,378	731	82,378	731	82,378
August.....	15,257	16,309	15,257	16,309	15,257	16,309
September.....	28,837	32,112	28,837	32,112	28,837	32,112
October.....	41,078	45,475	41,078	45,475	41,078	45,475
November.....	40,003	47,183	40,003	47,183	40,003	47,183
December.....	46,945	62,253	46,945	62,253	46,945	62,253
Totals.....	172,851	590,955	172,851	590,955	172,851	590,955

Total to August 1, 1909—1,234,433 cubic yards.
*No work done outside of Canal Prism

COLON—DREDGES.

Months.	1907		1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	111,100	44,403	44,403	46,298	521,050	21,050
February.....	110,002	25,835	401,887	46,298	444,910	46,298
March.....	84,145	31,663	515,223	31,663	461,208	461,208
April.....	69,889	496,366	496,366	470,635	470,635	470,635
May.....	133,847	564,386	564,386	315,370	315,370	315,370
June.....	17,000	107,118	572,749	182,570	182,570	182,570
July.....	104,322	5,127	625,497	638,217	348,451	348,451
August.....	189,170	5,127	638,217	638,217	638,217	638,217
September.....	403,842	5,488	604,776	604,776	604,776	604,776
October.....	409,632	5,500	570,832	570,832	570,832	570,832
November.....	417,297	14,782	679,604	679,604	679,604	679,604
December.....	428,053	652,598	6,639,200	103,796	103,796	103,796
Totals.....	1,969,316	652,598	6,639,200	103,796	2,744,199	2,744,199

Total to August 1, 1909—13,536,574 cubic yards.
In this total are included 39,820 cubic yards excavated in 1905, and 1,021,645 cubic yards in 1906. There were also 36,425 cubic yards removed by dredges at the Gatun dam site in 1907.

GATUN LOCKS, DAM AND SPILLWAY—STREAM SHOVELS.

Months.	1907		1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	47,539	193,567	193,567	98,588	69,001	33,689
February.....	70,177	176,291	176,291	106,506	61,819	33,212
March.....	100,151	202,763	202,763	171,835	59,598	30,453
April.....	103,489	196,109	196,109	177,347	58,088	11,921
May.....	70,528	138,815	138,815	127,932	48,198	4,588
June.....	71,181	116,998	116,998	127,983	28,943	7,613
July.....	59,537	136,816	136,816	76,543	36,098	2,960
August.....	78,357	26,866	130,263	57,999	10,710	.....
September.....	87,423	36,315	104,780	44,397	109,667	44,397
October.....	121,635	40,987	53,527	34,751	34,751	34,751
November.....	160,795	69,756	65,950	53,954	53,954	53,954
December.....	.....	.....	.....	.....	.....	.....
Totals.....	1,107,559	232,620	1,655,546	1,119,015	361,745	124,436

Total to August 1, 1909—4,627,549 cubic yards.
In this total are included 26,628 cubic yards excavated from the Canal prism October to December, 1906. In addition there were 488,533 cubic yards removed by dredges from Gatun locks in December, 1908, January, February, March, April, May, June and July, 1909.

CENTRAL DIVISION.

CULEBRA SECTION—STREAM SHOVELS.

Months.	1904		1905		1906		1907		1908		1909	
	From Canal Prism	Outside Canal Prism										
January.....	70,650	120,990	666,750	1,227,022	1,150,249	1,227,022	1,150,249	1,227,022	1,150,249	1,227,022	1,150,249	
February.....	75,200	139,410	639,112	1,248,265	1,194,454	1,248,265	1,194,454	1,248,265	1,194,454	1,248,265		
March.....	132,840	239,178	815,270	1,290,885	1,511,397	1,290,885	1,511,397	1,290,885	1,511,397	1,290,885		
April.....	126,749	213,177	879,527	1,242,574	1,291,844	1,242,574	1,291,844	1,242,574	1,291,844	1,242,574		
May.....	75,935	196,209	690,365	960,840	1,123,963	960,840	1,123,963	960,840	1,123,963	960,840		
June.....	76,905	212,623	624,586	1,134,032	1,242,134	1,134,032	1,242,134	1,134,032	1,242,134	1,134,032		
July.....	31,599	159,759	770,570	1,171,927	1,200,828	1,171,927	1,200,828	1,171,927	1,200,828	1,171,927		
August.....	35,056	244,823	786,866	1,171,927	1,200,828	1,171,927	1,200,828	1,171,927	1,200,828	1,171,927		
September.....	25,220	44,085	291,452	753,468	1,122,860	753,468	1,122,860	753,468	1,122,860	753,468		
October.....	19,695	327,009	834,499	1,160,101	1,160,101	834,499	1,160,101	834,499	1,160,101	834,499		
November.....	23,860	60,540	790,632	1,022,576	1,022,576	790,632	1,022,576	790,632	1,022,576	790,632		
December.....	42,935	307,689	1,025,485	1,210,046	1,210,046	1,025,485	1,210,046	1,025,485	1,210,046	1,210,046		
Totals.....	243,472	914,254	2,702,991	9,177,130	13,912,453	9,177,130	13,912,453	9,177,130	13,912,453	9,177,130		

Total to August 1, 1909—35,668,169 cubic yards.

CHAGRES SECTION—STREAM SHOVELS.

Months.	1907*		1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	169,447	389,399	389,399	450,182	450,182	450,182
February.....	200,145	324,233	324,233	490,922	490,922	490,922
March.....	329,483	386,170	386,170	275,900	275,900	275,900
April.....	322,145	235,857	235,857	1,873	1,873	1,873
May.....	368,810	346,948	346,948	424,911	424,911	424,911
June.....	21,946	25,627	25,627	386,390	386,390	386,390
July.....	44,094	356,980	356,980	88,652	88,652	88,652
August.....	98,652	192,769	3,786,119	1,873	2,769,161	2,769,161
September.....	.....	.....	.....	.....	.....	.....
October.....	.....	.....	.....	.....	.....	.....
November.....	.....	.....	.....	.....	.....	.....
December.....	.....	.....	.....	.....	.....	.....
Total.....	1,927,691	3,786,119	1,873	2,769,161	2,769,161	2,769,161

Total to August 1, 1909—6,749,922 cubic yards.
*No work done outside Canal prism.

CANAL EXCAVATION TO DATE.

By	Cu. Yds.
French Companies.....	50,527,088
By Americans—	31,170,890
Stream shovels.....	81,697,978
Dredges.....	243,472
Total.....	1,799,227
May 4 to December 31, 1904.....	4,948,497
January 1 to December 31, 1906.....	15,765,290
January 1 to December 31, 1907.....	37,070,887
January 1 to December 31, 1908.....	21,870,605

EXCAVATION IN TERRITORY OF PRESENT DIVISIONS

DIVISIONS.	Amount excavated, Cubic yards—Total.	
	Estimated amount yet to be excavated.	Total.
Atlantic.....	5,862,032	19,925,564
Dry excavation.....	14,063,532	3,699,879
Dredges, all dry excavation—	19,451,868	23,151,747
Culebra Cut.....	34,459,895	42,332,400
All other points.....	7,958,196	42,418,091
Pacific.....	2,246,965	3,683,615
Dry excavation.....	17,107,358	19,354,323
Dredges.....	.....	18,756,853
Grand totals.....	81,497,978	92,968,617

PACIFIC DIVISION.

PEDRO MIGUEL LOCKS—STREAM SHOVELS.

Months.	1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	83,726	83,726	83,726	83,726
February.....	57,138	57,138	57,138	57,138
March.....	93,261	93,261	93,261	93,261
April.....	101,365	101,365	101,365	101,365
May.....	57,523	57,523	57,523	57,523
June.....	6,396	6,396	6,396	6,396
July.....	18,964	18,964	18,964	18,964
August.....	21,203	21,203	21,203	21,203
September.....	28,750	28,750	28,750	28,750
October.....	47,688	47,688	47,688	47,688
November.....	55,401	55,401	55,401	55,401
December.....	65,578	65,578	65,578	65,578
Totals.....	244,416	244,416	244,416	244,416

Total to August 1, 1909—801,734 cubic yards.

MIRAFLORES LOCKS, DAMS AND SPILLWAY—STREAM SHOVELS

Months.	1908		1909	
	From Canal Prism	Outside Canal Prism	From Canal Prism	Outside Canal Prism
January.....	7,203	385	54,383	6,819
February.....	38,661	385	44,294	9,398
March.....	67,963	5,231	46,616	4,801
April.....	24,261	6,682	38,275	21,785
May.....	84,606	18,417	30,723	16,865
June.....	68,691	16,694	39,942	15,711
July.....	87,678	16,694	43,736	7,263
August.....	58,068	3,183	58,068	3,183
September.....	58,605	4,318	58,605	4,318
October.....	47,201	3,499	47,201	3,499
November.....	47,109	3,821	47,109	3,821
December.....	65,416	4,234	65,416	4,234
Totals.....	780,486	66,464	297,969	82,659

Total to August 1, 1909—1,227,528 cubic yards.
These were also 78,233 cubic yards removed by steam shovels at Balboa locks and dams in 1907; 139,288 cubic yards at Cardenas Hill March to December, 1908, and 194,010 cubic yards by dredges at Miraflores locks in January, February March, April, May, June and July, 1909.

BALBOA—DREDGES

Months.	1905		1906		1907		1908		1909	
	From Canal Prism	Outside Canal Prism								
January.....	95,940	95,940	94,710	94,710	94,710	94,710	460,250	460,250	469,529	469,529
February.....	95,940	95,940	93,480	93,480	93,480	93,480	663,519	663,519	671,477	671,477
March.....	116,820	116,820	92,319	92,319	92,319	92,319	783,281	783,281	865,696	865,696
April.....	110,700	110,700	104,855	104,855	104,855	104,855	676,539	676,539	731,767	731,767
May.....	112,340	112,340</								

MEAT FOR CANAL WORKERS.

Amount Used—Nature of Contract, Storage and Distribution.

Meats of various classes were delivered on the Isthmus in the fiscal year, 1909, for Canal workers and their families in the following amounts:

	Pounds.
Fresh meats.....	5,167,627
Cured and pickled meats.....	963,633
Poultry.....	399,562
Canned meats.....	437,842
Total.....	6,968,664

This does not represent the total amount of meat consumed, because the Panamanian and Canal Zone markets supply a small amount to the laborers not in Commission quarters. A small part of the whole was used by United States naval vessels on the Central American station, and by the battalion of marines at Camp Elliott. On the basis of 40,000 people supplied by the Subsistence Department, the average daily amount of meat consumed per person in 1909 by Canal and Panama railroad workers and their families was about one half a pound. About 30 per cent was sold to families, and the remainder was served at the hotels for gold employes, messes for European laborers, and kitchens for negro laborers.

Fresh meats are bought under an annual contract entered into after competitive proposals have been received. The contractor agrees to furnish beef, veal, lamb and mutton at a certain percentage above or below a base price. This base price is the average of the prices paid for the ten lots of cattle that bring the highest prices on the Chicago market on the Monday of the week in which the purchase is made, or if Monday is a holiday, on the next market day. Monday is made the standard because it is the day on which the largest sales are made on the Chicago exchange. None of the ten lots used as a basis may consist of less than ten animals, and the minimum number of animals in the ten lots may be not less than 125. The price is obtained by averaging the prices for the ten lots. Fresh pork and sausage are bought in the open market.

The carcasses are inspected by agents of the Department of Agriculture and then are placed in refrigerator cars and transferred in New York to the cold storage rooms of the Panama railroad steamships. They are unloaded at Cristobal into refrigerator cars and delivered at the cold storage plant. Except when the meat is transferred to and from the ships it is in rooms where the temperature is never higher than 30 degrees Fahrenheit. During more than four years transporting meat in this way no considerable quantity has reached the Isthmus unfit for use as food. At present the contract for fresh meat is held by Swift & Company, and Armour & Company. This contract expires on September 30. The contract was held for three years and a half by Morris & Company.

Six hundred carcasses can be stored in the Cristobal cold storage plant at one time. Each morning meat is sent along the line of the Canal in refrigerator cars. Meat for the hotels, messes and labor kitchens, and for the commissaries at Gorgona, Empire, Culebra, and Balboa, is delivered in quarters; and that for other points is cut at Cristobal and delivered ready for cooking.

The relative quantities of fresh meat used

is shown by the following statement of importation for the year ending December 31, 1908:

Kind.	Pounds.
Beef, No. 1.....	802,719
Beef, No. 2.....	3,737,395
Lamb.....	62,115
Veal.....	275,565
Mutton.....	238,794
Beef ribs.....	124,129
Pork loins.....	240,527
Beef tenderloins.....	6,045
Beef livers.....	27,673
Sirloin butts.....	53,921
Hog carcasses.....	3,533
Calves livers.....	243
Calves sweet bread.....	100
Beef sweet breads.....	1,000
Veal sweet breads.....	200
Suckling pigs.....	357
Total.....	5,574,316

Canned, cured, and pickled meats are contracted for quarterly. Poultry is brought to the Isthmus frozen and kept in that state until delivered. Chicken comprises the greater part, but turkey, duck, goose and squab are also imported.

Special Staterooms on "Ancon," "Cristobal" and "Allianca."

The officials of the Panama Railroad Steamship Company announce that an extra charge will be made for staterooms Nos. 1 and 2 on the *Ancon* and *Cristobal*. These staterooms have private bath and toilet attached. Number 1 is the forward stateroom on the starboard side and Number 2 is the forward stateroom on the port side. An extra charge of \$25 for employes, and \$50 for non-employes, will be made for these staterooms in addition to the regular fare to and from New York.

An extra charge of \$20 will also be made for suites A, B, C, D, and of \$10 for suite E on the *Allianca*, all of which have private bath and toilet.

Special Rates for Voyage to David.

The following rates have been made by the National Navigation Company of Panama for employes of the Isthmian Canal Commission or Panama railroad between Panama and David.

These rates will be given only to employes presenting authority issued by the office of the Chairman. The trip takes four days during which several ports are entered.

Ticket for one person—one way \$30, less 10 per cent.....	\$27 silver.
Ticket for one person—both ways \$60 less 25 per cent.....	\$45 silver.
Tickets for a family of four to occupy one stateroom of four berths. To go and return—each person.....	\$40 silver.
Children of 3 years of age and less.....	Free.
Children of 4 years of age to 8 years, each.....	½ fare.
Children of 9 years of age to 12 years; each.....	¾ fare.
Children over 12 years of age.....	Full fare.

Storage Charges.

The General Manager of the Panama Railroad Company wishes to call the attention of employes and other persons interested, to the fact that a charge of five cents gold per day per package is made for each package that remains in the care of the transportation company over forty-eight hours after receipt; and all persons are notified that if they neglect to claim their shipments when they receive notice that such are ready for delivery, they will be charged storage.

Money Order Convention with Martinique.

Money orders may now be purchased at Canal Zone post-offices for transmission to Martinique, under a convention entered into by the United States and France, effective August 1, 1909. The administrative details are not perfected, but the orders

will be issued if demand is made for them. A list of the offices at which orders will be made out and paid has been sent to Martinique, and a similar list will probably be received in the Canal Zone in September.

Under the terms of the convention the orders issued in Martinique must be made out in French, with the amounts expressed in terms of American currency, at the rate of 19 4-10 cents to one franc. No order for less than one cent or five centimes nor for more than \$100, or 500 francs will be issued. Orders sold in the Canal Zone will be made out in English with the amount expressed in terms of American currency. The fees to be charged will be fixed and kept by the administration issuing the order.

Little Damage to the "Colon."

The Panama railroad steamship *Colon* caught fire at 3 p. m., on August 3, while alongside her dock at New York. The cause is thought to have been a hot rivet falling into a bale of oakum. The fire was out at 4.30 o'clock the same afternoon. The ship was uninjured and sailed from New York at 3 p. m., on August 5 for Cristobal.

Ancon Odd Fellows.

Ancon Hall has been assigned to Ancon Club I. O. O. F., for Thursday evening of each week. The next meeting will be held August 12 at 8 p. m. All members and others interested in the formation of an Odd Fellows lodge in Ancon are invited and requested to attend.

Missing Men.

Information is desired in regard to A. W. Hood and G. C. Hood of Atlanta, Ga. They left home in October, 1908, and nothing has since been heard from them. Anyone having knowledge concerning either of these men is requested to communicate with their mother, Mrs. G. W. Hood, 85 Central Avenue, Atlanta, Ga.

Shovel and Dredgemen.

The I. B. of S. S. and D. M. will hold their monthly meeting in the I. C. C. lodge hall, Empire, on Sunday, August 15, at 2 p. m. All members are requested to attend.

S. I. LYONS,
Secretary and Treasurer.

Fire Station at Bas Obispo.

Sealed proposals, for labor only, will be received at the office of the Constructing Quartermaster, Culebra, until 3 p. m., August 21, 1909, and then opened, for the erection by contract of a Fire Station at Bas Obispo. Plans and specifications can be obtained from the Constructing Quartermaster by making a deposit of \$5. Fifty dollars must be deposited with the proposal and \$50 when the contract is signed.

C. A. DEVOL,
Chief Quartermaster.

Concert by I. C. C. Band.

CRISTOBAL, C. Z.,

Wednesday, August 18, 1909, at 8.15 p. m.

PROGRAM.

- 1 March—*Second Conn.*.....Reeves
- 2 Selection—*Florodora*.....Stuart
(By request.)
- 3 Waltz—*Gaite*.....Waldteufel
- 4 Dance of the Nile Maidens.....Eosey
- 5 Selection—*The Grand Mogul*.....Luders
(By request.)
- 6 Chilian Dance—*Manana*.....Missud
- 7 Medley Overture—*Haviland's Harmonies*...Halle
- 8 { *a—Moonlight in Dixie*.....Clement
 b—La, La, La.....Scotto
- 9 Selection—*Erminie*.....Jakobowski
(By request.)
- 10 March—*Festal Day*.....Roux

OLIVER KIMBALL, Director.

The next concert will be given at Las Cascadas, Sunday, August 29.

BUENA VISTA AND BOHIO.

Steam Shovel and Hand Excavation—Task Work.

The farthest north of the steam shovels of the Central Division is excavating at Buena Vista about a mile and a half south of Bohio. At present the excavation is confined to two hills that jut into the prism of the Canal east of the Panama railroad tracks, containing 93,164 and 59,326 cubic yards of earth and rock, respectively. Where the shovel is now operating the material is clay and conglomerate, and heavy blasting is necessary to prepare it for handling. Three locomotives and 67 ten-yard dump cars serve the shovel and haul the spoil to Gatun Dam, a distance of ten miles. Two well drills are kept constantly at work preparing the ground for blasting. About 3,000 feet of loading and running tracks have been laid. The force consists of about eighty men, and includes a grading gang.

Between the railroad track and the Chagres River is a low ridge of earth that must be cut down to 40 feet above mean sea-level. The excavation will amount to about 3,000 cubic yards and will be by hand. In order to do this work it will be necessary to move eight native shacks that are in the prism and located on the ridge. As it will be several years before the water of Gatun Lake covers this locality, no effort will be made to move the settlers to permanent homes.

On the west bank of the river at Buena Vista a hill containing about 105,000 cubic yards, almost wholly rock, lies partly within the prism of the Canal and above the 40-foot level. To take out this material it will be necessary to build a trestle across the river and over part of the lowland on the west bank. A steam shovel will do the excavating and the material will be dumped on the toes of Gatun Dam.

By substituting a 3-degree curve for the angle on the east line of the Canal prism at Bohio, about 11,000 cubic yards of excavation have been avoided. At this point the channel will be 1,194 feet wide in the turning basin.

At Bohio the work is also divided by the river, on the east bank of which about 65,000 cubic yards of material remain to be excavated and on the west side about 230,000 cubic yards. Of the 65,000 cubic yards on the east bank about 28,000 cubic yards are rock, and will probably be excavated by steam shovel and wasted at Gatun Dam. The ridge on the west bank of the river is opposite the fluvigraph and is almost wholly rock. A trestle will be built across the stream and a steam shovel will be set at work. This spoil also will probably be placed in Gatun Dam.

The remainder of the work at Bohio, and between there and Gatun, is being done by hand. About 3/4 mile north of the village at the end of the French canal, and at Peña Blanca, a half mile farther north, a gang of 200 laborers is excavating low ridges by pick and shovel and using eighty Decauville cars. At Bohio the material is largely from an old dump made by the French, and the track and cars used were left there when the old French Company suspended work in 1888. The spoil is dumped into the old canal and a diversion ditch a few hundred feet east of it. This work is done on the task system at the rate of 9 cents a car of about 18 cubic feet each. There remain to be excavated

by hand at Bohio about 37,000 cubic yards. At Peña Blanca the work is also done by the task system and there remain to be taken out 8,400 cubic yards, out of a total of 10,000 cubic yards.

At Mile 10, opposite Tiger Hill, a small knoll which contained 437 cubic yards of material has been excavated. There now remains between Gatun and Peña Blanca only one piece of excavation, and that is a small amount near Mile 15, a short distance north of Bohio.

Horse and Carriage Sale.

At the horse and carriage sale held at Ancon Corral, on Tuesday, July 20, four Victorias, two surreys, three horses, and four sets of harness were auctioned to private parties. The four Victorias brought \$855; the two surreys \$170; the horses \$352.50, and the harness \$95, a total of \$1,472.50 being realized from the sale, from which \$11.04 is to be deducted for advertising expense, leaving \$1,461.46, net proceeds. There were still remaining to be sold at some later date, five carriages, one surrey, and nine sets of harness.

Tug Boat Overdue.

The tug boat, which the Bayano River Lumber Company ordered from Seattle some time ago to be used in towing the shipments of native lumber, mention of which was made in THE CANAL RECORD of July 14, is thought to be lost, as the boat is now several weeks overdue. The last heard from the vessel was shortly before it left San Francisco to start south under its own steam. The secretary of the company has advised the Quartermaster's Department, that the first shipment of lumber on the recent orders will be made at once by sailing schooner.

Funeral of Mrs. W. S. Grant.

The remains of Mrs. Wm. S. Grant who died at Gatun on August 6, 1908, were buried in the cemetery at Ancon on Sunday, July 25, 1909. She was the wife of Wm. S. Grant, of Covington, Kentucky, who is employed as a carpenter in the Atlantic Division at Gatun, where he has resided for the past three years. The burial services were conducted by Archdeacon Bryan. A number of Mr. Grant's friends at Gatun accompanied him to Ancon for the funeral.

Cards of Thanks.

Mrs. F. C. Howland, of Paraiso, wishes to express her gratitude and sincere appreciation for the kindness and assistance given by the Brotherhood of Railroad Trainmen, and other friends, in her recent bereavement on the death of her husband.

I wish through THE CANAL RECORD, to thank the kind friends and all who helped me with their words of sympathy and kind acts in my recent bereavement in the loss of

my beloved husband, William Lamb, who died April 28, at Colon hospital.

MRS. WM. LAMB,
34 Buffalo Ave., Brooklyn, N. Y.
July 10, 1909.

Personal.

Mr. H. H. Rousseau, accompanied by Mrs. Rousseau, sailed on the *Ancon* from Colon on Sunday, August 8, for vacation in the States.

LEGAL NOTICE.

United States of America, } In the Circuit Court,
Canal Zone. } First Judicial Circuit.
A petition having been filed by the Collector of Revenues for the escheat of the estate of Richard Prince, who died intestate at La Boca, on or about the 17th of November, 1908, leaving property to the value of \$18.25 gold, notice is hereby given to all heirs, creditors, or other claimants of the said estate to appear at the courthouse at Ancon on or before the 6th day of October, 1909, for the purpose of filing their claims.
WALTER EMERY,
Circuit Court Clerk.
Ancon, C. Z., August 6, 1909.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES,
ANCON, C. Z., August 11, 1909.
The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:
Amos, Hugh P. Knight, Francis
Anderson, Miss Lucille McAlpine, Mrs. Kate
Barnett, James C. McCormick, Leo P.
Briggs, Frank A. Milan, Harry
Brown, John Murray, Samuel C.
Campbell, J. B. Nye, Ralph F.
Carkett, Mrs. George O'Ryan, Philip J.
Cassall, Miss Maud Osborne, Earl
Cate, J. S. Penner, Edward
Chambers, John Poper, Samuel
Cornejo, J. O. Sautler, N. F.
Crawford, Edw. M. Schneider, John
Delaney, H. B. Scott, M. Weldon
Drake, Cresswell C. Strother, George H.
Ferguson, Jas. G. Taggart, Robert O.
Herman, Lester Tinker, J. N.
Hozey, C. P. Vareukamp, Mrs. Robt.
Johnson, Harry P. Williams, John H.
Joyner, Charles K. Winter, Oscar
Kelley, Mrs. M. A. Wood, Robert
Young, Jack.

July Rainfall for Three Years.

STATION.	1907.	1908.	1909.	Years of record.*	Station average.*	No. rainy days—1909
<i>Atlantic Division—</i>						
Nombre de Dios.....	.....	16.94	0	.....	23	
Porto Bello.....	9.98	26.33	1	.....	27	
Cristobal.....	17.86	14.76	12.83	38	16.48	25
Brazos Brook.....	13.96	18.25	12.23	3	17.68	28
Gatun.....	11.12	13.67	11.46	3	12.63	28
Gatun River.....	.....	12.98	15.63	1	.....	28
Trinidad.....	.....	6.46	10.78	1	.....	25
Bohio.....	8.70	7.78	11.07	14	13.00	29
<i>Central Division—</i>						
Tabernilla.....	7.67	7.84	10.78	2	7.76	23
San Pablo.....	12.32	7.59	10.63	2	9.96	25
Gorgona.....	.....	.....	11.16	5	11.86	24
Gambon.....	7.92	11.43	11.59	28	10.14	26
Empire.....	9.89	11.79	8.27	4	10.14	24
Camacho.....	10.05	12.83	8.68	2	11.44	24
Culebra.....	9.31	13.23	7.95	17	9.39	23
Rio Grande.....	10.52	12.55	8.13	4	12.07	26
<i>Pacific Division—</i>						
Pedro Miguel.....	.....	9.53	9.19	1	.....	23
Balboa.....	4.06	5.66	14.92	10	9.75	22
Miraflores.....	.....	.....	10.27	0	.....	22
Ancon.....	4.28	6.83	9.01	12	8.02	22
<i>Upper Chagres—</i>						
El Vigia.....	.....	.....	14.09	0	.....	29
Alhajucla.....	13.29	9.68	13.64	10	13.56	28

* Not including 1909.

WEATHER CONDITIONS, CANAL ZONE, JULY, 1909.

Stations.	Pressure (reduced to mean of 24 hours.)	Temperature.					Mean relative humidity.	Precipitation.			Wind.				
		Mean.	Maximum.	Date.	Minimum.	Date.		Total inches	Station average per month.	Number of rainy days.	Total movement (in miles.)	Prevailing direction.	Max. velocity (in miles.)	Direction.	Date.
Cristobal.....	29.864	78	86	3	70	6	92	12.83	16.48	25	4,805	S.E.	34	H.	20
Culebra.....	29.867	78.7	90	10	67	21	94	7.95	9.39	23	3,951	N.W.	36	E.	11
Ancon.....	29.854	78.8	91	10	68	10	92	9.01	8.02	22	4,729	N.W.	59	S.	10

SOCIAL LIFE OF THE ZONE.

Women's Clubs and Other Features.

The bi-monthly business meeting of the Pedro Miguel Woman's Club was held in the clubrooms on Wednesday, August 4, with a good attendance. The club will give a social evening for members and their husbands at the home of the president, Mrs. H. Girdner, on the evening of August 14. A committee on refreshments was appointed consisting of Mrs. S. W. Jennings, chairman, Mrs. Mark White, and Mrs. W. E. Smith. Prizes will be awarded for games, Mrs. T. T. Curran and Mrs. Ed. Bityel being chosen as the committee for their purchase. The social meeting of the club, with study hour preceding the games, will be held on August 11, at the home of Mrs. W. W. Hurley. Mrs. Frank Roberts, formerly of Pedro Miguel, entertained the club at her home in Empire on July 28. The president and members are collecting books and periodicals for the penitentiary library.

The Sojourners Club of Pedro Miguel will give a dance at the clubrooms on Saturday evening, August 14.

An informal reception was held on Thursday evening, August 5, at the Commission clubhouse, Empire, in honor of Mrs. Archie O. Ludwig, wife of the assistant Y. M. C. A. secretary, who arrived on the Isthmus on the *Allianca* on that day.

There was an unusually large attendance at the meeting of St. Luke's Woman's Guild at the home of Mrs. R. E. Noble, on Monday afternoon, August 3, the occasion being a farewell to the vice-president, Miss Laura Carter, and her mother, Mrs. H. R. Carter. Both retiring members were elected honorary members of the guild and were presented with a testimonial signed by the chaplain and their associates. Mrs. H. B. Bryan was elected vice-president. The next meeting of the guild will be held at the residence of the chaplain on August 16.

The regular dance of the Tivoli Club will be held at the Hotel Tivoli in Ancon on the night of August 14.

Church Notes.

The Woman's Guild of St. Luke's church has authorized the purchase of a number of bibles to be presented to Ancon Hospital for the use of the patients in the wards.

The Protestant Episcopal mission has established regular services for the marines at Camp Elliott. They will be held in the camp library on the third Sunday in each month at 3 p. m.

Mission work has been established by the Methodist Episcopal church among the Spanish laborers who are not Roman Catholics. Services are held in the camps at New Balboa, Corozal, Pedro Miguel, Culebra, Gatun and Porto Bello. It is estimated that 500 laborers attend. The services are conducted in Spanish. Bibles and other literature are distributed.

Sigma Nu Fraternity.

All members of Sigma Nu fraternity on the Isthmus are requested to send their names and addresses together with chapter and number, to Rene Granger, Alhajuella, Bas Obispo, Canal Zone.

Marriages.

Beverly T. Isgrig and Julia M. Sarne of Tabernilla, were married at Culebra on July

11, by the Rev. Father Collins, a Commission chaplain.

Mr. Murray N. Lenham and Miss Sylvia C. Kingman were married at the chapel in Culebra, at 3.30 p. m., on Thursday, July 29, 1909, the Rev. J. Wesley Holland officiating.

Childrens' Playground at Colon.

The first public playground on the Isthmus of Panama will be opened and presented to the city of Colon by the Cristobal Woman's Club the middle of this month. The playground is the result of the effort of the educational department of the club, which has had the cooperation of the Panama railroad, the Canal Commission, and Colon officials. The Panama railroad permits the use of a lot about one acre in size, back of the Wasbington Hotel, at the corner of Second and Bolivar streets, and has also given the lumber for the equipment. The equipment was selected from photographs submitted by the National Playground Association, New York, and will consist of a shelter, 12 by 40 feet, 6 swings, 2 ladders, 2 horizontal ladders, 2 seesaws, 1 trapeze, 1 spring-board, 1 Maypole, and 2 sand gardens, one 2 by 10 feet, and the other 6 by 10 feet. A picket fence will enclose the grounds, with the entrance on Second street.

The Colon government will maintain the playground and will appoint a play director, probably of the rank of teacher. The age limit for the use of the ground has been fixed at 14 years. It is estimated that the population of children from which the playground will draw is about 500. These children are of all classes, and the older ones are pupils of the city schools. The Cristobal Woman's Club will pay for the labor, about \$250. To meet the expense the club will give a fancy dress cotillion at the Lincoln House on Saturday, August 14. The music will be furnished by the Colon Municipal Band, and preparations are being made to insure a successful evening. Single admission tickets cost one dollar. The club is also considering the placing of playground equipment in the yard of the American school at Colon beach.

Sunday School Picnic.

The annual picnic of St. Luke's Sunday School, Ancon, will take place at Naos Island on Thursday, August 12. The students and teachers will assemble at the church at 7.30 a. m., and proceed to the Panama railroad station to take the train for Balboa at 8 o'clock. The trip will be made on the steamer *Sanidad* leaving Balboa at 9 o'clock. Students that reside in Balboa may go direct to the wharf and meet the school on arrival of the train from Panama.

Prize Compositions at Cristobal School.

Cash prizes amounting to \$15 have been awarded to four members of the Cristobal school for compositions on topics chosen by the competitors. The prizes were given by Wm. McAdam, Esq., of the British Vice Consulate in Colon, and they were won by Miss Maria Elise Johnson of Gatun, and Miss Myrtle Lindersmith of Cristobal, \$5 each; Charles Palmer of Colon, \$3, and Miss Emma Stubner of Cristobal, \$2.

LOST—At Miraflores power station, or between that point and Culebra, an "A. F. M. E." emblem, four leaf clover shape. Finder returning the above to E. E. Lee, Administration Building, Culebra, will be rewarded.

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

CULEBRA.

Regular gymnasium classes are being conducted twice a week—Monday and Wednesday evenings. Musical drills, calisthenics and games vary the program of regular apparatus and class work.

A hand ball court is being constructed for the hall and will soon be installed. Owing to the adaptability of this game to the climate, a big demand for it has been felt and its popularity is assured.

Plans for the annual big pin bowling tournament will be perfected at a meeting of representatives called for Culebra in the near future. The trophy cup belongs permanently to the Association winning two tournaments. Cristobal and Empire has each won once. The advance interest in this year's tournament is good.

Sunday services have been planned for the next two weeks as follows: On Sunday, August 15, Rev. J. Wesley Holland will give a reading from Elizabeth Stuart Phelps' story, "A Singular Life". As this will be Chaplain Holland's last service on the Isthmus it will also be in the nature of a farewell to him. It will be held in the Y. M. C. A. hall at 8 p. m. Special music will be on the program.

On Suuçay, August 22, Judge Thos. E. Brown of Cristobal will address the people of Culebra at 4 o'clock. There will be special music also at this service.

A meeting has been called for Tuesday, August 10, to organize a Camera Club in more permanent form than it is at present, and to plan for an exhibit of prints in the near future. The dark room is being used a good deal and a regular club will be of advantage to all.

EMPIRE.

The sale of seats for "Captain Racket" has begun. The performance will be given Tuesday, August 17.

For the convenience of library members all books have been catalogued, both by numbers and by authors.

During the rest of the school vacation period the boys' department will have regular use of privileges on Monday, Wednesday and Saturday forenoons from 9 to 11 o'clock, instead of in the afternoons as formerly.

Mr. D. F. Rabbitt will have charge of the bowling alleys during the absence of Mr. Gustavson.

Members of the Pressing Club will be able to get more prompt service by giving requests for work as early in the week as convenient.

GORGONA.

A two-man team bowling tournament has been started with the following entries: C. L. Prentiss and H. D. Burnham; H. McConaughey and Charles O'Connor; D. G. Hayes and Wm. Kenyon; F. G. Swanson and Harry Otis; F. Lasker and S. Lasker; E. R. Hall and T. S. Booz; W. J. Humphrey and R. Arthur; E. Halderman and F. King; W. J. Wright and R. Varenkamp; L. P. Robitoy and E. L. Emery.

The team having the highest pinfall will be presented with silver medals. The highest individual pinfall will also win a silver medal.

Monday, August 9, the German Orchestra from the Hamburg-American boat will give a complimentary concert to the people of Gorgona.

Saturday night, the 14th, "Captain Racket", a farce comedy in three acts will be presented by the Gorgona Y. M. C. A. Dramatic Club. Reserved seats will be on sale Wednesday forenoon.

CRISTOBAL.

The local ten-pin bowling tournament which has been in progress for some weeks closed on Thursday night, August 5, with the following results:

	Won	Lost
1st—Miscellaneous team.....	18	9
2nd—Commissary team.....	16	11
3rd—Quartermaster team.....	12	15
4th—Dry Dock team.....	8	19
Single high score made by Bullard—	224	
Three game average made by Barte—	192 2/3	
High team score made by miscellaneous team—	917.	

Cristobal defeated Gorgona in a bowling contest on Saturday night, August 7, on the Cristobal alleys.

Score:	Cristobal.....	Gorgona.....
	815 813 836	761 631 820

The steamer *Hornelen*, which sailed from Port Townsend, Wash., for Balboa, on August 4, carries 1,114,000 feet of lumber for the Canal work.

LOST—A diamond set out of ring on August 2, between house No. 104, Ancon, and Dr. Herrick's. Finder is requested to return to Mrs. Hy. Montgomery, Ancon, and receive reward.

OFFICIAL CIRCULARS.

Traveling Engineers.

CULEBRA, C. Z., August 6, 1909.

CIRCULAR No. 266A:

Mr. Arthur C. Stone is hereby appointed Traveling Engineer for duty under the immediate direction of the Assistant to the Chief Engineer.

Mr. James G. Craig will hereafter be the Senior Traveling Engineer.
Effective August 6, 1909.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Rules Governing Car Repairs.

CULEBRA, C. Z., July 28, 1909.

CIRCULAR No. 268:

Rules governing the handling of all classes of cars needing repairs, the oiling of same, the handling of lost and damaged material of rolling stock, and the disposition in case of accident:

1. All classes of cars that can be safely and economically repaired in the field, must not be marked out for yard or shop repairs.

2. All cars that require setting out for repairs will be designated as "Shop," and "Bad Order." Cars for the shop will be designated by a white linen tag attached to the body of the car in a conspicuous place, reading: "Shop. Send to.....shop, M. D. 51 (form.)" The name of the shop to which car is to be sent must be written on the tag, the date car is set out, and the name of the inspector or foreman filling out same.

Cars for the repair or rip track will be designated by a white linen tag attached to the body of the car in a conspicuous place, reading: "Bad Order. Set on rip track. M. D. 50 (form.)" The date the car is tagged must be written on the tag, together with the inspector's or foreman's name setting the car out.

3. All inspectors or foremen applying either of the above tags should keep a record of same in a book provided for that purpose and the numbers of the cars so tagged must be reported to the Master Car Builder at Empire daily, on Form M. D. 62 Revised.

4. All cars of wooden construction should be sent to Gorgona shop, and all cars of steel construction should be sent to Empire shop for repairs.

5. Cars set out for shops must not be allowed to stand more than two (2) days before being forwarded.

6. Yardmasters or trainmen will not be allowed to forward cars to any shop unless the same shall have been properly tagged, and they must confer with inspectors and foremen in this regard.

7. Cars from the Atlantic and Pacific Divisions may be billed over the Panama railroad or forwarded by a crew from the originating division.

8. In each division or department certain persons are now authorized to forward or receive freight. These designated persons shall bill cars properly tagged to the Master Mechanic at Gorgona, or Empire shop in accordance with the above instructions. These persons must also furnish immediate notice to the heads of their respective departments or divisions so that Form M. D. 109 can be made out and forwarded the same or the next day after cars are billed or forwarded.

Cars used in Panama railroad relocation service will also be handled as above. It will be understood that cars cannot be repaired until the receipt of Form M. D. 109.

OILING.

9. Entirely too much oil waste, or dope, is being put into journal boxes. Inspectors and foremen will see that car oilers use proper care in this direction. In no case should the packing in a journal box extend above the center line of the journal, nor should it be packed too hard.

Car oilers must mark the date on the side of each box when it was last oiled or any portion of the packing removed, stirred up, or new applied.

The use of oil cans is strictly prohibited. Foremen and inspectors will be held personally responsible for the proper execution of these instructions.

ACCIDENTS.

10. Cars of wooden construction broken in two or otherwise badly damaged, must not be destroyed, but the car complete must be picked up and sent to Gorgona shop for rebuilding. Cars of steel construction should be handled in the same manner, but be sent to Empire shop.

All accidents coming under the observation of the foremen or the inspectors should be fully investigated, and complete reports sent to the Master Car Builder as soon as possible. Said reports to state definitely whether the damage was done by the I. C. C., or the P. R. R.

LOST, DAMAGED OR BROKEN MATERIAL.

11. Light material, such as air hose, angle cocks, brake rods, etc., for all classes of cars must be picked up and turned over to the nearest car inspector or car repair station. Heavy material, such as draw bars, side doors for steel dump cars, aprons, etc.

must be put in a place of safety, to be picked up by wrecking crews. This material, when picked up, is to be delivered to the nearest shop.

12. The foregoing rules are to govern on the Panama railroad, excepting that the reports on all cars in their commercial service are to be sent direct to the Master Mechanic at Cristobal; broken or damaged cars being sent to Cristobal shops.

GEO. W. GOETHALS,
Chairman and Chief Engineer of the I. C. C.,
President Panama Railroad Company.

Deductions for Meal Tickets.

EMPIRE, C. Z., August 9, 1909.

CIRCULAR No. 15:

To All Concerned:

The practice of stating one amount on deduction sheets covering meal ticket issues for the current month, together with adjustments on account of issues for a prior month, is confusing in the check made in this office, and results in delay and correspondence that can be avoided by a separation of the items.

Effective with the month of August, 1909, please show all "back deductions" on rolls and deduction sheets for meal tickets issued in a prior month as a separate amount, with such explanation as will allow the adjustment to be at once located and proper credit allowed.

Foremen or others delivering meal tickets to laborers should be instructed to state the denomination (30 or 40) opposite each name on the time book.

W. W. WARWICK,
Examiner of Accounts.

Approved:

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Requests for Work.

CULEBRA, C. Z., July 31, 1909.

CIRCULAR No. 197-D:

Paragraph 4 of Circular No. 197-c, in which it is directed that requests for work estimated to cost more than \$50 must be forwarded for the approval of the Chairman and Chief Engineer, will not be considered to apply to work covered by the report of the Committee on Manufacturing Accounts, which was approved and issued as Circular No. 264.

In accordance therewith it will not be necessary to forward Form 159 for repairs to steam shovels, except in cases where the cost thereof exceeds \$500, nor for repairs to unloaders, spreaders, etc., except when the estimated cost of same exceeds \$200. "Repairs" in the sense above used refers to cases where the equipment, either as a whole or in part, is sent to the shops.

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Wage Classification of Silver Employees.

CULEBRA, C. Z., July 31, 1909.

CIRCULAR No. 229-B:

Add the following note under "Cooks," as published in Circular No. 229-A:

The entrance salary for cooks on marine equipment in the Atlantic and Pacific Divisions shall not be more than \$40.

It is the intention of Circular No. 229-A that all employees performing the duties of messengers at a salary of less than \$15 per month shall be rated as "Boys."

GEO. W. GOETHALS,
Chairman and Chief Engineer.

Veterinary Service for Private Animals.

CULEBRA, C. Z., August 6, 1909.

TO ALL CONCERNED:

Effective September 1, a charge will be made for veterinary attendance and medicine furnished all private animals. The fee will be \$1 per visit, which will include attendance and medicine.

Persons desiring the services of a veterinarian will submit their applications in writing, to the District Quartermaster at the point where the corral is located.

C. A. DEVOL,
Chief Quartermaster.

Acting Mechanical Engineer.

CULEBRA, C. Z., August 5, 1909.

TO ALL CONCERNED:

Effective this date, Mr. J. H. Flynn, Jr., is appointed Acting Mechanical Engineer during the absence of the Mechanical Engineer on vacation leave.

GEO. D. BROOKE,
Supt. M. P. and M.

Superintendent of Public Works.

ANCON, C. Z., August 9, 1909.

EXECUTIVE OFFICE CIRCULAR No. 89:

Mr. Geo. H. Ruggles is appointed Superintendent of Public Works, effective to-day, vice Mr. Geo. L. Campen, resigned.

JO C. S. BLACKBURN,
Head of Dept. of Civil Administration.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Cristobal.....	P. R. R. Friday	Aug. 6
Thames.....	R.-M. Saturday	Aug. 7
Panama.....	P. R. R. Wednesday	Aug. 11
Prinz Aug. Wilhelm.....	H.-A. Saturday	Aug. 14
Advance.....	P. R. R. Tuesday	Aug. 17
Ancon.....	P. R. R. Thursday	Aug. 19
Atrato.....	R.-M. Saturday	Aug. 21
Allianca.....	P. R. R. Monday	Aug. 23
Prinz Joachim.....	H.-A. Saturday	Aug. 23
Colon.....	P. R. R. Saturday	Aug. 28
Cristobal.....	P. R. R. Thursday	Sept. 2
Panama.....	P. R. R. Friday	Sept. 3
Tagus.....	R.-M. Saturday	Sept. 4
Advance.....	P. R. R. Thursday	Sept. 9
Prinz Aug. Wilhelm.....	H.-A. Saturday	Sept. 11
Allianca.....	P. R. R. Wednesday	Sept. 15
Ancon.....	P. R. R. Thursday	Sept. 16
Oruba.....	R.-M. Saturday	Sept. 18
Colon.....	P. R. R. Tuesday	Sept. 21
Prinz Joachim.....	H.-A. Saturday	Sept. 25
Panama.....	P. R. R. Monday	Sept. 27
Cristobal.....	P. R. R. Thursday	Sept. 30
Magdalena.....	R.-M. Saturday	Oct. 2
Clyde.....	R.-M. Saturday	Oct. 16
Thames.....	R.-M. Saturday	Oct. 30

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Allianca.....	P. R. R. Wednesday	Aug. 11
Atrato.....	R.-M. Wednesday	Aug. 11
Colon.....	P. R. R. Tuesday	Aug. 17
Prinz Joachim.....	H.-A. Tuesday	Aug. 17
Cristobal.....	P. R. R. Thursday	Aug. 19
Panama.....	P. R. R. Monday	Aug. 23
Tagus.....	R.-M. Wednesday	Aug. 25
Advance.....	P. R. R. Saturday	Aug. 28
Prinz Aug. Wilhelm.....	H.-A. Tuesday	Aug. 31
Ancon.....	P. R. R. Thursday	Sept. 2
Allianca.....	P. R. R. Friday	Sept. 3
Oruba.....	R.-M. Thursday	Sept. 8
Colon.....	P. R. R. Thursday	Sept. 9
Prinz Joachim.....	H.-A. Tuesday	Sept. 14
Panama.....	P. R. R. Wednesday	Sept. 15
Cristobal.....	P. R. R. Thursday	Sept. 16
Advance.....	P. R. R. Thursday	Sept. 21
Magdalena.....	R.-M. Wednesday	Sept. 22
Allianca.....	P. R. R. Monday	Sept. 27
Prinz Aug. Wilhelm.....	H.-A. Tuesday	Sept. 28
Ancon.....	P. R. R. Thursday	Sept. 30
Clyde.....	R.-M. Wednesday	Oct. 6
Thames.....	R.-M. Wednesday	Oct. 20

NEW ORLEANS TO COLON.

Turrialba.....	U.F.C. Saturday	Aug. 7
Abangarez.....	U.F.C. Saturday	Aug. 14
Parismina.....	U.F.C. Saturday	Aug. 21
Turrialba.....	U.F.C. Saturday	Aug. 28

COLON TO NEW ORLEANS.

Parismina.....	U.F.C. Tuesday	Aug. 10
Turrialba.....	U.F.C. Tuesday	Aug. 17
Abangarez.....	U.F.C. Tuesday	Aug. 24
Parismina.....	U.F.C. Tuesday	Aug. 31

COLON TO BARBADOS, CALLING AT TRINIDAD.

Thames.....	R.-M. Tuesday	Aug. 17
Atrato.....	R.-M. Tuesday	Aug. 31

Sailings of the French line (Cie. Generale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line will be as follows: *Lousianian* for New Orleans, via Kingston, Ja., on or about August 31.

The steamers *David* of the National Navigation Company, and the *Taboga* of the Pacific Steam Navigation Company, leave Panama, for David, province of Chiriqui, and intermediate points, the first and third weeks of each month.

The following vessels arrived or departed at the port of Balboa during the week ending August 6, 1909: Arrivals—July 31, *City of Sydney*, from San Francisco; August 4, *Arica*, from Guayaquil; August 5, *Lansing*, Union Oil Company's steamer, from Port Harford, Cal. Departures—July 31, *San Juan*, for San Francisco; *Ecuador*, for Guayaquil, and *Limari*, for South ports; August 4, *Chiriqui*, for intermediate ports.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,
Ancon, Canal Zone,
Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Accident at Naos Island Breakwater.

During the night of Monday, August 9, clapet No. 8 of the Pacific Division ran into the Naos Island breakwater trestle about 250 feet from the outer end, doing considerable damage. The impact destroyed three bents, carried away about 1,900 feet of track, including rails and ties and tumbled a pile-driver and tender, which were located 21 bents back from the end of the trestle, into the bay on the west side of the breakwater. The clapet escaped without injury. Ralph Bangh, check No. 63,345, the watchman for the pile-driver, is supposed to have been killed, or drowned, as he has not been seen since the night of the accident. The pile-driver will be recovered.

Agricultural Development in Canal Zone.

Soil and plant experts from the Department of Agriculture will visit the Canal Zone in October for the purpose of investigating agricultural possibilities. The investigation will be conducted by request of the Secretary of War at the instance of the Commission.

Wireless Station at Porto Bello.

The wireless station at Porto Bello is to be installed solely for the benefit of the Isthmian Canal Commission, for communication with the Colon station, but to be under the control of, and to be equipped and manned by the Bureau of Equipment, Navy Department. With this understanding the Commission has built a house containing the office and condenser room, besides living quarters for three operators, enlisted men of the Navy. This house is from a special design drawn in the Chief Engineer's office, and is situated on the hillside just below the eastern end of the reservoir dam. The mast will be erected on the hill east of the reservoir at a sufficient distance for the aerial wires to reach from its upper end to the office. The "ground" will be obtained by large copper plates sunk in the shore of the reservoir. The

house is about finished, and the aerial and guys for the mast have been received, but until the mast, instruments, and ground plates are sent by the Navy Department no further progress can be made. These are expected soon. The mast will be about 150 feet high, set on a hill 135 feet above sea level, making the extreme height 285 feet, sufficient for the waves to clear the intervening hills. The power will be carried to the station from the Commission's power plant at Porto Bello.

When completed the station will probably be under the immediate charge of Electrician Edgar Rennard, U.S. Navy, at present on duty at the Colon station.

Shipment of Native Lumber.

The schooner *Almirante* arrived at Panama on Thursday, August 12, with a cargo of about 14,000 feet of native lumber from the Bayano River Lumber Company. A portion of this shipment, about 6,000 feet, was consigned to the Isthmian Canal Commission, forming a part of the trial orders, an account of which appeared in THE CANAL RECORD of July 14, 1909. It was unloaded at the American wharf and shipped to Empire, where it will be given a thorough trial in connection with repairs to cars and locomotives. The shipment was principally of timber size and consisted of several varieties of Isthmian hard and semi-hardwoods.

Brazos Brook Reservoir.

The low point of the year in the Brazos Brook reservoir, which supplies water to Cristobal and Colon, was reached on June 8, when the surface of the lake was at an elevation of 38 feet above sea level. From that date until the present time there has been a slow, but steady rise, the surface of the water attaining an elevation of about 45 feet above sea level on August 13. The greatest consumption from the reservoir for any one day since January 1, 1909, was approximately 2,275,000 gallons on July 26. Another rise of two feet was recorded in the Rio Grande reservoir on Friday, August 13.

Additional Schoolhouse Facilities.

Plans have been prepared and approved for two new school buildings for colored children, one at New Gatun and one at Culebra; also, for additions to the white schools at Cristobal and Gorgona, and to the colored school at Cristobal.

The New Gatun schoolhouse will consist of a four-room frame building, 50 feet long and 73 feet wide, without verandas, and the contract for its erection has been let. The other colored schoolhouse will be built at Culebra under practically the same specifications as the one at Gatun.

A two-story frame addition will be made to the schoolhouse for white children, opposite the Y. M. C. A. clubhouse at Cristobal. It will be 24 feet wide and 37½ feet long,

with one room on each floor. A two-story frame annex will also be made to the rear of the white school at Gorgona, 25 feet long and 37 feet wide, with a 6½ foot veranda separating the old from the new part, connected by a bridge both upstairs and down. The annex will provide two additional rooms, one on each floor.

A one-story two-room frame addition will be built to the rear of the colored school at Cristobal, which is located near the Salvation Army Institution. The new part will be 22 feet long and 55 feet wide, with a space between the old and new buildings for a 6½ foot veranda.

New Train Schedule.

On another page of this issue of THE CANAL RECORD will be found the new schedule of passenger trains, effective on the Panama railroad beginning August 15, 1909.

Fossils in Canal Excavation.

A request has been made by the Smithsonian Institution to have specimens of fossils and other natural history objects uncovered in excavating the Canal, preserved and sent to the National Museum in Washington. The Chairman has issued orders that this request be complied with, and the matter has been referred to one of the assistant engineers for action and report.

Houses on Slide at New Culebra.

Six two-story and nine one-story frame buildings situated on the old French dump at New Culebra, have been appraised and will be purchased and razed by the Commission. The old dump forms the slide at New Culebra, and the houses are in danger of being wrecked.

Canal Zone Roads.

The new Mount Hope-Gatun wagon road has been completed, with the exception of a top dressing of sand, and will probably be ready for traffic within the next two weeks. The present road from Mount Hope to Cristobal is in poor condition owing to heavy travel over it, and will be regraded and rolled as soon as the work on the Mount Hope-Gatun road is finished.

Progress is being made on the road which extends from the Empire suspension bridge to the Las Cascadas plantation. It is cut out of the side of the hills, and follows the valley of the Massambi River for quite a distance, crossing the stream over a bridge with a 100-foot span, about a mile and a half from Empire. A 6-foot berm was originally excavated along the side of the hills to make the route immediately available for traffic, and this cutting has since been enlarged to the permanent width of eight feet. The grading of the road is now completed for a distance of 6,800 feet out of Empire, and is nearly finished 1,000 feet farther. Very little grading has been done for the rest of the distance, and some excavation

NOTES OF PROGRESS.

(Continued.)

still remains to be accomplished toward the plantation end of the road. The highway will be 13,600 feet long, measuring from the Obispo Diversion bridge to the plantation, and will open up a valuable agricultural territory, which steadily improves on nearer approach to Cruces, where the road may ultimately extend.

The survey of the Empire-Paraiso road has been completed, and the work of excavation and grading will commence as soon as a stockade for prisoners, who will be employed on this section, is located.

On the Las Cascadas-Gorgona extension, the subgrade has been completed, with the exception of about a mile. The grading gangs have been working from both directions.

Operations on the Corozal-Panama road, which are completed, with the exception of rolling, were resumed this week, two road rollers being set at work, one at each end.

Applications for Married Quarters.

The number of applications for "gold" married quarters on file on the first of each month since May was as follows:

Month.	No. 1 List.	No. 2 List.
May.....	85	249
June.....	94	281
July.....	115	305
August.....	82	332

Applicants on the No. 1 List are employees who entered the service prior to January 1, 1908, and they are given prior consideration. The number of applications on the No. 2 List is steadily increasing, while the applications on the No. 1 List show a tendency to decrease in number. When married quarters in process of construction are completed they will provide for 54 additional families.

Money Order Business in July.

During the month of July, 1909, the sixteen post-offices of the Canal Zone where a money order business is done, sold 15,434 money orders, aggregating \$417,378.10. This is a decrease of 262 in the number of orders issued in June, and of \$11,138.80 in value. Of the July business, \$306,131.63 represented orders drawn payable in the United States and elsewhere, and \$111,246.47 in orders drawn payable in the Canal Zone. The fees collected amounted to \$1,790.08. The orders paid and repaid amounted to \$138,637.14, which includes \$1,419.50 representing invalidated money orders paid by the Treasurer.

In the number of orders drawn, Cristobal was first with 2,980; Empire second with 1,779, and Gatun third with 1,640. In the total value of orders, Cristobal was first with \$84,100.83; Empire second with \$41,729.75, and Gorgona third with \$41,504.73. Of the amount payable in the United States and elsewhere, Cristobal was first with \$73,419.14; Empire second with \$32,549.68, and Gatun third with \$29,388.24. In orders payable in the Canal Zone, Gorgona was first with \$13,185.93; Cristobal second with \$10,681.69, and Pedro Miguel third with \$9,878.78. Of the amount paid and repaid, Cristobal was first with \$24,214.62; Empire second with \$17,636.51, and Ancon third with \$14,045.61.

The average of all the orders issued was \$27.04. The highest average was at San Pablo where 504 orders, amounting to \$17,895.25, were issued, an average of \$35.50;

the lowest was at Matachin where 240 orders amounted to \$4,788.83, an average of \$19.95.

Central Division Unloaders.

Lidgerwood unloading crews accomplished the following work on the Central Division dumps in July:

Dump.	Number of unloaders.	Number of Trains.	Number of Cars.
Balboa.....	3	808	14,544
Miraflores.....	3	676	12,168
Tabernilla.....	5	1,381	24,523
Total.....	11	2,865	51,235

Relocated Line at Corozal in Use.

The relocated line of the Panama railroad from the station at Corozal, to a point about ¾ of a mile north of the Balboa wye has been completed, and was placed in service on Sunday, August 15, when passenger train No. 26, leaving Panama at 4 p.m., passed over it. The relocated track practically eliminates the long curve opposite El Diablo hill.

Questions Answered.

THE CANAL RECORD:

Please answer the following questions:

1. Can employes desiring to resign after two years' service while on vacation do so through the office at Washington without sending the resignation to the Canal Zone?
 2. Will employes having fractional parts of their yearly longevity earned prior to July 1 have same added to their salary?
 3. When will the Canal medal be delivered?
 4. Will you receive yearly subscription for THE CANAL RECORD and deliver it in the States?
- WM. BODETTE.
Empire, C. Z., August 6.

1. When an employe desires to resign in the United States, while on vacation leave, and after having completed two years' satisfactory service, his resignation should be addressed to the head of his department on the Isthmus, and not to the Washington office of the Commission.

2. Longevity increases, prior to July 1, 1909, were given only for each full year's service. An employe will not be entitled to longevity for the fractional part of a year, up to July 1, 1909.

3. About September 1.

4. There is no subscription price to THE CANAL RECORD. See announcement on first page.

Homicide at Paraiso.

Manuel Manlabro, a Colombian, was struck on the head by a blunt instrument in the hands of Secronдино Pineder, also a Colombian, at Paraiso, about 9 p.m. Saturday, August 14, causing injuries from which he died at Ancon Hospital, Monday afternoon, August 16. Pineder is in jail at Paraiso.

Accident at Miraflores.

At 11.07 a. m., Saturday, August 14, as the labor train at Miraflores had come to a stop opposite the lock site, several "doby" shots went off about a car's length ahead of the locomotive. Fragments of rock struck five or six men, three of whom were taken to Ancon Hospital. All will probably recover.

Work of tearing down the buildings on the old station site in Colon has been about completed.

CENTRAL DIVISION.

Steam Shovel Records Made in July.

During the month of July, the total amount of material excavated in the Central Division was 1,443,094 cubic yards, of which 377,701 cubic yards were classified as earth and 1,065,393 cubic yards as rock. Of this quantity, 1,414,552 cubic yards were removed by steam shovels, 22,887 cubic yards by hand, and 5,655 cubic yards by sluicing in the Obispo Diversion. The quantity of material removed from the Canal prism was 1,429,070 cubic yards, while 5,655 cubic yards were removed from the Obispo Diversion, 5,657 cubic yards from inclines at Point No. 3, Santa Cruz, 266 cubic yards from the engine house site at Gamboa, and 2,446 cubic yards from the road at the east end of the Empire suspension bridge. The total excavation for the same month in 1908 was 1,467,082 cubic yards, showing a decrease of 23,988 cubic yards for July of the present year.

For comparison with previous high monthly records, the following table is given:

DATE.	Prism.	Prism and outside.
March, 1908.....	1,540,497	1,615,118
October, 1908.....	1,551,409	1,598,981
February, 1909.....	1,546,008	1,644,636
March, 1909.....	1,966,294	2,065,827
April, 1909.....	1,722,442	1,798,454

The high record for the month was made by shovel No. 204 working in the Culebra District, which excavated 45,331 cubic yards of earth in 25 working days.

The best record for a shovel in the 70-ton class was made by shovel No. 127 working in the Tabernilla District, which excavated 27,933 cubic yards of earth in 25 working days.

Shovel No. 203 in the Culebra District, made the high record for one day by excavating 2,964 cubic yards of rock on July 3.

Shovel No 125 working in the Tabernilla District excavated 2,190 cubic yards on July 2, and this is the high record for one day by a 70-ton shovel during the month.

Best Records for the Month.

TABERNILLA DISTRICT.

Shovel No.	CUBIC YARDS.			No. of days at work.
	Earth.	Rock.	Total.	
254	40,835	3,551	44,386	25
127	18,994	8,939	27,933	25

BAS OBISPO DISTRICT.

232	7,324	29,296	36,620	25
226 .....	.....	31,169	31,169	24

EMPIRE DISTRICT.

265	17,734	26,602	44,336	25
209	4,355	39,197	43,552	25

CULEBRA DISTRICT.

204 .....	.....	45,331	45,331	25
214 .....	.....	45,331	45,331	26
217 .....	.....	44,120	44,120	21

BEST RECORDS FOR ONE DAY

Shovel No.	Location.	Date.	Character of material excavated.	Cubic yds. excavated.
254	Tabernilla.....	July 8.	Rock and earth	2,290
254	Tabernilla.....	July 30.	Earth.....	2,220
125	Tabernilla.....	July 2.	Earth.....	2,190
232	Bas Obispo.....	July 23.	Soft rock.....	2,427
226	Bas Obispo.....	July 27.	Rock.....	2,058
202	Empire.....	July 7.	Soft rock.....	2,717
206	Empire.....	July 27.	Soft rock.....	2,375
203	Culebra.....	July 3.	Rock.....	2,964
203	Culebra.....	July 1.	Rock.....	2,907
217	Culebra.....	July 10.	Rock and earth	2,755

SALE OF FRENCH JUNK.

Terms Under Which Old Iron and Steel will be Sold.

Proposals have been invited for the purchase of all the old iron and steel along the line of the Canal, excepting such parts or portions as may be reserved for Canal work. The amount of this material has been variously estimated from 45,000 to 120,000 tons, and it includes old locomotives, dump cars, tanks, barges, boilers, girders, dredges, sheet iron, parts of old machinery, and other miscellaneous junk left on the Isthmus by the French, or accumulated here since the beginning of operations by the Americans. A part of the copper, brass, white metal, rails and cast iron will be reserved, as many uses are found for the rails, and the metals specified can be utilized to advantage at Gorgona foundry. The bids will be opened on September 16, and as soon as a satisfactory contract can be entered into the shipment of the junk will be begun. For the present it is probable that about 700 tons will be taken to the States every two weeks by the *Ancon* and *Cristobal* on their return voyages, although delivery can be made in such amounts and in whatever vessels the Commission may deem advisable. It is thought that all the material can be delivered within three years.

As this material is principally of foreign manufacture it is subject to a duty on entry into the United States, under the new tariff law, of \$1 a short ton. Under a provision made in the Sundry Civil Act of May 27, 1908, this duty will be returned to the funds for Canal construction, if the material is sold by the Commission in the United States. In order that the amount of the duty may be returned to the Canal funds without special appropriation each year, the material will not be sold until after it has passed through the customs house at New York. Payment will be made by the contractor immediately after each delivery, and he will be under a bond of not less than \$75,000, or under a deposit of cash or securities amounting to \$50,000. After all the scrap shipped within 18 months from the date of the award has been paid for by the contractor, the amount of the bond or other securities may be reduced 50 per cent, and after an additional period of 9 months, may be reduced 25 per cent more at the option of the Chairman.

The sale is made at this time for the dual purpose of procuring ballast for the cement ships *Ancon* and *Cristobal*, on their return voyages to New York, and of getting the material which lies in the basin of Gatun Lake out of the way before the lake is filled. There are large amounts of this junk at Bohio, Tabernilla and Gorgona, all in the lake region. Quantities of it are found all along the line of the Canal, but the greater portion is stored between Cristobal and Pedro Miguel. Orders were sent out to the Division Engineers several weeks ago that tracks in the vicinity of the places where the junk has been collected must not be removed, because they would be needed in hauling the material to Cristobal.

Although much of the equipment is on trucks, it cannot be moved on its own wheels as the metrical gauge of the old French rolling stock is about 3/4 of an inch short of the 5-foot gauge of the Panama railroad. The material will therefore be scrapped where it lies,

under the direction of a representative of the Mechanical Division, and in the presence of a representative of the contractor, whose wishes will be complied with in so far as they do not conflict with economy in the handling. No pieces of more than 20 tons weight will be shipped, but this limitation will permit of the shipping of locomotive boilers with fire boxes and flues. The material will be sent in single shipload quantities to Cristobal or assembled at the seaboard in large piles, according as the Commission may find it advisable. As far as possible the material will be unloaded directly from the cars into the ships. Delivery will be made in New York Harbor at any dock requested by the contractor and consented to by the customs officials. It will be weighed by the customs officials, and sold at the basic rate of 2,000 pounds.

The great amount of machinery and equipment that was left on the Isthmus by the French has been so thoroughly utilized that, after the reservations indicated above are made, what is left will be valuable chiefly as scrap. At Gorgona foundry, a large quantity of brass, copper, white metal, and tons of cast iron have been made over into articles useful in the Canal work. Several hundred pounds of copper and brass have been sent to the Philadelphia mint to be made into Canal Medals. Such cast iron, brass, copper, and white metal as has not been used, because it was not needed or because the "scrapping" of it in small amounts would not have been profitable as an isolated operation, will be taken to the foundry. In the locomotives left by the French the fire boxes, flues, and staybolts are usually of copper, and it is estimated that there is from \$400 to \$600 worth of the metal in each locomotive.

Old rail will be saved, because it has proved of value as reinforcement for concrete, in repairing dump cars, as telephone and telegraph poles, and in various other ways. Some of the 60-pound French rail is being used in anchoring the floor of Gatun Locks to the earth, and 7,000 tons have been collected

at Empire to be straightened or bent, as the engineers require, for use in the locks. All structural I-beams, channels, angles, and parts that can be used in repairing the French equipment now in service will also be reserved. Decauville cars, track, and locomotives will also be retained because they are used in all the construction divisions on hand excavation and municipal work.

Whatever profit there may be in the sale of the old material will be small compared with the value the French equipment has already been in the Canal work. For two years the locomotives left by the French were the only ones owned by the Isthmian Canal Commission, and on June 30, 1906, there were 106 of them in service and only 15 American locomotives. A year ago 134 were in service, but since that time the number has decreased. French dump and work cars were the only ones used on the Canal work in 1904, when 308 of them were in service. On June 30, 1905, over 2,000 of them were in service, as compared with about 300 American built cars. Shop tools, stationary engines, repair parts, and materials and supplies of all kinds were found on the Isthmus by the Americans. Seven ladder dredges have been rebuilt and are now engaged in Canal excavation, and the parts of many others have been utilized.

Much of the work done in the two years of preparation, 1904 and 1905, would have been impossible without the French supplies and equipment, as waiting for supplies from the States would have involved long delays. The money value that has been assigned to the French equipment and supplies so far utilized is over \$1,000,000, but this estimate is inadequate because much material was used before the system of crediting the old French account was begun.

The following statement of the Isthmian Canal equipment in service each year since the beginning of the work shows what a large part the French rolling stock played in the first years of the work, and how it has gradually been displaced:

	1904.	1905. June 30.	1906. June 30.	1907. June 30.	1908. June 30.	1909. May 1.
<i>Locomotives:</i>						
French.....	10	70	106	99	134	129
American.....			15	160	164	164
<i>Cranes:</i>						
French.....	2	10	17	8	14	6
American.....		2	4	12	20	30
Made on the Isthmus.....						1
<i>Excavators:</i>						
French.....	3	3				
<i>Steam shovels:</i>						
45-ton Bucyrus.....			1	3	10	10
70-ton Bucyrus.....	1	8	15	28	35	35
95-ton Bucyrus.....	1	5	23	32	32	32
Model-20 Marion.....					1	1
Model-60 Marion.....					7	7
Model-91 Marion.....					16	15
<i>Spreaders:</i>						
Jordan.....		4	4	4	4	5
Mann-McCaun.....		4	9	9	19	19
<i>Unloaders:</i>						
25-ton Pull.....			4	4	4	4
60-ton Pull.....			8	14	26	26
<i>Piledrivers:</i>						
Made on the Isthmus.....			2	6	16	15
American.....					2	2
<i>Track shiflers:</i>						
Made on the Isthmus.....				3	9	10
<i>Plows, unloading:</i>						
Right hand.....			9	17	27	27
Left hand.....			7	10	13	13
Center.....			6	6	6	6
<i>Cars:</i>						
6-meter dump, French.....	248	2,000	622	255	659	656
50-ton steel flats.....		200	500	500	500	500
40-ton wooden flats.....			561	1,500	1,778	1,778
40-ton coal.....					15	15
12-yard steel dump.....		100	300	300	800	800
25-yard steel dump.....				50	300	300
4-yard steel dump.....					35	35
King-Lawson dump.....		1	1	1	1	1
Ingoldsby dump.....		12	12	12	12	12
Goodwin dump.....		12	12	12	12	12
Work (old French equipment).....	60	72	76	43	32	6
Motor.....		1	1	3	4	4
Motor velocipede.....					1	1

PUBLIC WORKS.

Operations Under the Agreements Between the United States and Panama.

Under the agreements between the United States, and the Republic of Panama, which were signed on September 20, 1907, and made effective as of July 1, 1907, it was provided that if at the expiration of two years from the latter date, it appeared that the United States could reimburse itself for the water, sewer and paving expenditures in the cities of Panama and Colon at lower water rates than now exist, within the next 50 years, the rates could be decreased, and if on the contrary, it did not appear that the United States could reimburse itself at the present rates within the time stated, they could be raised.

The time for making the first revision of the water rates fell due on July 1, 1909, while, according to the agreements, the next revision will take place five years later, or on July 1, 1914. In a letter dated April 16, 1909, the Superintendent of Public Works recommended that in view of the fact that \$800,000 had been appropriated by the Congress of the United States for new installations, an amended agreement be drawn postponing the adjustment of water rates for a further period of two years from July 1, 1909, as by that time the new work will probably have been finished, and the figures of cost known, so that an equitable readjustment can be made. It was further set forth that there was no present necessity for a change in the water rates, as the quarterly amounts collected from private consumers were about equal to the quarterly payments agreed upon by the two Governments for the amortization of the principal and interest of the water, sewer and paving cost.

The substance of this recommendation was communicated to the Panama Government by the Department of Civil Administration, with a request for an expression of its views on the subject. No official reply has yet been received, but in speaking of the matter, Mr. Samuel Lewis, Secretary of State for Panama, said that the Panama Government would certainly have no objection to the postponement of the revision of rates, at least, until it could be ascertained what the expenditures in connection with the proposed improvements and extensions in Cocoa Grove, Guachapali, and other sections of the city of Panama, and at Colon, would actually amount to.

Under the agreements referred to above, the Isthmian Canal Commission, acting for the United States, binds itself to maintain and operate the water and sewer systems of the cities of Panama and Colon for a period of 50 years, and to maintain and repair the pavements for a period of 10 years. At the time these agreements were entered into, it was estimated that the cost of installation, operation and maintenance of the water and sewer system, and the construction, maintenance and repair of the pavements in the city of Panama for these periods would be \$3,276,250, United States currency, equivalent to \$65,625 per year for the full fifty years. In the city of Colon, the estimated amount was \$3,492,500, or \$69,850 per year for the entire period. These figures form the basis for the existing water rates.

Under the above arrangement the amount that must be collected at the expiration of

each quarter in Panama, is \$16,400, and in Colon \$17,500, and the agreements stipulate that when a deficit occurs between the aggregate of water rents collected and the agreed payment, the Panama Government shall adjust the difference. There have been but three quarterly periods in the city of Panama, since the agreements went into effect, that the Panama Government has not been called upon to make up a deficiency, and but one period in the city of Colon. In the quarter ending June 30, 1909, for the first time the collections from private water consumers at both Panama and Colon exceeded the required amount. In Panama, the quarters ending June 30, 1908, and December 31, 1908, also showed surplusages. The greatest deficit for any one quarter was that ending September 30, 1907, the amount in Panama being \$3,142.75, and in Colon, \$9,073.95.

The total amount paid by the Panama Government on account of deficits in the water collections to July 1, 1909, was \$39,429.53, of which sum \$12,720.30 was paid on account of insufficient water collections in

the city of Panama, and \$26,709.23 in the city of Colon. The total surplusage to July 1, 1909 amounts to \$2,571.10, of which excess sum \$1,213.50 is credited to Panama, and \$1,357.60 to Colon. The deficits have been gradually diminishing, due in a large measure to the increased number of new installations, which have shown a steady growth. Under the present plan, the collections in excess of the required amounts in the cities of Panama and Colon are turned over to the Disbursing Officer to be credited to the principal and interest of the debt. From June 30, 1906, the date on which the water rates became effective in Panama, until June 30, 1909, the record in the Public Works' office shows but seven bills remaining unpaid for the entire period, the amount involved being \$133.20.

A statement showing the water consumption, both public and private, water collections, collections of deficits, and excess amounts in the city of Panama, from the beginning of operations to July 1, 1909, is given herewith:

For quarter ending.	No. paying	CONSUMPTION.		COLLECTIONS.		In excess of \$16,400.
		Private.	Public.	Private.	Republic of Panama.	
		Gallons.	Gallons.			
*June 30, 1906.....	432			\$915.75		
*September 30, 1906.....	633			\$1,557.90		
*December 31, 1906.....	753	12,934,110	1,674,990	\$7,312.50	\$251.25	
March 31, 1907.....	892	51,793,147	8,900,853	\$9,423.10	1,335.15	
June 30, 1907.....	997	46,946,797	19,332,203	\$10,213.65	2,899.80	
September 30, 1907.....	1,071	51,367,000	15,507,000	\$3,257.25	3,142.75	
December 31, 1907.....	1,133	52,261,000	18,907,000	\$3,763.30	2,636.70	
March 31, 1908.....	1,166	60,871,000	9,531,000	\$5,547.70	\$52.30	
June 30, 1908.....	1,179	65,733,000	16,323,000	\$6,721.90		\$321.90
September 30, 1908.....	1,200	59,436,000	27,026,182	\$15,327.40	1,072.60	
December 31, 1908.....	1,204	63,442,500	23,390,000	\$6,564.20		164.20
March 31, 1909.....	1,239	60,224,500	20,901,750	\$5,870.25	\$59.75	
June 30, 1909.....	1,292	67,802,750	17,740,500	\$11,127.40		727.40
Total.....		592,811,804	179,234,478	\$153,602.30	\$12,720.30	\$1,213.50

*On account of absence of water meters only the minimum charge was collected. The charge by meter commenced December 1, 1905. The Republic of Panama was charged at the same rate as private consumers for the difference between the total amount of water that entered the city, as shown by the Venturi meter, and the amount used by private consumers for all quarters up to and including the quarter ended June 30, 1907. Since then it has paid the difference between the amount collected each quarter, if any, and \$16,400.

†On account of errors, the following refundments were made by the Disbursing Officer: June 30, 1906, \$3; September 30, 1906, \$34.95; December 31, 1906, \$112.50; March 31, 1907, \$37.50; June 30, 1907, \$25.05.

‡Includes \$16,249 collected by July 15, and \$875.40 outstanding after the close of the discount period.

In Colon, the water users are divided into three classes, viz., private, Panama Railroad Company, and Isthmian Canal Commission. In 1906, the old water system of the railroad company was transferred to the Commission, with the understanding that the latter was to supply the railroad with water free of charge. On September 6, 1906, the Commission passed a resolution charging the railroad company 11 cents gold per 1,000 gallons for water used by it, and on January 21, 1907, the arrangement was again changed, and a rate of 40 cents gold per 1,000 gallons established, which was the same as the net rate at which water was furnished to private consumers. The railroad company objected to the latter rate as excessive, and in the meantime had commenced work on a new water works system of its own known as the Mindi Diversion plant, with a new pipe line from Dock No. 14 to the Cristobal tank.

An agreement between the railroad company and the Commission was finally reached on March 21, 1908, approved by the Secretary of War April 23, 1908, whereby the railroad company agreed to transfer to the Commission its then existing water system, except the water pipes on docks Nos. 1, 2, 3 and 4, and to grant a perpetual easement to all lands occupied by the Min-

di water works system, in consideration of the supply to the railroad company free of charge, of all water consumed by it outside of the city of Colon, in its shops and locomotives, and all water necessary to supply docks Nos. 11 and 14, and the Cristobal supply tank. It stipulated, however, that no water should be sold to foreign ships from any docks outside of the city of Colon unless notice of such sale was given to the Superintendent of Public Works, and the amount so delivered for resale to foreign ships was measured and paid for by the railroad company at the rates charged it for water in the city of Colon.

In consideration of the above, and also of the fact that the Panama Railroad Company does not use the sewer system of the city of Colon, a rate of 30 cents gold per 1,000 gallons was established and is now operative.

The purchase of water by foreign ships outside the city of Colon for the period March 1, 1909, to June 30, 1909, amounted to 37,037 gallons, and the water collection on account thereof, \$11.10. The customary charge to foreign ships by the Panama Railroad Company is one-half cent gold per gallon. The Panama Railroad Company's water bills are settled in cash, or by draft, while the I. C. C. bills in Colon are made a

bookkeeping transaction only. The amount of the bills are, however, credited in full to water collections in the quarterly accounting with the Panama Government. A state-

ment showing water consumption, number of private connections, collections, deficits, etc., at Colon, from the beginning of operations to July 1, 1909, follows:

For quarter ending.	Private connections.	CONSUMPTION.				COLLECTIONS.				In excess of \$17,500.
		Private.	P. R. R.	I. C. C.	Public.	Private.	P. R. R.	I. C. C.	R. of P.	
		Gallons.	Gallons.	Gallons.	Gallons.					
Sept. 30, 1906...	2	298,000				\$121.20				
Dec. 31, 1906...	2	1,153,027				465.20				
March 31, 1907...	10	1,457,930				584.40				
June 30, 1907...	49	3,520,659	11,532,000	6,405,170	43,869,378	1,404.15				
Sept. 30, 1907...	126	8,579,856	11,247,510	5,521,063	44,474,251	3,395.48	\$3,374.25	\$1,656.32	\$9,073.95	
Dec. 31, 1907...	184	14,268,154	13,561,000	6,448,094	49,143,012	5,948.27	4,068.30	1,934.40	5,549.03	
March 31, 1908...	235	20,230,237	12,685,737	7,294,208	24,559,412	8,166.75	3,865.80	2,188.20	3,279.25	
June 30, 1908...	300	19,183,500	12,374,200	6,064,100	22,846,052	7,789.50	3,712.50	1,819.20	4,174.80	
Sept. 30, 1908...	352	26,436,000	8,981,675	5,740,700	32,831,235	10,683.55	2,694.60	1,722.30	2,399.55	
Dec. 31, 1908...	400	28,966,595	7,058,355	3,570,775	22,133,275	11,788.25	2,117.70	1,671.30	1,922.75	
March 31, 1909...	436	32,967,330	8,887,500	4,127,250	21,020,320	13,285.60	2,666.40	1,238.10	309.90	
June 30, 1909...	464	36,968,250	9,579,750	3,541,575	9,669,250	*14,921.00	2,874.30	1,062.30		\$1,357.60
Total.....		194,029,538	96,107,727	50,712,935	270,546,185	\$78,553.35	\$25,373.85	\$13,292.12	\$36,709.23	\$1,357.60

*Includes 443 bills collected up to close of business July 15, and 21 bills for \$736.20 outstanding at close of discount period.

The expenditures during the fiscal year 1908-09 on water works, sewers and pavements in the cities of Panama and Colon, have been principally confined to maintenance of the existing plant, new water installations being classed as maintenance. There was a small construction expense at Colon on account of new water pipes and sewers, and the emergency reservoir on Ancon Hill was completed. No part of the

reservoir expense will, however, be charged to the amount to be amortized by the Panama Government, as it is for reserve fire protection.

The Panama Government has not yet accepted the figures of cost as prepared and presented for the period up to and including June 30, 1908. A report on the subject is now in course of preparation in the office of the Hacienda, and will be ready for issue shortly.

DREDGING IN JULY.

Operations in the Atlantic and Pacific Divisions Show an Increase Over June.

The combined output of the dredges of the Atlantic and Pacific Divisions for July amounted to 1,775,077 cubic yards, as compared with 1,755,178 cubic yards for June, an increase of 19,899 cubic yards. Of the July excavation, 1,107,814 cubic yards were removed from the Canal prism, and 667,263 from outside works. In the Atlantic Division, 348,451 cubic yards belonged to Canal excavation and 660,275 cubic yards to outside works. In the Pacific Division, 759,363 cubic yards were taken from the prism and 6,988 cubic yards from outside. The dredging output in the Atlantic Division shows an increase over June of 133,050 cubic yards, while in the Pacific Division there was a decrease of 113,151 cubic yards.

The suction dredge *Caribbean* of the Atlantic Division excavated a total of 393,102 cubic yards, exceeding its best previous record, made in June, 1909, by 15,089 cubic yards. This dredge has broken its record in three successive months. A mark of 374,060 cubic yards was established in May of this year; in June, the record was raised to 378,013 cubic yards, while the output of the dredge for June nearly reached the 400,000 figure. Of the amount taken out by the *Caribbean* during July, 219,618 cubic yards were removed from the approach channel to Cristobal Harbor, and 53,965 cubic yards from in front of Pier No. 11, Cristobal. The remainder of the *Caribbean's* output, 119,519 cubic yards, was taken from the Canal prism.

The dipper dredge *Mindi* took out 37,975 cubic yards of rock from in front of Pier No. 11, and 1,200 cubic yards of earth and 2,000 cubic yards of rock from the dry dock slip. Dredges Nos. 1, 5 and 6 worked the entire month in the Canal prism removing 200,894 cubic yards of earth and 28,038 cubic yards of rock. In taking out 176,082 cubic yards

of material, dredge No. 5 established a new Isthmian record for old French ladder dredges.

In the Gatun section, dredge No. 82 excavated 156,049 cubic yards from the borrow pit east of the Chagres River, and dredge No. 83 removed 102,600 cubic yards from the borrow pit west of the river, both dredges pumping the entire month into Gatun Dam. Dredge No. 82 was laid up for seven working days in July, during which new thrust bearings were installed on the main pump, and new lower pump casing, lined throughout, was substituted for the worn-out casing. Dredge No. 85 excavated 86,868 cubic yards from the channel in front of the spillway dock, and northward in the old French canal and Chagres River. On the morning of July 30, the upper bank caved in on the dredge's ladder, buckling and wrecking the supporting "A" frame, necessitating dry dock repairs.

The detailed statement of operations in the Atlantic Division follows:

DREDGE.	Type.	Cu. yds.
Caribbean.....	Suction.....	393,102
No. 1.....	Ladder.....	24,812
No. 5.....	Ladder.....	176,082
No. 6.....	Ladder.....	28,038
Mindi.....	Dipper.....	41,175
No. 82.....	Suction.....	156,049
No. 83.....	Suction.....	102,600
No. 85.....	Suction.....	86,868
Total.....		1,008,726

In the Pacific Division, the dredge *Culebra* was engaged during the entire month in deepening the channel from the intersection of the Rio Grande and the French canal, seaward, removing 309,100 cubic yards. The dredge *Gopher* worked up to and including July 9 in the new channel, continuing the cut along the east bank toward the intersection of the French and American channels. On July 10 the dredge was laid up and overhauled preparatory to working in the sand beds at Chamé. It was taken to Chamé on July 26, and brought back again on July 29,

after having dredged about 1,000 cubic yards of sand. The *Mole* worked on the west bank of the Canal, opposite the Panama railroad wharf, up to July 9, when it was removed to the *Gopher's* former position in the new channel, continuing at that point until July 25 when it was taken to buoy No. 15 in the new channel, where it remained the balance of the month. The total output of the *Mole* was 101,130 cubic yards. The *Badger* worked during the entire month in the upper French canal, a short distance above the intersection of the Rio Grande and the Canal, and removed 109,761 cubic yards. The dredge *Cardenas* worked from July 1 to 7 near Station 2,225 removing rock broken by the *Vulcan* during its ten-day test, and for the rest of the month was engaged in stripping material from the top of the rock area at this point. The dredge's output was 30,800 cubic yards. The *Marmot* was at work the entire month in the extreme upper end of the French canal, and took out 147,894 cubic yards.

The orange peel dredge continued excavating in the Rio Grande Diversion, between Miraflores and the Rio Grande River, taking out 6,988 cubic yards. The suction dredge *Sandpiper*, working in the lower lock chamber at Miraflores removed 26,182 cubic yards, of which 14,670 cubic yards constituted hydraulic fill in the core of the west dam. The detailed statement of operations in the Pacific Division follows:

DREDGE.	Type.	Cu. yds.
Culebra.....	Suction.....	309,100
Marmot.....	Ladder.....	147,894
Gopher.....	Ladder.....	34,496
Badger.....	Ladder.....	109,761
Mole.....	Ladder.....	101,130
Cardenas.....	Dipper.....	30,800
Orange Peel.....	O. P.....	6,988
Sandpiper.....	Suction.....	26,182
Total.....		766,351

Supplies for Canal Work.

The following steamers arrived at the ports of Cristobal and Colon during the week ending August 14, with supplies for the Isthmian Canal Commission:

Prinz Joachim, August 9, from New York—100 water closets for buildings; 8 fuel oil tanks for oil storage.

Sheppy Allison, August 10, from Baltimore—100 dump cars for Mechanical Division, for stock; 92 tons galvanized pipe, 199 tons C. I. pipe and specials; 63 tons steel plates; 28 tons steel bars; 200,000 pounds track spikes; 14,000 pounds drift bolts; 25,000 pounds boat spikes; 50 tons rivets and nuts; 1,000 drums gasoline; 50,000 building brick; 200 tons blacksmith's coal; 206 tons coke; 200 pieces drain tile; 8,152 pieces sewer pipe; 1,200 bundles angle bars, for stock; 150 tons structural steel for culvert forns, Gatun; 82,447 feet B. M. white oak lumber, for car repairs; 10,000 pounds dynamite, for Porto Bello.

Colon, August 11, from New York—1,000 barrels cement; 30,000 electric fuses; 212 bundles crow bars; 20 boxes R. R. picks; 382 boxes window glass; 605 kegs wire nails; 150 cases yellow grease for stock; and a miscellaneous cargo aggregating 3,377 packages weighing 400 tons.

Turrialba, August 12, from New Orleans—30 tons rock crushing machinery, for Balboa; 39 creosoted piles for Balboa; 233 bales cotton waste; 35 reels wire rope; 2,500 gallons dynamo oil; 9,390 gallons kerosene; 25 sets split switches, for stock; 588 pieces castings, for car repairs.

Cristobal, August 13, from New York—51,408 bags and 12,043 barrels cement, for Gatun and Miraflores; 3,493 pieces sewer pipe; 23 reels copper wire; 370 pieces wrought pipe, for stock.

Proposals for Repairs to Building.

Proposals will be received by the Assistant Quartermaster, U. S. Marine Corps, for furnishing the necessary labor and supervision to make certain repairs to building No. 297 at Camp Elliott, including a roof over the structure. All materials will be delivered to the contractor at the site. For information and blank forms address, Assistant Quartermaster, U. S. Marine Corps, Camp Elliott, Bas Obispo, Canal Zone.

D STREET SEWER, COLON.

Report of Committee Favors a Closed Sewer.

CULEBRA, C. Z., August 7, 1909.

LIEUT.-COL. GEO. W. GOETHALS,

Chairman and Chief Engineer, Culebra, C. Z.

Sir: The Committee appointed by you July 14, 1909, to consider a proposed plan for the installation of a storm sewer in "D" street, Colon, to be constructed and paid for under authority of Act of Congress passed at its last session appropriating \$800,000 for sanitary improvements in Panama and Colon, held its first meeting in Colon on August 3, at which meeting were present the Chief Engineer of the Panamanian Government and the Sanitary Officer of the city of Colon.

At this meeting the Chief Engineer of the Republic of Panama expressed a preference for an open ditch, bottom elevation about 2½ feet, and width about 6 feet. The opinions of the representative of the Sanitary Department were practically confined to questions of cleaning the sewer.

The Committee, accompanied by the Chief Engineer of the Republic of Panama and the Sanitary Officer of the city of Colon, made a personal inspection of "D" street, discussing with these representatives orally, the salient features that should govern a design. The Committee then directed that a design be prepared for an open sewer, bottom elevation at summit 1 foot, 0 inches, and at exit 3 feet, 0 inches; width at summit 4 feet, 0 inches and to be so increased from summit to exit as to carry to the sea the expected storm water. The Committee then adjourned and met again at Culebra on August 7.

The estimated cost of the design presented to the Committee is \$125,000. The estimated cost of the alternative open sewer design is \$119,232. It is probable that the closed sewer could be maintained and operated at a less cost per year than the open sewer. The slope of the former is intended to facilitate flushing, while in the

latter, manual cleaning would probably be necessary. An estimate indicates that the additional cost for the open sewer might reach \$3,700 per year, which, if capitalized at 3 per cent would amount to \$123,333.

The Committee, after considering the disadvantages of an open sewer, which consist largely of its availability as a dumping ground for garbage and other material, its permanent injury to the abutting property on account of its unsightliness and attendant disagreeable odors, and the necessary contraction of the roadways, which will be greatest near the exits of the sewer, where the property is most valuable, adopted the following resolution:

Resolved, That the Committee, bearing in mind the probable future development of Colon, is of the opinion that an open sewer along "D" street is not desirable as a permanent feature.

After further discussion the following resolution was proposed and carried:

Resolved, That the Committee favors a type of closed sewer in general accord with the plan before it for consideration; the invert at the summit level to be laid between 1½ feet and 3 feet below mean sea level, and to be located about midway between exits; the slope of the bottom of the sewer from summit level to exit to average approximately 2 feet per 1,000 feet; variations from section submitted may be advisable from a construction standpoint, such variations to be subject to approval of the Chairman and Chief Engineer.

The estimates, submitted by the Division Engineer of the Atlantic Division and considered by the Committee, indicate that \$125,000 can be expended in constructing the storm sewer in "D" street, and that there will remain sufficient of the \$800,000 appropriation above referred to to complete the contemplated sanitary improvements in the city of Colon provided that \$509,000 of this appropriation is allotted to that city.

Respectfully,

H. F. HODGES,

Assistant Chief Engineer.

WM. L. SIBERT,

Division Engineer, Atlantic Division.

H. H. ROUSSEAU,

Assistant to the Chief Engineer.

R. BUDD,

Chief Engineer, Panama railroad.

The report has been approved by the

Chairman and Chief Engineer, and has been presented to the Government of Panama.

PERSONAL.

Dr. H. R. Carter, Director of Hospitals, with his wife, daughter, and son, sailed from Cristobal on the *Allianca* for New York on August 11. At the expiration of his leave in the States he will resign, after having completed more than five years' service on the Isthmus.

Mr. R. Budd, Chief Engineer of the Panama Railroad Company, sailed for New York on the *Allianca* on August 11.

Major Chester Harding and Major Edgar Jadwin, sailed for New York on the *Avrato*, of the Royal Mail Steamship Company, on Wednesday, August 11, on annual leave of absence.

Obituary.

Harriet A. Humphey of Philadelphia, Pa., died at the home of her daughter, Mrs. Elliott F. Brown, at Gatun, on August 14. She was 71 years old and had resided on the Isthmus four months.

Frank Moore died at Colon Hospital on August 14, 1909. He was born in New York, was 42 years of age, unmarried, and was employed on the P. R. R. steamship *Cristobal*.

Misdirected Letters.

DIVISION OF POSTS, CUSTOMS AND REVENUES, ANCON, C. Z., August 18, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured on request of addressee:

Adilard, M.	Marx, Frank H. (2)
Baptiste, Cornelius	McDermid, Robt.
Benson, Jack	Miller, Vivian
Boyle, John	Muldoon, Albert C.
Brown, Gale B.	O'Donnell, A. O.
Bush, E. (2d. class)	Peterkin, David
Butler, Harry H.	Polo, Juan B.
Cochran, C. P.	Ray, Harry (Chippie)
Columbus, Mrs. Calhoun	Swain, John G. (2)
Dutari, Dr. A. A.	Tabor, Dr. John
Forde, Cicel	Thomas, Edw. G.
Gilaga, Benito R.	Thompson, Newton
Linville, Dr. J. A.	Farnum.
	Wheeler, Robert W.

PANAMA RAILROAD COMPANY.

PASSENGER TRAIN TIME TABLE No. 5—IN EFFECT AUGUST 15, 1909.

SOUTHWARD.									Miles from Colon.	STATIONS.	NORTHWARD.										
SUNDAYS AND HOLIDAYS.					WEEK DAYS.						WEEK DAYS.				SUNDAYS AND HOLIDAYS.						
29	27	25	23	21	7	5	3	2			4	6	8	20	22	24	26	28	30		
P. M.	P. M.	P. M.	A. M.	A. M.	P. M.	A. M.	A. M.	A. M.			P. M.	P. M.	P. M.	A. M.	P. M.	P. M.	P. M.	P. M.	P. M.		
7.00	4.00	1.00	10.00	6.45	4.35	10.30	5.15	0.00	Leave.	†Colon.	Arrive.	9.05	1.15	3.50	3.00	9.03	12.15	3.15	6.15	9.15	11.55
7.05	4.05	1.05	10.05	6.50	4.40	†10.37	5.20	1.77	†Mount Hope.			8.58	†1.07	†3.42	†7.52	8.53	†12.08	†3.08	†6.08	†9.08	†11.48
†7.10	†4.10	†1.10	†10.10	†6.55	†4.44	†10.42	†5.25	4.37	†Mindi.			†8.51	†1.01	†3.36	†7.44	†8.47	†12.02	3.02	†6.02	†9.02	†11.42
7.18	4.18	1.18	10.18	7.03	4.52	10.50	5.33	6.79	†Gatun.			8.43	12.54	3.30	7.32	8.40	11.55	2.55	5.55	8.55	11.35
†7.27	†4.27	†1.27	†10.27	†7.12	†5.01	†11.00	†5.42	10.41	†Lion Hill.			8.33	†12.42	3.19	†7.23	†8.29	†11.44	†2.44	†5.44	†8.44	†11.24
†7.33	†4.33	†1.33	†10.33	†7.18	†5.06	†11.06	†5.49	12.48	†Ahorca Lagarto.			8.27	†12.35	3.13	†7.16	†8.23	†11.38	†2.38	†5.38	†8.38	†11.18
7.40	4.40	1.40	10.40	7.25	5.13	11.13	5.56	15.26	†Bohio.			8.20	12.29	3.05	7.09	8.18	11.33	2.33	5.33	8.33	11.13
7.47	4.47	1.47	10.47	7.32	5.22	11.22	†6.05	18.51	†Prioles.			8.10	†12.21	†2.58	6.59	8.10	†11.25	†2.25	†5.25	†8.25	†11.05
7.55	4.55	1.55	10.55	7.40	5.31	11.31	6.12	21.37	†Tabernilla.			8.03	12.15	2.50	6.50	8.04	†11.19	2.19	5.19	8.19	10.59
8.00	5.00	2.00	11.00	7.45	5.37	11.37	6.18	23.30	†San Pablo.			7.58	12.08	2.46	6.45	7.57	†11.12	2.12	5.12	8.12	10.52
†8.02	†5.02	†2.02	†11.02	†7.47	†5.40	†11.40	6.20	24.31	†Bailamonos.			†7.52	†12.03	2.43	†6.42	†7.53	†11.08	†2.08	†5.08	†8.08	†10.48
8.08	5.08	2.08	11.08	7.51	5.45	11.45	6.25	25.74	†Mamei.			7.50	12.01	2.40	6.39	7.49	11.04	2.04	5.04	8.04	10.44
8.13	5.13	2.13	11.13	7.58	5.53	11.53	6.33	28.27	†Gorgona.			7.41	11.53	2.32	6.33	7.42	10.57	1.57	4.57	7.57	10.37
8.18	5.18	2.18	11.18	8.03	5.58	11.58	6.37	29.68	†Matachin.			7.36	11.48	†2.27	6.28	7.37	10.52	1.52	4.52	7.52	†10.32
8.22	5.22	2.22	11.22	8.08	6.03	12.03	6.42	31.01	†Bas Obispo.			7.32	11.43	2.23	6.24	7.33	10.48	1.48	4.48	7.48	†10.28
8.28	5.28	2.28	11.28	8.16	6.10	12.10	6.49	32.62	†Las Cascadas.			7.25	11.35	2.16	6.17	7.25	10.40	1.40	4.40	7.40	10.20
8.34	5.34	2.34	11.34	8.21	6.17	12.17	6.56	34.91	†Empire.			7.17	11.29	2.10	6.12	7.21	10.36	1.36	4.36	7.36	10.16
8.39	5.39	2.39	11.39	8.26	6.22	12.22	7.03	35.90	†Culebra.			7.10	11.24	2.05	6.08	7.15	10.30	1.30	4.30	7.30	10.10
8.47	5.47	2.47	11.47	8.35	6.32	12.32	7.07	39.71	†Paraiso.			6.54	11.11	1.50	5.54	†7.06	†10.21	1.21	4.21	7.21	10.01
8.51	5.51	2.51	11.51	8.40	6.37	12.38	7.11	40.37	†Pedro Miguel.			6.51	11.07	1.48	5.50	7.03	10.18	1.18	4.18	7.18	9.58
8.56	5.56	2.56	11.56	8.45	6.42	12.43	7.16	41.73	†Miraflores.			6.42	11.02	†1.44	5.46	7.00	10.15	1.15	4.15	7.15	†9.55
9.04	6.04	3.04	12.04	8.51	6.50	12.50	7.21	44.31	†Corozal.			6.48	10.54	1.38	5.38	6.53	10.08	1.08	4.08	7.08	9.48
9.15	6.15	3.15	12.15	9.00	7.00	1.00	7.30	47.14	Arrive.	†Panama.	Leave.	6.35	10.45	1.30	5.30	6.45	10.00	1.00	4.00	7.00	9.40
P. M.	P. M.	P. M.	P. M.	A. M.	P. M.	P. M.	A. M.					A. M.	A. M.	P. M.	P. M.	A. M.	A. M.	P. M.	P. M.	P. M.	P. M.
29	27	25	23	21	7	5	3		†Telegraph station.	†Flag station.		2	4	6	8	20	22	24	26	28	30

SOCIAL LIFE OF THE ZONE.

Women's Clubs Federation Meeting—Other Features.

A meeting of the executive board of the Canal Zone Federation of Women's Clubs and conference of club presidents was held at the Commission clubhouse, Cristobal, on the afternoon of August 12, the president, Mrs. Thomas E. Brown, Jr., presiding. The Federation committees for the year will be: Art and Literature, Library Extension, Forestry and Waterways, Education, Botany, Home, and Philanthropy. At a meeting of the executive board in May, 1909, the Reciprocity committee was abolished, and its work will be divided between the Art and Literature, and Library Extension committees.

The Art and Literature committee will assist in outlining programs, forward upon request the books and portfolios of art which have been presented to the Federation by the Eighth District art committee, of St. Louis, and give the various clubs such other assistance as may be required. The club year books and calendars will be in the hands of the Library Extension committee. A gift of books has been received from club women in Marshalltown, Ia. The present arrangement is to keep these books in Cristobal. The Cristobal children's library is to be removed from the Commission chapel to the rest house, where suitable provision for their care will be made. Mrs. Charles W. Boxer, of Ancon, is chairman of the Library Extension committee, and Mrs. Ralph Blunt, of Cristobal, was elected vice-chairman. The committee will organize for active work, and it is expected that the traveling library will become a feature of Federation activity.

The Federation is interested in securing kindergarten teachers and equipment for the Zone public schools, and to this end, the education committee will canvass the stations and a report on the number of children eligible for kindergarten will be made at the next meeting.

The ordering of the Federation pin, which was chosen from designs submitted at the last meeting, is in the hands of the chairman, Mrs. H. C. Ball, of Empire. Individual club members who wish to secure pins are urged to forward their orders, with the money, \$2.50, to Mrs. Ball at once, without waiting for their clubs to convene. A number of General Federation pins has been ordered, and will be on sale at the October meeting.

Invitations for the October meeting were extended by the Pedro Miguel and Gatun clubs, through their presidents, and that of the Gatun club was accepted by the board. The convention will be held at the Commission chapel, Gatun, on Tuesday, October 12, the second anniversary of the organization of the Federation. There will be but one session, beginning at 2 o'clock. For their guidance in electing delegates, the chairman of the credentials committee desires to call attention of club presidents to the following sections of the by-laws:

SECTION 1 Each club shall be represented at the annual election and at the regular meetings of the Federation by its president and three delegates, who shall have the power to vote on all questions coming before the Federation.

SEC. 2. When the president of any club is a member of the executive board of the Federation, her club shall send a substitute to represent her as a delegate.

SEC. 3. Members of clubs belonging to the Canal Zone Federation of Clubs may be present at regular

meetings of the Federation and may take part in the discussions upon all measures brought forward, but, unless otherwise entitled, shall not introduce motions or vote.

The Cristobal Woman's Club has purchased a drinking trough for horses which will be presented to the town of Cristobal. The trough will be placed near the Commission clubhouse. The club gave a complimentary concert to members and their friends on Thursday evening, August 5. The program consisted of piano solos by Mrs. Ullrich and Miss Burkhalter; violin solos by Dr. Hill, and readings by Miss Mary Rebecca Slifer. The attendance was large.

Work is going forward on the tennis courts to be opened under the patronage of the Gatun Woman's Club. The court is being made on land assigned by the Commission. The expense of the labor is met by the club. The court will be open to residents of Gatun on subscription of \$5.00. It is expected that a tennis club will be formed, independently of the woman's club. The club kindergarten closed some weeks ago, the properties of the school being sold to club members. It is expected to reopen the kindergarten in the fall, unless arrangements are made for the pupils in the Gatun school.

The Gorgona Woman's Club held a business meeting on Thursday, August 5. Plans for an entertainment are under way.

An entertainment under the auspices of the Pedro Miguel Woman's Club was given at the clubrooms on Monday evening, August 16, Mr. J. Wesley Holland presenting a program of monologues and readings.

Under the auspices of Kangaroo Court No. 1, Empire, a vaudeville entertainment was given at the lodge hall on Saturday evening, August 7. Miss Marie Kenny, a professional entertainer, was assisted by Messrs. Jacobs, Moore, Flynn, Peaslack, and the Manila Mandolin Quartette. The dance announced for that evening was postponed and took place on Saturday evening, August 14.

A meeting of the board of directors of the Canal Zone Humane Society was held at Ancon on Sunday afternoon, August 8, the president, Col. W. C. Gorgas, presiding. In response to a recommendation of the officers in Cristobal, the Panama Railroad Company will place a drinking fountain for horses at Colon in the vicinity of the old Colon station. A recommendation has been forwarded to the Governor of Colon to organize a humane society in that city, similar to that in Panama, to cooperate in the work of the Canal Zone society. The society has forwarded an offer to the president of the Panama Humane Society to defray one-half the expense of placing two drinking troughs in the city of Panama, each organization to appropriate a sum not to exceed \$50 gold for the purpose. The board elected Mrs. Lorin A. Clark of Gatun to fill the vacancy in its numbers left by the resignation of Mr. Geo. L. Campen. A badge, similar to that worn by the members of the New York Humane Society, was ordered.

Ancon Club, I. O. O. F.

The next regular meeting of Ancon Club, I. O. O. F. will be held Thursday evening, August 19, at 8 o'clock. There will be a special meeting Saturday evening, August 21, at which Mr. B. F. Sisson, D. D. G. S. will be present.

COMMISSION CLUBHOUSES

Activities of the Young Men's Christian Association.

CULEBRA.

At the regular meeting of the chess club held last week, Mr. C. M. Wilson, the present champion of the club, played a simultaneous game against all the other members of the club, winning all but one match, which ended in a draw.

The new indoor hand ball court is completed and is proving a popular feature.

The farce comedy "Captain Racket" will be presented by the Gorgona Y. M. C. A. Dramatic Club on Friday night, August 20.

Sunday evening, August 15, Rev. J. W. Holland held his farewell service at the clubhouse. After a few remarks regarding his year spent on the Zone, Mr. Holland read by request, Elizabeth Stuart Phelps' story, "The Singular Life." Special music consisted of a piano solo by Mrs. Ernest E. Lee and two vocal solos by Mr. George R. D. Kramer. Mr. Holland left for the States on August 17.

Judge Thos. E. Brown will speak at the Y. M. C. A. Sunday evening, August 22. This will be a union meeting of the Culebra Union League, and the Y. M. C. A. Special music will be furnished.

EMPIRE.

A bowling match between the men from the Empire shop offices, and the men from the Division Engineer's office resulted as follows: Shop office—846, 732, 787. Engineer's office—750, 781, 826.

Every Tuesday and Friday, night classes are held in the gymnasium. Calisthenics, apparatus work and recreative games are features.

The Junior Department of the Empire Y. M. C. A. is planning a trip to the bathing beach in Panama.

All members interested in the organization of a basket ball team are requested to leave their names with Assistant Secretary Ludwig.

GORGONA.

The following members of the Gorgona Y. M. C. A. have entered the handicap pool and billiard tournament which will be started at once:

Pool entries—E. L. Emery, Frank Lasker, W. H. Keenan, J. M. Warrick, M. I. Miller, E. R. Hall, Dan Kenney, J. D. Deavours, E. A. McInerney, L. E. Clark. Billiard entries—Frank Lasker, G. Grosse, C. L. Prentiss, W. J. Wright, U. L. Hill, Thos. Bailey.

The bowling alleys are being repaired and will be in good shape Thursday. Come out and practice up for the league tournament and try for a place on the association team.

The attractiveness of the lobby has been greatly increased by the installation of Tungsten lights.

The Gorgona Y. M. C. A. Dramatic Club presented the farce comedy "Captain Racket" to a crowded house on August 14. The residents of Gorgona showed their interest and appreciation by their presence and hearty applause.

CRISTOBAL.

Saturday night, August 14, the Empire team bowled a match of three games with the team representing the local association, with the following result: Empire—795, 891, 836. Cristobal—903, 812, 895.

A shipment of new books has recently been received from the States as an addition to the library. All the books in the library are being renumbered, and recatalogued according to authors and titles.

The Union Christian League of Culebra.

Rev. John Wesley Holland, Commission Chaplain at Culebra, who has had charge of the regular services of the Union Christian League, has resigned to re-enter the regular ministry of the Methodist Episcopal Church in Illinois. During his ten months service at Culebra there has been an average attendance of 70 at the Sunday evening services, and an average of 17 at the Bible class on Thursday evenings. There also have been eight additional gatherings under the auspices of the League, consisting of receptions, musicales, and special religious meetings. Awaiting the appointment of a regular Chaplain, the League will continue all its usual services, securing lay speakers principally to give addresses.

Gorgona Athletic Park Association.

A special meeting of the stockholders of the Gorgona Athletic Park Association, will be held in the hall over the I. C. C. Hotel, at 8 p.m., Friday, August 20, 1909.

OFFICIAL CIRCULARS.

Overtime Pay for Hourly Employees.

CULEBRA, C. Z., August 9, 1909.

CIRCULAR No. 132-F:

The following resolution, adopted by the Commission at its 154th meeting, is published for the information and guidance of all concerned:

Resolved, That, effective September 1, 1909, all hourly employees who are citizens of the United States will be paid time and one-half for work over the eight-hour day, all other hourly employees will be paid time and one-half for work over ten hours in one day. All hourly employees will be paid time and one-half for all work on Sundays and holidays.

Attention is called to the fact that the length of the working day for mechanics and laborers, as now established by the United States Statutes, is not changed by the above resolution. It is merely intended that when alien mechanics are required to perform emergency work after the close of the eight-hour day, they shall be paid straight time until they have worked ten hours; and that laborers, when required to work more than nine hours per day, shall not be paid time and one-half until after ten hours' work.

GEO. W. GOETHALS, *Chairman*.

Family Quarters.

CULEBRA, C. Z., August 10, 1909.

CIRCULAR No. 134-B:

The following resolution, adopted by the Commission at its 154th meeting, is published for the information and guidance of all concerned:

Resolved, That family quarters may be held, with the approval of the Chairman, for the full period of any extended leave of absence with pay which may be granted to the employee to whom quarters are assigned.

That family quarters may be held for 56 days during the absence either of the employee to whom they are assigned, or of his family, or of both simultaneously, provided that this privilege shall not be granted for more than one period of 56 days in any service year.

If vacated the second time during the service year either by the employee, his family, or both simultaneously, quarters will be held for not more than 42 days.

This rule supersedes in part the rules governing the assignment of married quarters adopted by the Commission at its 130th meeting.

GEO. W. GOETHALS, *Chairman*.

No Holiday Pay for Silver Employees.

CULEBRA, C. Z., August 9, 1909.

CIRCULAR No. 133-A. (Amending, also, Circular No. 132):

The following resolution, adopted by the Commission at its 154th meeting, is published for the information and guidance of all concerned:

Resolved, That hereafter hourly employees on the so-called silver rolls, who are not citizens of the United States, will not be allowed gratuity pay for holidays.

GEO. W. GOETHALS, *Chairman*.

Corral Charges for Private Work.

CULEBRA, C. Z., August 12, 1909.

In future, corral charges covering shoeing of private animals and repairs to private equipment will be collected by deductions from pay-rolls. Any information in regard to details of charges may be obtained from the District Quartermaster of the district in which the service is rendered.

C. A. DEVOL, *Chief Quartermaster*.

Steamship Baggage.

The General Manager of the Panama Railroad Company wishes to call attention to the following rules printed in THE CANAL RECORD of June 9, 1909:

Passengers for Panama railroad steamships will avoid a great deal of confusion to themselves, and the probable loss of baggage, if they will kindly see that their baggage, with full directions, is delivered to the agent on steamer sailing day, at least one hour before the train is due to leave their station; and they will also avoid a great deal of confusion, and possible loss of baggage, if they will check their baggage through to New York. Each agent is provided with blank tags for either the hold or the stateroom, and it is requested that all pieces of baggage be plainly marked with the person's name and final destination in the States.

LOST—A brown suit of clothes wrapped up in a parcel, from the train that was wrecked at Corozal on July 11. Please return to the owner, Clyde Cecil, Empire, Canal Zone.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending August 18, 1909 (75th meridian time):

DATE.	Low.		High.	
	A. M.	P. M.	A. M.	P. M.
August 19 .....	.....	.....	5.52	12.08
August 20	12.21	6.24	6.24	12.43
August 21	12.55	6.55	1.18	7.10
August 22	1.28	7.28	1.55	7.43
August 23	2.05	8.03	2.35	8.23
August 24	2.46	8.43	3.23	9.24
August 25	3.36	9.35	4.23	10.18

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Stages of the Chagres.

Maximum height of Chagres River above mean sea level for the week ending midnight Saturday, August 14, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Gamboa.	Bohio.	Gatun (Canal).	Gatun (W. D.)
Height of low water ab. m. n sea-level, ft.	125	92	46	1	0	0
Maximum height ab. mean sea-level, feet:						
Sunday, Aug. 8.	128.3	94.8	52.3	10.9	4.4	3.8
Monday, Aug. 9.	134.0	98.0	49.2	9.3	4.2	3.5
Tuesday, Aug. 10.	134.0	98.3	54.2	12.9	6.6	5.8
Wednesday, Aug. 11.	137.4	100.2	56.3	9.9	5.9	4.5
Thursday, Aug. 12.	130.6	96.8	56.5	14.8	7.1	6.0
Friday, Aug. 13.	135.2	99.2	57.0	12.8	6.9	5.8
Saturday, Aug. 14.	131.9	97.5	57.2	17.2	9.1	8.0

Rainfall, August 1 to 14, 1909, Inclusive. (MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Atlantic Division—</i>			
Cristobal	2.61	3	6.50
Brazos Brook	1.28	1	5.07
Gatun	4.58	13	7.47
Bohio	2.47	13	6.64
<i>Central Division—</i>			
Tabernilla	1.62	3	4.94
San Pablo	1.52	3	4.97
Gorgona	1.37	7	6.43
Gamboa	1.16	7	4.73
Empire	1.85	3	5.92
Camacho	1.88	4	6.80
Culebra	2.19	3	7.03
<i>Pacific Division—</i>			
Rio Grande	1.88	3	6.43
Pedro Miguel	1.11	3	5.37
Balboa	1.98	3	4.48
Ancon	1.75	3	4.19
<i>Atlantic Coast—</i>			
Porto Bello	2.19	9	8.68
Nombre de Dios. (August 1 to 7) ..	2.43	3	2.75
<i>Upper Chagres—</i>			
El Vigia	1.43	4	5.34
Alhajuela	1.27	3	4.42

Proposals for Building.

Contract building. Sealed proposals, for labor only, will be received at the office of the Constructing Quartermaster, Culebra, until 3 p. m., August 30, 1909, and then opened, for the erection by contract of a Fire Station at Porto Bello. Plans and specifications can be obtained from the Constructing Quartermaster by making a deposit of \$5. Fifty dollars must be deposited with the proposal and \$50 when the contract is signed.

C. A. DEVOL, *Chief Quartermaster*.

Contract Schoolhouse and Colored Institute.

Contract buildings. Sealed proposals, for labor only, will be received at the office of the Constructing Quartermaster, Culebra, until 3 p. m., August 23, 1909, and then opened, for the erection by contract of a schoolhouse and a colored institute at Culebra. Plans and specifications can be obtained from the Constructing Quartermaster by making a deposit of \$5. Fifty dollars must be deposited with the proposal, and \$200 when the contract is signed.

C. A. DEVOL, *Chief Quartermaster*.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Advance	P. R. R. Tuesday	Aug. 17
Ancon	P. R. R. Thursday	Aug. 19
Atrato	R.-M. Saturday	Aug. 21
Allianca	P. R. R. Monday	Aug. 23
Prinz Joachim	H.-A. Saturday	Aug. 28
Colon	P. R. R. Saturday	Aug. 28
Cristobal	P. R. R. Thursday	Sept. 2
Panama	P. R. R. Friday	Sept. 3
Tagus	R.-M. Saturday	Sept. 4
Advance	P. R. R. Thursday	Sept. 9
Prinz Aug. Wilhelm	H.-A. Saturday	Sept. 11
Allianca	P. R. R. Wednesday	Sept. 15
Ancon	P. R. R. Thursday	Sept. 16
Oruba	R.-M. Saturday	Sept. 18
Colon	P. R. R. Tuesday	Sept. 21
Prinz Joachim	H.-A. Saturday	Sept. 25
Panama	P. R. R. Monday	Sept. 27
Cristobal	P. R. R. Thursday	Sept. 30
Magdalena	R.-M. Saturday	Oct. 2
Clyde	R.-M. Saturday	Oct. 16
Thames	R.-M. Saturday	Oct. 30

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Colon	P. R. R. Tuesday	Aug. 17
Prinz Joachim	H.-A. Tuesday	Aug. 17
Cristobal	P. R. R. Thursday	Aug. 19
Panama	P. R. R. Monday	Aug. 23
Tagus	R.-M. Wednesday	Aug. 25
Advance	P. R. R. Saturday	Aug. 28
Prinz Aug. Wilhelm	H.-A. Tuesday	Aug. 31
Ancon	P. R. R. Thursday	Sept. 2
Allianca	P. R. R. Friday	Sept. 3
Oruba	R.-M. Thursday	Sept. 8
Colon	P. R. R. Thursday	Sept. 9
Prinz Joachim	H.-A. Tuesday	Sept. 14
Panama	P. R. R. Wednesday	Sept. 15
Cristobal	P. R. R. Thursday	Sept. 16
Advance	P. R. R. Tuesday	Sept. 21
Magdalena	R.-M. Wednesday	Sept. 22
Allianca	P. R. R. Monday	Sept. 27
Prinz Aug. Wilhelm	H.-A. Tuesday	Sept. 28
Ancon	P. R. R. Thursday	Sept. 30
Clyde	R.-M. Wednesday	Oct. 6
Thames	R.-M. Wednesday	Oct. 20

NEW ORLEANS TO COLON.

Abangarez	U. F. C. Saturday	Aug. 14
Atenas	U. F. C. Saturday	Aug. 21
Turrialba	U. F. C. Saturday	Aug. 28
Abangarez	U. F. C. Saturday	Sept. 4
Atenas	U. F. C. Saturday	Sept. 11
Turrialba	U. F. C. Saturday	Sept. 18
Abangarez	U. F. C. Saturday	Sept. 25

COLON TO NEW ORLEANS.

Abangarez	U. F. C. Tuesday	Aug. 24
Atenas	U. F. C. Tuesday	Aug. 31
Turrialba	U. F. C. Tuesday	Sept. 7
Abangarez	U. F. C. Tuesday	Sept. 14
Atenas	U. F. C. Tuesday	Sept. 21
Turrialba	U. F. C. Tuesday	Sept. 28
Abangarez	U. F. C. Saturday	Oct. 5

COLON TO BARBADOS, CALLING AT TRINIDAD.

Atrato	R.-M. Tuesday	Aug. 31
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Sailings of the French line (Cie. Générale Transatlantique) for Venezuelan ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailing of the Leyland Line will be as follows: *Louisianian* for New Orleans, via Kingston, Ja., on or about August 31.

The steamers *David* of the National Navigation Company, and the *Tuboga* of the Pacific Steam Navigation Company, leave Panama, for David, province of Chiriqui, and intermediate points, the first and third weeks of each month.

Fire Station at Bas Obispo.

Sealed proposals, for labor only, will be received at the office of the Constructing Quartermaster, Culebra, until 3 p. m., August 21, 1909, and then opened, for the erection by contract of a Fire Station at Bas Obispo. Plans and specifications can be obtained from the Constructing Quartermaster by making a deposit of \$5. Fifty dollars must be deposited with the proposal and \$50 when the contract is signed.

C. A. DEVOL, *Chief Quartermaster*.



The Canal Record

Published weekly under the authority and supervision of the Isthmian Canal Commission.

The Canal Record is issued free of charge, one copy each, to all employes of the Commission and Panama Railroad Company whose names are on the gold roll. Extra copies and back numbers can be obtained from the news stands of the Panama Railroad Company for five cents each.

Address all Communications

THE CANAL RECORD,

Ancon, Canal Zone,

Isthmus of Panama.

No communication, either for publication or requesting information, will receive attention unless signed with the full name and address of the writer.

NOTES OF PROGRESS.

Chairman's Monthly Report.

The report of the Chairman of the Isthmian Canal Commission for the month of July is published in full in other columns of this issue of THE CANAL RECORD. It gives a detailed description of the progress of Canal work in all departments and divisions.

Dredge for Gatun Dam Fill.

Authority has been granted for the purchase in open market, for use in making the hydraulic fill at Gatun Dam, of a 20-inch pipe-line suction dredge which is now at Baltimore, Md., having been made by the Ellicott Machine Company of that city and never put in service. It will be delivered on the Isthmus before the close of the present calendar year. When it is added to the fleet making the hydraulic fill there will be four 20-inch suction dredges in that service, and it is probable that another will be added during the coming year. It is proposed to keep all the dredges at work on the Dam until the fill is nearly completed, when two of them will be withdrawn and set at work on the excavation in the Central Division that can be done more economically by suction dredge than by steam shovel. It is estimated that about 4,000,000 cubic yards of material between Gatun and the beginning of Culebra Cut at Bas Obispo can be handled in this manner, as soon as the water in Gatun Lake has reached a high enough level to permit of dredging. The dredging and the fill in the Dam will thus be completed at the same time.

The hull of the new dredge is of open hearth steel, 150 feet long, 40 feet moulded beam, 10½ feet deep, well 30 feet long and 11½ feet wide. There are four boilers of the Scotch marine type, inside diameter 10½ feet, length inside heads 11 feet 4 inches, Morrison suspension furnaces of 40 inches inside diameter, 156 tubes 7 feet 11¼ inches long and 3 inches in diameter; working pressure 200 pounds. The engine is of the vertical triple expansion type with cylinders

14 inches, 22½ inches, and 40 inches, stroke 20 inches, revolutions 200 a minute. The ladder for the suction pipe, cutter, shaft and gearing is 70 feet long from the hinge to the center of the cutter. The cutter is of the spiral type, adapted for sand and mud. The pump is a 20-inch centrifugal, single suction, disc-lined, Volute pump, with inclosed runner of six blades 94 inches in diameter. Two manholes give access to the parts for making repairs. Quarters and toilet accommodations are provided for a crew of 35 men, and there are electric lights throughout. The dredge will dig to a depth of forty feet, and has a capacity of 600 cubic yards of material an hour through 5,000 feet of pipe line.

Mechanical Cement Unloader.

Plans are in preparation for a mechanical unloader to be used on the cement dock at Cristobal Point in unloading cement from the ships *Ancon* and *Cristobal*. The conditions to be met are the rising of the ship in the water as the cement is taken out of the hold, the sinking of the lighters as they are loaded, and a rate of unloading rapid enough to enable the ships to keep to their bi-weekly schedule.

Gatun Fire Protection.

A paid fire department was instituted at Gatun on August 3, displacing the volunteer department that had served up to that time. The company at present consists of four men, but five have been authorized. The station is a two-story frame building 22 by 50 feet, with quarters on the second floor for five men. The equipment consists of one hose wagon and 1,000 feet of hose, two fire extinguishers, one 20-foot extension ladder and one 12-foot roof ladder. A Gamewell fire alarm system has been installed with ten street boxes convenient to Commission property.

Rock Breaker at Work.

The rock breaker *Vulcan* began active operations on Saturday, August 21, in the Canal channel, opposite the Panama railroad wharf at Balboa, where there is a considerable area of rock to be broken up before the dredges can resume work. The barge on which the rock-breaking machinery is placed, is strongly anchored in the channel by means of chains drawn perfectly taut, and progress and location are determined by ranges stationed on the bank. The crushing of the rock bottom is accomplished by a huge steel ram, weighing 15 tons, which is raised by a heavy winch, and by releasing a clutch is allowed to drop through a well in the middle of the barge. The mode of operation is in a measure similar to that of a pile-driver, except the lift of the ram is usually not more than from four to six feet from the bottom. One complete operation occupies but 15 seconds when the machinery is working steadily. The area of rock broken while

the barge is in one location, is a circular space about five feet in diameter. The ram crushes the rock to a depth of three feet, and when the area is completed, a dredge will clean out the loose material, after which the process will be repeated until the required depth is reached. The breaker is now working in about 30 feet of water at low tide, crushing rock which is mostly hard trap, with here and there a softer streak. The barge is manned by seven men, three white operators, and four colored employes, and the work at present is carried on in the daytime only.

New District Quartermaster's Office.

A new one-story building, about 16 by 20 feet in size, has been completed at East Balboa for use as an office by the Assistant District Quartermaster, whose territory comprises both Old Balboa and East Balboa, and is under the jurisdiction of the District Quartermaster, Ancon. The building is located on the Old Balboa road, a few steps west of the Commissary, and contains but one room. The removal of the office, which has heretofore occupied building No. 106 at East Balboa, formerly used as office quarters by Resident Engineer Comber, took place on Thursday, August 19.

The Chame in Commission.

The work of converting the *Chame* into a supply tender for the Pacific Division dredging fleet and sand service has been completed, and the vessel is now in commission. The *Chame* was formerly the *Riversdale*, an English-built steam trawler, launched at Hull in 1899, and having a gross tonnage of 180.36 tons, a registered tonnage of 58.61 tons, and a rated speed of 10 knots. The boat arrived at Panama early in 1908 on her way to Cocos Island, off the coast of Costa Rica, where buried treasure has been rumored to exist, but the trip was abandoned at this point, and the vessel was purchased by the Commission. It has been equipped with oil-burning apparatus, and a refrigerating plant of the same type as the plants installed on the suction dredges *Culebra* and *Caribbean*, which have a daily capacity each of 400 pounds.

Additions to Cold Storage Plant.

An addition of a new refrigerating unit has been authorized for the cold storage plant at Cristobal. This unit will have a refrigerating capacity in 24 hours equal to that obtained by melting three hundred tons of ice, and so, will increase the capacity of the plant by more than one hundred per cent, as the unit now in use has a capacity of 250 tons. This addition is necessary because of the increased demand on the present refrigerating unit, which is constantly running beyond its normal capacity, and as a precaution against the loss of the meats and other foods in cold storage.

The new plant will consist of a 300-ton

NOTES OF PROGRESS.

(Continued.)

ice machine, an Ideal engine, circulating pump, reboiler, and hoiler feed pump. The engine will be a horizontal cross-compound Corliss, with cylinders 20 and 40 inches with 42 inch stroke, and it will be direct connected to two horizontal double-acting ammonia compressors. It will operate at approximately 60 rotations per minute with steam pressure at the throttle (saturated) of one hundred and thirty pounds gauge; back pressure of ammonia at compressor of 15.67 pounds gauge; condensing pressure of ammonia of 185 pounds gauge; temperature of cooling water 85 degrees Fahrenheit. The compressors will be double-acting, horizontal, water jacketed, with two cylinders each 16½ inches in diameter by 42-inch stroke, one connecting to each end of the engine crank shaft by the engine crank pin. There will be 19,200 linear feet of 2-inch pipe in the atmospheric condenser.

In order to utilize the additional refrigerating capacity a reinforced concrete building 135 feet long, 35 feet wide, and two stories high will be added to the present plant at the north end. The ground floor will consist of a meat storage room, which will be finished for cold storage, and a loading corridor. The corridor now in use is 122 feet long and accommodates three cars. With the extension the corridor will be 257 feet long and will accommodate seven cars. The part of the present cold storage house in which ice is kept will also be used for meats, and the total increase in storage capacity for meats will be 800 quarters of beef a day. The second floor will be used as a vegetable storeroom, but will be so constructed that it can be changed into cold storage space at little cost of time or money. Removing the ice room from the cold storage building will do away with a large part of the dampness that interferes with perfect storage.

An ice storage house will be built across the loading track near Dock No. 11. The present output of 75 tons of ice a day will be increased by five or ten tons when the new refrigerating unit, and new brine and ice tanks have been installed. The 16 refrigerator cars that are now cooled by ice will be cooled by a brine circulating system. Cracked ice for the system will be carried from the ice house and dumped into the car by a tip conveyor.

Labor Train Between Gatun and Culebra.

At the request of employees of the Atlantic Division, who occupy married quarters at various places between Bohio and Culebra and whose work is at Gatun, a labor train will be run between Gatun and Culebra each working day, and the service was begun on August 18. The schedule approved follows:

P. M.	A. M.
6.00 (Leave).....Gatun (Arrive).....	6.45
6.06.....Tiger Hill.....	6.39
6.09.....Lion Hill.....	6.35
6.23.....Bohio.....	6.22
6.38.....Tabernilla.....	6.05
6.44.....San Pablo.....	6.00
6.52.....Mamei.....	5.52
6.59.....Gorgona.....	5.45
7.03.....Matachiin.....	5.40
7.08.....Bas Obispo.....	5.36
7.12.....Las Cascadas.....	5.31
7.20.....Empire.....	5.22
7.25 (Arrive).....Culebra (Leave).....	5.15 a. m.

This arrangement is made because there

are not enough family quarters at Gatun to accommodate the married men employed there. The train and fuel are supplied by the Commission, but the men have agreed to furnish a qualified train crew.

Operations at Balboa.

Suction dredge *Culebra*, which was laid up at Flamenco Island for several days undergoing repairs, resumed work in the Canal channel on Wednesday, August 18. The hull of the vessel was cleaned and repainted, and two tail-end bushings, and a new propeller were fitted. A wash-out system was also installed in its hold to clean out any mud deposits that may stick to the bottom of the bin.

Ladder dredge *Gopher* is at the shipways undergoing a thorough overhauling preparatory to being set steadily at work in the sand beds at *Chame*. A number of plates will be renewed, and a wash-out system will be installed. It is probable that the repairs will take several weeks, and in the meantime, if found necessary, ladder dredge *Mole* will be taken to *Chame* temporarily.

The preparatory work has been begun for the erection of the four 400-cubic yard knocked-down dump scows, which were brought to the Isthmus on the first trip of the cement ship *Cristobal*. When ready for service, two of these scows will probably be used in the Canal dredging operations, and two in sand transportation.

Work on the bins at the sand dock is about 30 per cent completed. The sand track from Miraflores is almost finished to the dock.

The work of reconstructing an old French barge at the shipways, which will be used in carrying a wrecking crane, is well under way.

Improving Telephone Service.

An improvement will be made in the telephone service at Cristobal and Colon by moving the switchboard for those places from the general offices of the Panama Railroad Company in Colon to the building in Cristobal, formerly occupied by the Commissary printing plant. This building is more centrally located than the general offices are. Two sets of Number 9D, Western Electric telephone switchboards will be installed in the new office making it possible to handle 280 common battery and 70 magneto lines.

In the 24 hours from 7 a. m., August 10 to 7 a. m., August 11, the telephone system handled 118,000 trunk line miles of calls, and 7,729 local calls. These figures represent actual conversation, and take no account of requests for connections when the answer "Busy" was given by the switchboard operators.

Old French Scrap to the States.

The cement ships *Ancon* and *Cristobal* are taking scrap iron and steel to the States on their return voyages, using it as ballast. Five hundred tons were taken by each ship on its most recent return voyage. This scrap comes from Gorgona where it is loaded on the cars and sent to Colon. At Colon the cars are run out on the dock next to that at which the cement ships are temporarily tying up. The material is transferred from the cars to the deck of the crane boat, whence the ship's tackle lifts it upon the ship and places it in the hold. This scrap is sold in the open market as no contract has yet been made for the sale of the whole amount now on the Isthmus.

NAVIGATION IN THE CANAL.

Directions for Ships Using the Five Miles at the Pacific Entrance.

The attention of the shipping interests of all the maritime nations has been called to directions for navigation in the Pacific entrance to the Canal, as contained in a report made by the Division Engineer of the Pacific Division under date of August 16. The report says:

"The new channel at the Pacific entrance to the Canal has been dredged from the Balboa wharf to the minus 45 curve at mean tide in the bay of Panama, to its full width but not entirely to the full depth. For the benefit of the shipping, both foreign and domestic, it has been marked and described as follows:"

The center of the channel at the sea end is about 6,000 feet distant from San Jose Rock, the outer one of the cluster of five islands immediately south of Panama and about four miles distant from the city of Panama. The azimuth from this center of channel point to the triangulation station on San Jose Rock is 240 degrees.

The channel is open from this point to Balboa wharf, a distance of about five miles, to its full 500-foot bottom width, although not to its full depth, and the azimuth of the center line is 151 degrees, 44 minutes, and 35 seconds.

The sides of the channel are marked by parallel lines of buoys, red on the starboard and black on the port hand side going up the channel; these buoys are numbered beginning at the sea end of the channel. The buoys on the starboard side have even numbers running 2, 4, 6,.....,24, and those on the port side have odd numbers, running 1, 3, 5, 7,.....,17. Marks 19, 21, and 23 are target tripods which take the place of the buoys over the shoaler water, and are placed in lieu of same.

These buoys and targets are 2,000 feet from each other in the line going up the channel, and 600 feet from each other in the cross-section. They are moored on top of the channel bank to avoid interference with the dredging, and shipping should clear the buoys by at least 100 feet in passing them. These buoys willall be lighted at night.

A set of three rectangular range targets mark the prolongation of the center channel line, on its shore end, and shipping should keep these ranges in one while coming in or going out, thus assuring them of being in the channel center; these ranges have a white light on each which should merge in one three-light tower at night.

The depths of the channel that are available at this time are as follows:

Buoys 1 and 2 to buoys 13 and 14.....	50 feet.
Buoys 13 and 14 to buoys 17 and 18.....	40 feet.
Buoys 17 and 18 to target 21 and buoy 22 in east half of channel.....	35 feet.
Buoys 17 and 18 to target 21 and buoy 22 in west half of channel.....	30 feet.
Target 21 and buoy 22 to upper end Balboa wharf.....	32 feet.

These depths are mean tide data; add 10 feet for spring high, subtract 10 feet for spring low tide.

The azimuths given are true meridian azimuths, and ship captains can apply their individual corrections for their compasses.

Revenue Operations for July.

During the month of July, 1909, fifty-seven liquor licenses were issued in the Canal Zone, the revenue therefrom aggregating \$34,200, an amount somewhat less than the aggregate of collections from this source in July a year ago. Nine licenses were issued in the Cristobal district; 30 in the Empire district, and 18 in the Gorgona district. None were issued in the Ancon district. The total revenue collections for July were as follows: Distillation licenses \$717.30; burial permits \$3; retail liquor licenses \$34,200; escheated estates \$23; taxes, licenses, etc., from tax collectors \$10,570.95, a total of \$45,514.25.

The District Quartermaster at Cristobal has been authorized to issue requests on the Panama railroad for half rate tickets to employees returning from their leave in the States.

COLORS OF P. R. R. EQUIPMENT.

Standard Colors for Coaches, Freight Cars and Locomotives.

Canary yellow has been adopted as the standard color for the coaches, refrigerator cars and all other box cars used in the passenger service on the Panama railroad. Tests to ascertain the color best suited to withstand the local climatic conditions, which are unusually hard on exterior paints, have been made with the result that yellow has demonstrated a superior lasting quality over the other colors tried. In response to a letter from the General Manager setting forth the desirability of such a test, the President of the Panama Railroad Company on October 22, 1907, sanctioned it, and subsequently three passenger coaches were taken into the shops and each painted a different color. The results appear in the following statement from the Master Mechanic, which also shows the date the coaches were turned out of shop, the cost of labor and material expended on them since, and their condition at the time the report was made:

Pullman color coach No. 1—Turned out of shop December 24, 1907. Taken into shop again in June, 1908. Rubbed down, touched up and two coats of varnish given the outside. Inside renovated and floor and roof painted. Total expense, \$58.38. At present in good condition.

Yellow coach No. 4—Turned out of shop December 24, 1907. Taken into shop in June, 1908. Rubbed down, touched up outside and given two coats of varnish. Cleaned and rubbed up inside. Total expense, \$57.42. At present in good condition, ahead of No. 1.

Red coach No. 8.—Turned out of shop in June, 1908. No repairs made since. Present condition fair, but not as good as Nos. 1 and 4. Shows more perished condition, but can be touched up.

On November 17, 1908, the President of the Panama Railroad Company appointed a committee, consisting of S. D. Morgan, formerly superintendent of painting in the old Division of Building Construction, A. C. Everist, foreman painter in the Gorgona shops, and E. W. Leeds, foreman painter in the Panama railroad shops at Cristobal, to consider the painting of Panama railroad equipment, and report their recommendations, which were in substance as follows:

All cars in the passenger service should be painted a canary yellow, on the A. B. C., or 1, 2, 3, system, with the lettering boards a light olive green, and the name "Panama Railroad," and the numbers of the coaches in gold leaf. The sides of the refrigerator and other box cars in the passenger service should be painted yellow, with the ends some dark color, and the trucks of both coaches and cars with standard truck enamel. The roofs and decks should be painted with two coats of Princess Mineral. The special private cars should still be painted the standard Pullman color.

Cars that are used in the maintenance of way department should be painted a light steel gray, using lead and oil material. Cars that are set off at stations and which become a part of the station should be treated to harmonize with the station color. Trucks of maintenance of way cars should be painted black.

The bodies of freight cars should be painted with Princess Mineral paint, the roofs with coal tar paint, and the trucks, black. The sides of steel cars should receive one coat of graphite, two, if time permits, and the underneath frames, ends and trucks should have one coat of coal tar paint.

On locomotives, black jacket enamel should be used for the jackets, steam chest cylinders, and parts that become extremely heated. The metal surfaces of the cabs, tanks, and upper parts of the locomotive should be primed with a mineral primer, given two coats of primer stone No. 1, dark, or some other surfacer, two coats of locomotive black, and a coat of engine finishing varnish, lettered and numbered with aluminum. The stack and front end should be painted with front and stack black; the rods and drivers with rod and tire color, and the top of tank, top of cab, coal space, and bottom of tank where it is lifted from the frame, with graphite. The cab sash should be painted a tan color, the tank trucks with

engine truck black, and the tank frames underneath, with coal tar paint.

The report and recommendations of the committee were approved by the President of the Panama Railroad Company on July 3, 1909, and on July 7, the General Manager issued an order making them effective in the shops of the Company.

Among the trunk lines in the United States that have made yellow the standard color for passenger equipment, are the Chicago & Northwestern, the Chesapeake & Ohio, the "Big Four," and the Chicago, Milwaukee & St. Paul, the latter company using light orange. The Chicago, Burlington & Quincy also uses yellow on its branch lines west of the Missouri River.

Police Report for July.

The July report of the Chief of the Division of Police and Prisons shows that 529 arrests, representing 43 nationalities, were made in the Canal Zone during the month, as compared with 518 in June, an increase of 11. Of the July arrests, 492 were men, and 37 were women, the offenses with which they were charged aggregating 55. The arrests were distributed as follows: Ancon, 26; Las Sabanas, 3; Balboa, 22; Corozal, 4; Miraflores, 11; Pedro Miguel, 3; Paraiso, 21; Culebra, 44; Empire, 86; Las Cascadas, 24; Bas Obispo, 20; Gorgona, 71; San Pablo, 10; Tabernilla, 27; Bohio, 3; Gatun, 59; Cristobal, 84; Porto Bello, 11.

The police force numbered 249 men on July 31, including 93 men on special duty, while the pay-roll for the month amounted to \$19,234.77. There were 50 criminal cases tried in the Circuit courts, 11 of which were dismissed, one resulting in acquittal, 22 continued, and 16 in which convictions were secured. Of the 16 persons convicted, 11 were sentenced to the penitentiary; one to the common jail who also had a fine imposed, and one convicted of desertion who was ordered back to his ship.

The Zone convicts on June 30 numbered 117; received during July, 11; discharged, 9; total on July 31, 119. The number of district prisoners on the same date was 121. The prison pay-rolls for the month amounted to \$1,546.32; cost of prisoners' subsistence \$982.75; clothing \$340.50, a total expense of \$2,869.57. The value of work performed by prisoners on Zone roads was \$1,782.90. Seventy-three civil cases were tried during the month, and the sum of \$170.03 was collected in executions.

Obituary.

Major Lewis Balch, U. S. A., the first American Health Officer of the city of Panama, died in New York City on August 11, from a complication of diseases. He was born in 1847, was graduated from the college of Physicians and Surgeons in New York, served a term as secretary of the New York State Board of Health, and later was the Health Officer of the city of Albany. At the outbreak of the Spanish-American war he went to Cuba as surgeon of the Second Regiment, New York Volunteers, and a year afterwards accompanied Col. Hardin to the Philippines, where he nearly lost his life from fever. He was in charge of the Health Department in Panama from July 11, 1904, until April 1, 1905, resigning May 15, 1905. Major Balch left a widow and a son, Lewis Balch, who reside at Wakefield, R. I.

Gordon Burton Smith, of Atlanta, Ga., a

civil engineer in the employ of the Panama railroad, was drowned in the Chagres River near Gamboa bridge on the afternoon of August 20. He was crossing the river in a native canoe which was swamped. Two laborers who were in the boat with him escaped. Mr. Smith came to the Isthmus on January 30, 1908, and was employed in the Pacific Division until January 18, 1909, when he transferred to the relocation of the Panama railroad. He was 20 years of age. The body was recovered near San Pablo shortly after midnight Sunday, and was shipped to Atlanta, Tuesday, August 24.

Edward R. Williams, an American, employed in the Pacific Division, was drowned in the Canal channel at Balboa, about 11.50 a. m., Saturday, August 21. He was working as a roddman on subaqueous rock excavation, and at the time of the accident was standing on a sandbar. His foot suddenly slipped and he slid down the steep slope of the bar into deep water, and sank before assistance could reach him. He was a native of Boston, Mass., 23 years of age, unmarried, and had been on the Isthmus a little over four months.

William D. Green, a foreman of the Central Division, with quarters at Las Cascadas, died at Ancon Hospital, on August 21, after an illness of four months. He was born on January 20, 1868, at Maysville, Ky., and his home at the time of his death was at Danville, in that state.

A Card of Thanks.

As friends of the late Gordon Burton Smith, and on behalf of his family, we wish to thank all those who assisted in the search for his body, from the time of his drowning in the Chagres River at Gamboa, on August 20, until the body was recovered at San Pablo on the night of August 22.

LOUIS B. WILCOX,
A. R. JAMES.

Corozal, August 23, 1909.

Premature Explosions.

A premature explosion occurred in Culebra Cut, near Culebra, about 6 a. m., Monday, August 23. Some workmen were engaged in loading a hole when the charge went off, seriously wounding two Barbadian laborers, who were brought to Ancon Hospital.

A dynamite blast was prematurely discharged at 9.25 a. m., Thursday, August 19, at the lock site at Miraflores. In placing the charge it became clogged, and while tamping a little harder than usual to get it in position, the blast exploded. Six colored laborers engaged on the work, three Jamaicans and three Barbadians, were slightly hurt, the injuries consisting principally of powder burns and contusions about the faces and hands.

Oil is no longer used as fuel in the cold storage plant at Cristobal. All of the six boilers have been reconverted for coal.

The following steamers arrived at or departed from Balboa during the week ending August 20, 1909:

Arrived—August 8, *City of Para*, from San Francisco; August 9, *Mexico*, from South ports; August 14, *Ecuador*, from Guayaquil; August 15, *Guardian*, from Callao, (Cable ship); August 17, *Manavi*, from intermediate ports; August 19, *Peru*, from San Francisco; August 20, *Loa*, from South ports. Departures—August 8, *City of Para*, for San Francisco; August 9, *Mexico*, for South ports; August 14, *Ecuador*, for Guayaquil; August 15, *Guardian*, (Cable ship), for Callao; August 17, *Manavi*, for intermediate ports.

CANAL WORK FOR JULY.

Monthly Report of the Chairman to the Secretary of War.

CULEBRA, C. Z., August 19, 1909.

The Honorable the Secretary of War,
Washington, D. C.

Sir: I have the honor to submit the fol-

Item.	Unit.	Atlantic.	Central.	Pacific.	Total.
Work excavation, dry.....	Cubic yards.....	121,436	1,434,725	128,502	1,684,663
Work excavation, wet.....	Cubic yards.....	348,451	.....	759,363	1,107,814
Total work excavation.....	Cubic yards.....	469,887	1,434,725	887,865	2,792,477
Plant excavation, dry.....	Cubic yards.....	.....	8,369	42,414	50,783
Plant excavation, wet.....	Cubic yards.....	.....	.....	.....	.....
Total plant excavation.....	Cubic yards.....	.....	8,369	42,414	50,783
Total Canal excavation.....	Cubic yards.....	469,887	1,443,094	930,279	2,843,260
Explosives used.....	Tons (2240 lbs).....	38.40	305.50	26.57	370.47
Rock drilling.....	Feet.....	52,729	367,580	84,171	504,480
Track removed.....	Miles.....	.....	9.50	.....	9.50
New track laid.....	Miles.....	2.30	17.48	3.25	23.03
Material placed in dams.....	Cubic yards.....	513,076	.....	45,316	558,392
Rock crushed.....	Cubic yards.....	20,327	10,140	5,285	35,752
Cement used.....	Barrels.....	6,900	.....	1,608.50	8,508.50
Concrete placed.....	Cubic yards.....	6,749	.....	1,553	8,302
New roads built.....	Miles.....	3	.05	.....	3.05
Water mains laid.....	Feet.....	5,570	2,003	5,557	13,130
Sewers laid.....	Feet.....	724	1,404	.....	2,128
New drains and ditches dug.....	Feet.....	605	3,523	2,400	6,528
Average daily force.....	.....	5,329	9,538	3,983	18,850
Rainfall, average.....	Inches.....	11.46	8.27	14.92	10.66

Atlantic Division.

GATUN LOCKS.

Excavation—Excavation was continued during the month with four steam shovels and two cranes. The excavation in the upper locks was completed, excepting the curtain wall south of the emergency dam, and on the west side of the lock excavation, and the cleaning up of loose material.

Receiving Material—During the month 22 barges, containing 13,300 cubic yards of stone, and two barges, containing 1,109 cubic yards of sand were delivered at the lock site. Thirty thousand, five hundred and eighty-four barrels of cement were received.

Cement Shed—Work on the barrel conveyor at the cement shed was 95 per cent completed, and one track of the automatic railroad was completed, with the exception of the permanent crossovers and paper insulation between porcelain insulators.

Industrial Railroad—The two west tracks of this road were completed between a crossover at the south end of the track and a crossover at the north end of the mixer building. The entire road was about 95 per cent completed at the end of the month.

Saw Mill—The saw mill was completed during the month.

Anchorage—Six hundred and five French rails were set in the east chamber of the upper locks, making a total of 939 at the end of the month.

Power House—Excavation was finished at the power house for ditches around the building, 830 cubic yards being removed. The building was completed with the exception of finishing floors in the boiler and engine rooms.

Cableways—With the exception of power lines and anchorages for head towers, the unloading cableways and the lock cableways were completed during the month.

GATUN DAM.

Construction during the month increased the total fill by 513,076 cubic yards, making

lowing report of operations on the Isthmus for the month of July, 1909:

Department of Construction and Engineering.

The following table summarizes the principal items of construction work accomplished by the Atlantic, Central and Pacific Divisions during the month:

the total at the end of the month 3,476,745 cubic yards.

Stripping—The stripping of the low area east of the old Panama railroad was continued with the wheel scrapers. The railroad tracks within the limits of the dam were taken up and the old roadbeds cleaned out by steam shovel. The stripped area was extended in this locality by 2.1 acres, and on the east side of Spillway Hill by 1.4 acres. The total area stripped at the end of the month was 195.7 acres. Immediately after the stripping was completed, the hydraulic fill lake was raised and at the close of the month the water stood at elevation +19.3, the lake extending from the lock hills to Spillway Hill.

Hydraulic Fill—The hydraulic fill in the dam was increased by 310,965 cubic yards, making the total at the end of the month 1,031,012 cubic yards.

Enrockments—The material received from Bas Obispo, Buena Vista, the lock site, Mindi, the Spillway and the stripped area of the dam, amounting to 202,111 cubic yards, was placed on the north and south toes of the dam. The total dry fill at the close of the month was 2,445,734 cubic yards.

Trestles—A short connecting trestle, 65 feet in length, was driven on the south toe across the site of the old Panama railroad, 20 piles being used. It having been decided to cut off the flow from the Chagres into the old French canal, north of the dam, arrangements were made for constructing the necessary trestles and tracks to the site near the foot of the west diversion.

GATUN SPILLWAY.

Excavation was continued clearing up the floor in preparation for the concrete and cutting a curtain trench across the south end of the spillway. During the month material excavated by crane, by hand and by steam shovel, amounted to 1,558 cubic yards, making the total spillway excavation at the close of the month 1,300,280 cubic yards.

Concrete—Work was continued on the west

retaining wall, north of the dam, the west face wall south of the dam, and the floor south of the dam, and into the curtain trench. The total amount of concrete placed during the month was 6,330 cubic yards, making the total at the end of the month 36,794 cubic yards.

PORTO BELLO.

General miscellaneous mechanical and repair work was continued during the month. Five steam shovels were in operation at this point. Twenty-four thousand, three hundred and sixty cubic yards of rock were loaded into cars for crushers and fills. Twenty-six thousand, one hundred and thirty-three cubic yards of earth were removed hydraulically from the quarry. The total yardage for the month was about 60,888 cubic yards.

NOMBRE DE DIOS.

The work of deepening and widening the entrance channel and opening the channel to the sand zone was continued. Other necessary work at this point progressed satisfactorily.

HARBOR AND CHANNEL SECTION.

Dry Excavation Below Sea Level at Mindi—During the month 17,217 cubic yards of earth and 65,161 cubic yards of rock were excavated.

Dredging from the Ocean to Mindi—Four dredges removed from the prism 320,413 cubic yards of earth and 28,038 cubic yards of rock during the month. In addition, the dredge *Caribbean* removed 219,618 cubic yards of earth from the approach channel to Cristobal Harbor, and 53,965 cubic yards of earth in front of Pier No. 11. The dredge *Mindi* removed 37,975 cubic yards of rock from in front of Pier No. 11, and 1,200 cubic yards of earth and 2,000 cubic yards of rock from the dry dock slip. On July 31, 40 feet of water could be carried from 0 to mile 2 plus 4,200 feet; 30 feet to mile 3 plus 800 feet; 20 feet to mile 4 plus 2,600 feet; and 10 feet to mile 4 plus 5,000 feet, the end of the cut.

MUNICIPAL ENGINEERING AND BUILDING CONSTRUCTION.

The usual work of these sub-divisions was performed during the month, including work on the Mount Hope-Gatun road, and the new water supply for Gatun. Construction work was continued on the commissary at Gatun, the power plant at Gatun, and the boiler and machine shops at Cristobal.

Central Division.

During the month of July, the total amount of material excavated in the Central Division was 1,443,094 cubic yards, of which 377,701 cubic yards were classified as earth, and 1,065,393 cubic yards as rock.

Of this quantity, 1,414,552 cubic yards were removed by steam shovels, 22,887 cubic yards by hand, and 5,655 by sluicing in the Obispo Diversion.

The quantity of material removed from the Canal prism was 1,429,070 cubic yards, while 5,655 cubic yards were sluiced at the Obispo Diversion; 5,657 yards cast over for track inclines at point No. 3, Santa Cruz; 2,446 yards removed for the plantation road at Empire, and 266 yards at the new engine house site at Gamboa.

The daily average number of steam shovels at work during the month was 45.08, as compared with 45.65 for the month of June. For comparison with the work done by steam shovels during the corresponding month of

the previous year, in the Central Division, the following table has been prepared:

Period.	Excavated by shovels		Classification of material.		Av. No. of steam shovels working during month.	W'kg days in month.	Av. amount excavated per shovel per 8-hour day.
	cu. yds.	cu. yds.	Rock	Earth			
1908:							
July....	1,463,970	992,232	471,738		52.58	26	1,071
1909:							
July....	1,414,552	1,046,772	367,780		45.08	26	1,207

Rainfall at Empire: 1908, 10.50 ins.; 1909, 8.27 ins.

The above table shows that the average output per shovel day was over 12½ per cent greater in July, 1909, than in the corresponding month of the previous year.

During the month, 181,003 cubic yards of material excavated from the prism were transported to the relocation of the Panama railroad at Caimito, Santa Cruz and Corozal and dumped as filling in the embankment for the new roadbed, the total at the close of the month for this purpose being 1,495,787 cubic yards.

During the month, 42,160 cubic yards of earth from Buena Vista, and 43,335 cubic yards of rock from Bas Obispo, were transported to Gatun for use in construction of the dam. At the close of the month 42,160 cubic yards of earth and 444,518 cubic yards of rock had been transported for this purpose.

Work on the Empire suspension bridge was continued during the month, the supporting structures being completed and the floor structure nearly finished.

The daily average number of laborers at work was 8,545, while the average number of gold men working was 993.

Pacific Division.

DISTRICT NO. 1—LOCKS AND DAMS.

The total excavation during the month amounted to 197,098 cubic yards. No material was added to the prism of the west dam at Pedro Miguel during the month. Thirty thousand, six hundred and forty-six cubic yards of dry filling were added to the toe and 14,670 cubic yards of hydraulic filling to the prism of the west dam at Miraflores, making a total at the close of the month of 426,402 cubic yards.

At Pedro Miguel, Miraflores, and Ancon quarry, work was satisfactorily continued. No unfinished work was completed.

DISTRICT NO. 2—DREDGING.

Six dredges were in operation during the month, the amount of material excavated by each being shown in the following table:

Dredge	Type.	Cubic yards.		Remarks.
		Work.	Plant.	
Culebra	Suction	309,100	.....	Scow measurement
Gopher	Ladder	34,496	.....	Place measurement
Mole...	Ladder	101,130	.....	Place measurement
Badger.	Ladder	109,761	.....	Place measurement
Cardenas...	Dipper	30,800	.....	Place measurement
Marmot	Ladder	147,894	.....	Place measurement
Total.....		733,181	.....

The necessary work in connection with maintenance of equipment was satisfactorily performed.

DISTRICT NO. 3—MUNICIPAL AND BUILDING WORK.

Building and municipal work were continued during the month, and the filtration plant, Ancon steam plant, and the Rio

Grande rock crusher were successfully operated. The construction of the powder magazine and detonator house at Ancon quarry was completed.

Mechanical Division.

The usual work of this division was satisfactorily performed during the month.

Relocation Panama Railroad.

During the month, 167,657 cubic yards of material were excavated, making the total excavation at the close of the month 1,569,599 cubic yards, and 225,737 cubic yards of material were placed in embankment, making the total for this purpose at the end of the month 4,931,231 cubic yards. During the month 1,290 linear feet of temporary trestle were driven, and numerous small culverts were completed. During the month, 5,451 linear feet of permanent track were laid, making the total at the close of the month 113,571 linear feet.

The force of laborers during the month averaged 2,171 men.

Quartermaster's Department.

During the month, there were 284 additions to the gold force, and 264 separations, making the net increase 20. The silver force remained practically stationary, the increase being 227. The force of European laborers was decreased by 175 men.

The arrangement referred to in the report for June, whereby the expense of recruiting laborers in Barbados would be reduced from \$6 to \$2 per man, was definitely effected. The steamship *Cristobal*, which sailed from New York June 25, was diverted to Barbados, and reached the Isthmus July 7, with 816 laborers. The steamship *Ancon*, sailing from New York August 19, will also be diverted to Barbados for the purpose of bringing to the Isthmus approximately 1,200 laborers. Under the new arrangement, the expense of recruiting will not only be reduced, but it is anticipated that it will also result in securing men more apt to give satisfactory and continuous service as common laborers than those previously recruited, as, with this end in view, plans have been made to exercise greater care in their selection.

Subsistence Department.

The operation of the Hotel Tivoli during the month showed a loss of \$341.72. There was a loss of \$1,349.86 on the operation of the line hotels, and a profit was made on the operation of the kitchens and mess halls. The net operations of this department for the month showed a profit of \$2,335.86.

Department of Civil Administration.

COURTS.

The Supreme Court held one session in July. No cases were disposed of. In the Circuit Courts 33 civil and 30 criminal cases were disposed of, and in the District Courts 76 civil and 526 criminal cases were disposed of.

DIVISION OF POSTS, CUSTOMS AND REVENUES.

The total revenues in July aggregated \$53,454.23. The general revenues amounted to \$47,954.25, as compared with \$28,801.86 collected in June. Included in the general revenues is \$34,200, representing the revenues derived from the issue of retail liquor licenses for the present semi-annual period.

The postal revenues were \$6,161, on account of stamp sales; \$13.30 on account of newspaper postage, and \$1,790.08 on account of money order fees. Money order

sales during the month amounted to \$417,378.10, of which \$306,131.63 was payable in the United States and foreign countries, and \$111,246.47 in the Canal Zone.

Twenty vessels entered at, and 24 cleared from the port of Ancon, and 22 vessels entered at, and 20 cleared from the port of Cristobal.

DIVISION OF POLICE AND PRISONS.

The total effective strength of the police force on July 31, was 162 officers and men, and the total force of the division on that date aggregated 249 officers and men.

There were 121 prisoners confined in the district jails at the close of the month. Eleven convicts began penitentiary sentences during the month; 9 were discharged at the expiration of their sentences, and on July 31, 119 convicts were confined in the penitentiary.

DIVISION OF PUBLIC WORKS.

The regular inspection and maintenance work of this division was performed during the month. In the city of Panama 28,964,000 gallons of water were consumed, and in the city of Colon 20,682,550 gallons were consumed.

DIVISION OF FIRE PROTECTION.

Five alarms of fire were responded to by the Canal Zone Fire Department, four of which involved Commission property. No damage resulted to Commission property; private property was damaged to the extent of \$245.

DIVISION OF SCHOOLS.

The schools were closed during July.

Department of Sanitation.

Among employes, the death rate was smaller than in any July since American occupation:

YEAR.	Force.	No. of deaths.	Rate.
July, 1905.....	11,277	45	46.11
July, 1906.....	28,041	151	64.71
July, 1907.....	38,298	112	35.19
July, 1908.....	44,938	55	14.65
July, 1909.....	45,875	31	8.10

For the total population, the rates were equally gratifying:

YEAR.	Total population.	No. of deaths.	Rate.
July, 1905.....	41,084	237	69.22
July, 1906.....	74,777	422	67.72
July, 1907.....	103,333	357	41.46
July, 1908.....	121,607	295	29.11
July, 1909.....	135,871	207	15.29

In July, 1905, there were 14 deaths from malarial fever among employes; in July, 1906, 26 deaths; July, 1907, 22 deaths; July, 1908, 8 deaths; and July, 1909, 1 death.

While during the past two months there was an increase in typhoid fever at Gatun, considering this disease as a whole, and considering all stations, but little typhoid fever exists in the Canal Zone. In July, 1905, there was one death from this disease; in July, 1906, 7 deaths; in July, 1907, 14 deaths; in July, 1908, 5 deaths; in July, 1909, 4 deaths.

No cases of yellow fever or plague occurred on the Isthmus during the month.

Upon the whole the health of the force was excellent, and better than at any previous period.

Respectfully,
GEO. W. GOETHALS,
Chairman.

EXECUTIVE ORDERS.

Penalties for Murder in First and Second Degree.

Under authority vested in me by law, it is ordered: That Section 149 of Act No. 14 of the Laws of the Canal Zone is amended to read as follows:

Sec. 149. Every person guilty of murder in the first degree shall suffer death, or if there be extenuating circumstances, confinement in the penitentiary for life; and every person guilty of murder in the second degree is punishable by imprisonment in the penitentiary not less than ten years.

WM. H. TAFT.

The White House,
July 30, 1909.

Good Behavior Allowance to Prisoners.

Under authority vested in me by law, it is ordered:

That every convict who is now or who may hereafter be confined in the Canal Zone penitentiary under sentence for a definite time, and who shall have no infraction of the rules and regulations of the penitentiary or laws of the Canal Zone recorded against him, and who performs the duties assigned to him in a faithful, orderly and peaceable manner, shall be entitled to the diminution of time from his sentence as follows: For the first year, one month; for the second year, two months; for the third year, three months; for the fourth year, four months; for the fifth year, five months; for the sixth and each succeeding year, six months; and pro rata for any part of a year, where the sentence is for more or less than a year.

In case any convict shall be guilty of the violation of any of the rules or regulations of the penitentiary or laws of the Canal Zone as above provided, and has become entitled to any diminution of his sentence by the provisions aforesaid, he shall for the first offense forfeit, if he has made so much, two days; for the second offense, four days; for the third offense, eight days; for the fourth offense, sixteen days; and in addition thereto, whatever number of days, more than one, that he is in punishment, shall also be forfeited; for more than four offenses, the warden shall have power to deprive him, at his discretion, of any portion or all of the diminution of sentence that he may have earned, but not less than as provided for the fourth offense: *Provided*, That the Chief Executive of the Canal Zone shall have the power to restore to any convict any diminution of sentence forfeited by him.

Whenever any convict is or has been committed under several convictions, with separate sentences, they shall be construed as one continuous sentence, in the granting or forfeiting of diminution of sentence.

The warden, in computing the diminution of sentence of any convict now in the penitentiary, shall allow him for the unexpired portion of his sentence, the same as if this order had been in effect at the commencement of his sentence, but shall not allow him for the portion of his sentence already served.

WM. H. TAFT.

The White House,
July 30, 1909.

Ancon Woman's Club and Library.

The Ancon Woman's Club has transferred from the rooms over the old offices of the District Quartermaster to Ancon Hall, where one of the ante-rooms has been equipped for the library. Two book cases have been

added to the one already in use, and the library table is supplied with magazines and periodicals. The librarian is in attendance on Monday evenings at 8 o'clock, when books may be exchanged. The donation of a book, or periodical forwarded regularly, constitutes membership in the library. The case containing a few reference books and students' editions of classic works is open at all hours. These books are not to be taken from the clubrooms. The reading room is open to club women from the line at any time during the hours that the building is open. The club has been assigned the use of the hall for the first and third Wednesdays in the month, the regular meeting days, and Monday evenings. Ancon Hall is open daily from 10 a. m. to 2 p. m., and from 4 p. m. to 10 p. m. On Saturdays the evening hour is extended to 11 p. m. The building is open on Sundays between the hours of 8 a. m. and 12 m.

Woman's Guild at Ancon.

At the meeting of the Woman's Guild, St. Luke's church, Ancon, on Monday, August 16, Mrs. A. Jacobs de Konstein, one of the members, presented a gift of money for the purchase of a lectern for the church. Miss Ethel Mason was elected treasurer in place of Mrs. George Green, who is leaving the Isthmus. The guild has a membership of 31 active and 9 honorary members. The next meeting will be held at the home of Mrs. W. C. Gorgas, on Monday, September 6. The annual meeting with election of officers will be held on Monday, October 1. St. Luke's Guild was organized in November, 1907.

The Children's Playground at Colon.

A total of three hundred dollars was realized from the sale of tickets for the fancy dress ball, given at Lincoln House in Colon on the night of August 14, and from donations. This is sufficient to pay the expense of fitting up the playground guaranteed, by the educational committee of the Cristobal Woman's Club. The playground will be

presented to the municipality of Colon on Wednesday, August 25, at 4 o'clock in the afternoon, and all persons in sympathy with the movement are invited to be present. The Governor of the province of Colon, the Alcalde of the city, and the school children, headed by the municipal band, will march from the municipal building to the playground to assist in the formal exercises. Through the chairman of the educational committee, Mrs. Pierce T. Murphy, the Cristobal Woman's Club wishes to thank all who made the playground possible, by their contributions of money and help, and by attending the recent ball.

Personal.

Capt. F. C. Boggs, Mrs. Boggs, and their daughter arrived on the Isthmus on August 23.

Mr. I. K. Rourke, Assistant Division Engineer of the Central Division, returned from his leave in the States on August 23.

Culebra Lawn Tennis Club.

Permission has been granted to the Culebra Lawn Tennis Club to construct two tennis courts on the lawn in front of the Culebra hotel. The land is granted free with the understanding that it will be vacated whenever its occupation by the Commission may be deemed necessary. The work will be paid for by assessment on the members of the club.

Concert by I. C. C. Band.

IAS CASCADAS, C. Z.,
Sunday, August 29, 1909, at 5.30 p. m.
PROGRAM.

- 1 March—*The Sixth Massachusetts*.....Missud
- 2 Selection—*A Waltz Dream*.....Oscar Strass
- 3 Waltz—*Gaite*.....Waldeufel
- 4 { *a—Moonlight in Dixie*.....Clement
- { *b—La, La, La*.....Scotto
- 5 Intermezzo—*Eldovey*.....Von der Mehden
- 6 Medley Overture—*Haviland's Harmonies*...Halle
- 7 *Among the Lilies*.....Frey
- 8 { *a Bolero—Isolina*.....Labory
- { *b Canzonetta—Felice*.....Langey
- 9 Selection—*A Stubborn Cinderella*.....Howard
- 10 March—*Festal Day*.....Roux

OLIVER KIMBALL, Director.

The next concert will be given at Hotel Tivoli, Sunday, September 5.

LABOR FORCE AND QUARTERS IN JULY.

The report of the Chief Quartermaster for the month of July shows that the number of Isthmian Canal Commission employes actually at work on July 28, was 26,938, of whom 4,198 were "gold" employes, and the remainder were on the "silver" or labor roll. The Panama railroad force was 6,163, and the Panama railroad commissary force numbered 800. Thus the total number of persons at work on the Canal and railroad on the 28th day of July was 33,901. During July 284 people were added to the "gold" roll and there were 264 separations, the net increase in the force being 20.

The number of family quarters occupied by "gold" employes was 1,468, and the occupants numbered 4,389; bachelor quarters by "gold" employes, 2,041, and the occupants numbered 3,429, of whom 105 are women. The family quarters occupied by West Indians numbered 938, and the occupants 3,229; bachelor quarters, 243; number of occupants, 4,859. The family quarters occupied by European laborers numbered 275, and the occupants 864; bachelor quarters, 122; number of occupants 4,452.

A statement of the force actually at work on July 28, 1909, follows:

DEPARTMENT.	Monthly.	Artisans.				European Laborers.		West Indian Laborers.				Total Silver.	Total Gold.	Grand Total.	
		44 cents.	32 cents.	25 cents.	20 cents.	16 cents.	20 cents.	16 cents.	16 cents.	13 cents.	10 cents.				7 cents.
Const'n and Eng'ng.	2,351	27	54	375	1,260	2,513	3,271	457	1,264	2,005	4,521	292	18,390	3,129	21,519
Civil Administration...	152	...	...	2	2	15	...	...	...	...	2	...	173	294	467
Sanitation.....	608	...	...	4	5	...	...	...	70	...	211	7	905	367	1,272
Quartermaster's.....	1,022	8	6	65	140	208	320	28	29	...	824	24	2,674	235	2,909
Subsistence.....	582	...	...	1	2	...	...	...	...	...	...	...	585	61	646
Disbursements.....	8	...	...	...	...	...	...	...	...	...	...	...	8	25	33
Examin'n of Accounts	5	...	...	...	...	...	...	...	...	...	...	...	5	87	92
Totals.....	4,728	35	60	447	1,409	2,736	3,591	485	1,363	2,005	5,558	323	22,740	4,198	26,938

Panama railroad force, 6,163; Panama railroad commissary force, 800.

BREAD FOR CANAL WORKERS.

Bread, Pastry, Cake and Biscuit Consumed in Fiscal Year.

Over 120 pounds of flour were supplied in the fiscal year 1909 to each of the persons engaged directly or indirectly in Canal construction. This is on the basis of 40,000 people drawing their food supplies from the commissaries, a number which includes the employes and their families. The commissaries imported 4,809,124 pounds of wheat flour, or 24,536 barrels in the fiscal year. This flour is purchased on the open market in the States and sent to the Isthmus in small shipments. A surplus of about 1,000 barrels is kept in the storehouse in Cristobal, enough to supply the demand for about two weeks.

The flour is distributed by the Subsistence Department principally in the form of bread, rolls, pies and cakes, but also as raw flour. In the year under consideration 16,832 barrels out of a total of 24,536 were used in the bakery at Cristobal, and from this flour the output was:

Loaves of bread (14 oz. loaves) number	4,992,778
Rolls (2 pounds to a dozen) number	615,782
Cake, pounds.....	135,279
Pies, number.....	129,414

This product sold for \$249,276.73.

The general equipment of the bakery includes two reel ovens and two Duhrkop continuous baking ovens. The equipment used exclusively in bread making includes two mixers, two dividing machines, and two molding machines. It is possible to make 38,000 loaves of bread, 14 ounces to the baked loaf, in one day, but the plant is not run at its capacity, the average for the fiscal year 1909 being only 13,680 loaves a day. The average number of loaves of bread supplied a day to the hotels, messes, and labor kitchens is 11,000, leaving about 2,500 loaves to be disposed of through the commissaries. It is turned out in pan, Vienna, and French loaves. Two dividing and two molding machines form the machinery used especially in making rolls. The capacity is 8,000 rolls a day, but the average number turned out daily is about 2,000.

In the pastry division of the bakery are made the pies and cake sold at the commissaries. Very little pastry made at the bakery is used in the hotels and messes, because each hotel is equipped with an oven in which to do the pastry cooking for the hotel, and the messes under the control of the hotel steward. The machinery in the pastry division of the bakery consists of one cake mixer, one automatic cake molding and dropping machine, one egg-beating machine, and one pie-making machine. The capacity is 5,000 pounds of cake, and 10,000 pies daily, but the average output is about 370 pounds of cake and 350 pies daily. Owing to the uniformly even warmth of the Isthmus the pies are not so good on delivery as when they leave the bakery, the conditions being much the same as they are in the States during the summer.

The flour that was distributed in a raw state to the hotels and messes, and through the commissaries to families, amounted in the fiscal year 1909, to 7,704 barrels. At the hotels and messes it was made into hot bread, pies and cake, and used in general cooking. About 8,500 people living in married quarters buy a portion of the flour for their bread at the commissaries. In the

bakery at Ancon Hospital between 1,100 and 1,300 loaves of bread are made daily.

Another form in which flour is distributed by the Subsistence Department is in biscuits of various kinds. In the fiscal year, 198,000 pounds of soda biscuits, 99,000 pounds of pilot bread, and 35,000 pounds of fancy biscuits were sold to Canal workers. All biscuits for consumption on the Isthmus come in hermetically sealed tins, because only such packing would keep them dry in this humid climate. Pilot bread comes in 25-pound tins and soda biscuits in 5-pound, but they may be purchased in pound lots at the commissaries. The pilot bread is used almost exclusively by the West Indians. Fancy biscuits come in 1-pound tins, and are purchased largely by the "gold" employes.

Tide Table.

The following table shows the time of high and low tides at Panama for the week ending September 1, 1909 (75th meridian time):

DATE.	High.		Low.		High.
	A. M.	A. M.	A. M.	P. M.	
August 26		4.44	10.43	5.30	11.33
August 27		5.58	11.58	6.36	.....
			P. M.		
August 28	12.45	7.05	1.07	7.38	.....
August 29	1.47	8.04	2.06	8.30	.....
August 30	2.41	8.56	3.00	9.20	.....
August 31	3.28	9.45	3.48	10.06	.....
Sept. 1.....	4.15	10.30	4.35	10.51	.....

The variation of high and low tide at Cristobal is so slight that a tide table for the Atlantic side is not necessary.

Stages of the Chagres.

Maximum height of Chagres River above mean sea level for the week ending midnight Saturday, August 21, 1909:

	STATIONS.					
	Vigia.	Alhajuela.	Camacho.	Bohio.	Gatun (Canal.)	Gatun (W. D.)
Height of low water ab. m'an sea-level, ft.	125	92	46	1	0	0
Maximum height ab. mean sea-level, feet:						
Sunday, Aug. 15	128.0	94.5	50.1	12.0	8.6	7.0
Monday, Aug. 16	128.8	95.0	50.2	8.9	5.9	4.7
Tuesday, Aug. 17	127.9	94.4	50.2	8.8	3.4	3.6
Wednesday, Aug. 18	131.4	96.6	52.9	8.5	4.6	3.6
Thursday, Aug. 19	128.2	95.0	51.4	10.4	5.5	4.3
Friday, Aug. 20	129.9	95.6	50.6	8.1	4.1	3.2
Saturday, Aug. 21	129.8	95.3	50.7	9.5	4.3	3.6

Rainfall, August 1 to 21, 1909, Inclusive.
(MIDNIGHT TO MIDNIGHT.)

STATIONS.	Maximum in one day.	Date.	Total for period.
<i>Atlantic Division—</i>			
Cristobal	2.61	3	8.97
Brazos Brook	1.33	18	7.53
Gatun	4.58	13	8.43
Bohio	2.47	13	7.63
<i>Central Division—</i>			
Tabernilla	1.62	3	6.46
San Pablo	1.52	3	5.50
Gorgona	1.37	7	7.22
Gamboa	1.16	7	6.24
Empire	1.85	3	6.80
Camacho	1.88	3	7.33
Culebra	2.19	3	7.52
<i>Pacific Division—</i>			
Rio Grande	1.88	3	7.44
Pedro Miguel	1.11	3	6.35
Balboa	1.98	3	5.09
Ancon	1.75	3	4.60
<i>Atlantic Coast—</i>			
Porto Bello	2.19	9	11.05
Nombre de Dios, (August 1 to 7) ..	2.43	3	8.19
<i>Upper Chagres—</i>			
El Vigia	1.43	4	7.83
Alhajuela	1.27	3	5.57

COMMISSION CLUBHOUSES.

Activities of the Young Men's Christian Association.

A reorganization of the Isthmian Y. M. C. A. Bowling League has been effected and the following officers have been elected:

F. H. Dougherty, Culebra, president; C. M. Bullard, Cristobal, secretary and treasurer; E. J. Lamster, Culebra, official scorer. A tournament of thirty-six games will be begun on September 4, with the following schedule:

TEAMS	Abroad	Cristobal	Gorgona	Empire	Culebra
At Home					
Cristobal.....			Sept. 18 Oct. 16	Oct. 2 Nov. 6	Sept. 11 Nov. 20
Gorgona.....		Sept. 25 Oct. 23	.....	Sept. 11 Nov. 20	Oct. 2 Oct. 30
Empire.....		Sept. 4 Oct. 30	Oct. 9 Nov. 13	.....	Sept. 29 Oct. 27
Culebra.....		Oct. 9 Nov. 13	Sept. 4 Nov. 6	Sept. 22 Oct. 20	.....

The Association whose team wins the tournament will hold the trophy cup for one year. Should either Cristobal or Empire win, the cup will become its property permanently, as each has already won a tournament. Solid gold medals will be awarded the individual members of the winning team, and the individuals making highest average and highest score. A player must roll at least 24 of the 36 games to be eligible to an individual prize. Rules of the American Bowling Congress will govern the tournament.

CULEBRA.

The Gorgona Dramatic Club presented the farce-comedy "Capt Racket" at the Y. M. C. A., Friday night to a good sized audience.

The bowling team is practicing regularly each Tuesday night for the coming big pin bowling tournament. F. H. Dougherty has been elected captain of the local bowling team.

The Bible Club has finished its regular sessions having completed the course of study. This class met for fifteen weeks with an average attendance of 10 men.

EMPIRE.

On Saturday evening, August 21, the Empire Camera Club was organized. A constitution was adopted and the following officers were elected: President, E. L. Uppen; vice-president, E. C. Mil's; secretary, Wm. Bodle; treasurer, J. L. Bewick; librarian, Carl Anderson. Membership is restricted to members of the Y. M. C. A. in good standing. Persons interested may obtain further information from Secretary Gobrecht.

Twenty-four new books have been received from the States and are now ready for circulation. Mr. F. M. Hill has been appointed librarian to succeed Mr. Smith, who has become office secretary, succeeding Mr. Windes, who has been transferred to Gatun.

A crescent pin, containing 11 garnets, has been lost by Miss Clark of Empire. Anyone returning it to the Y. M. C. A. office will receive a reward.

On Friday night, a game of ten pins between the "Pen Pushers" of the Master Mechanic's office and Shaughnessy's "Nut Splitters" from the machine shops, resulted in a victory for the "Nut Splitters," who won two out of the three games, although the "Pen Pushers" had the largest pinfall. Following are the scores: Pen Pushers, 822, 813, 728. Nut Splitters, 840, 727, 739.

GORGONA.

A popular praise service will be held Sunday night, August 29, at 8 o'clock. Mr. A. Bruce Minear of Culebra will address the meeting. There will be special music by a male quartet and a mixed double quartet.

Mr. Louis DePoerter gave an exhibition of expert pool playing Saturday night before a large audience.

The bowling alleys are in good shape since the repairs have been completed.

The following scores were bowled Saturday night in a match game between Gorgona and Cristobal: Gorgona, 832, 720, 708. Cristobal, 715, 763, 743.

CRISTOBAL.

"Captain Racket" will be played Saturday night by the Gorgona Dramatic Club. Reserved seats will be on sale Thursday morning.

Association members living at Gatun have organized a bowling team, and a series of match games on Cristobal alleys last Saturday night resulted as follows: Cristobal, 729, 834, 781. Gatun, 788, 695, 746.

COMMISSARY DEPARTMENT.

Increased Supply of Ice—Cold Storage Price List.

The hours during which commissaries are open are as follows:
 Cristobal and Culebra, 8 a. m. to 12.30 p. m.; 2 p. m. to 7 p. m.
 All other commissaries, 8 a. m. to 1 p. m.; 3 p. m. to 7 p. m.

All purchasers of ice who were, prior to July 30, receiving thirty (30) pounds of ice per day, and which was reduced to twenty (20) pounds per day, may upon application and remittance of sufficient fines have thirty (30) pounds delivered on and after this date.

This notice does not apply to purchasers now receiving thirty (30) pounds of ice, or more, per day.

JOHN BURKE, *Manager.*

Approved:

EUGENE T. WILSON,
Subsistence Officer.

The ham and bacon now being supplied by the commissaries is especially cured for tropical trade, that is, it is highly smoked, but not heavily salted. It should be kept in the refrigerator.

The cantaloupes that will be on sale three days in the week, from this time until frost begins in the States, will come from Colorado, and are of the class known as Rocky Ford melons.

Retail prices of cold storage provisions for the week beginning August 21:

FRESH MEATS.

	Price.
Mutton—Stewing.....per lb	7
Shoulder, neck trimmed off, (4 pounds and over).....per lb	10
Entire forequarter (not trim- med), 10 pounds and over.....per lb	9
Leg (8 to 10 pounds).....per lb	19
Steak.....per lb	20
Short-cut chops.....per lb	22
Lamb—Stewing.....per lb	7
Entire forequarter, neck trimmed off.....per lb	10
Leg (6 to 8 pounds).....per lb	27
Chops.....per lb	29
Veal—Stewing.....per lb	10
Shoulder for roasting (not under 4 lbs).....per lb	15
Loin for roasting.....per lb	19
Chops.....per lb	20
Cutlets.....per lb	23
Pork cuts.....per lb	20
Beef—Suet.....per lb	4
Soup.....per lb	6
Stew.....per lb	10
Corned.....per lb, 12, 14, 15	16
Chuck roast.....per lb	14
Pot roast.....per lb	16
Rib-roast, second cut (not under 3½ pounds).....per lb	19
Rib-roast, first cut (not under 3 pounds).....per lb	21
Knip roast.....per lb	22
Rump roast.....per lb	22
Porterhouse roast.....per lb	22
Steak, Chuck.....per lb	15
Round.....per lb	16
Rib.....per lb	21
Sirloin.....per lb	22
Porterhouse.....per lb	22
Rump.....per lb	22
Tenderloin.....per lb	27
MISCELLANEOUS.	
Livers—Beef.....per lb	11½
Calif.....each	65
Shad roes.....pair	40
Sausage—Pork.....per lb	17
Bologna.....per lb	17
Frankfurter.....per lb	17
Leberwurst.....per lb	17
Sweet bread—Veal.....per lb	1.20
Sweet bread—Beef.....per lb	30
Eggs, fresh.....dozen	132
POULTRY AND GAME.	
Chickens—Fancy Roasting, large.....each	1.50
medium.....each	1.30
Fowls.....each 90,	1.00
Ducks, fatted.....each	1.30
medium weight.....each	90
Broilers.....each	75
Turkeys.....per lb	30
Squabs.....each	30
Capons.....each	2.50
Geese, fatted, about 10 pounds.....each	2.00
12 pounds.....each	2.30
CURED AND PICKLED MEATS.	
Bacon—Breakfast, whole piece.....per lb	23½
Breakfast, sliced.....per lb	26
Ham—Sugar-cured, sliced.....per lb	25
One-half, for boiling.....per lb	21
Hocks.....per lb	18
Sugar cured.....per lb	20
Beef, salt, family.....per lb	10
Pork, salt.....per lb	15
Ham, boiled.....per lb	28
Ox tongues.....each	1.00

Pigs' feet.....per lb	14
tongues.....per lb	16

DAIRY PRODUCTS.

Butter—Prints, prime quality.....per lb	36
Cheese—Roquefort.....per lb	45
Philadelphia Cream.....each	20
Young America.....per lb	22
Swiss.....per lb	31
Edam.....each	1.05
Camembert.....per lb	28
Neufchatel.....each	6
Gouda.....per lb	34
Parmesan.....bottle	20
French cheese in tins—Camembert, Brie, Neufchatel.....1-lb tin	20
Milk, Briarcliff.....bottle	*25
Butter.....bottle	*15

VEGETABLES AND FRUITS.

Lettuce.....per lb	8
Potatoes, white, old.....per lb	3½
sweet.....per lb	2½
Onions.....per lb	3
Squash, Hubbard.....per lb	5
Yams.....per lb	3½
Turnips.....per lb	3½
Carrots.....per lb	5
Beets.....per lb	5
Potatoes, new.....per lb	3½
Cucumbers.....per lb	7
Tomatoes.....per lb	7½
Lemons.....dozen	24
Limes.....per 100	80
Watermelons.....each	*30
Cantaloupes.....each	10
Cabbage.....per lb	4½
Pineapples.....each	15
Oranges.....dozen	12
Grapefruit.....each	4

*Indicates reduction from last list.

**Indicates 5 cents allowed for return of bottle.

†Indicates advance on last list.

‡Sold only from Commissaries; no orders taken for delivery.

§Sold only from Cold Storage and not from Commissaries.

Supplies for Canal Work.

The following steamers arrived at the ports of Cristobal and Colon during the week ending August 21, with supplies for the Isthmian Canal Commission:

Thames, August 15, from New York, with 46 reels electric wire; 17 cases packing; 10 barrels graphite paint, for stock.

Sarnia, August 17, from New York, with 10 tons rock crushing machinery, for Balboa; 238 barrels coal tar, for stock; 3 dipper balls, for steam shovels.

Panama, August 17, from New York, with 168 tons steel angles, bars, channels and plates; 70 bales water hose; 10,000 pounds soap; 13,000 pounds sheet coppers; 464 kegs bolts, nuts and rivets; 69 tons wrought pipe; 455 bundles lining bars, pinch bars and track wrenches; 1,000 barrels cement; 400 kegs wire nails, for stock; 7,200 feet steel cable, for steam shovel repairs; 12 steel wire cables, for unloaders; 2 swivel joints for dredge *Culebra*; 1 wood planing machine, for Gatun locks; 60,784 feet copper cable, for Pedro Miguel power house; 5 submarine rock drills, for Balboa, and a miscellaneous cargo aggregating 6,429 packages weighing 765 tons.

Abangarez, August 19, from New Orleans, with 2,500 gallons dynamo oil, for stock; 41 tons castings for car repairs; 1 locomotive coaling crane, for Mechanical Division; 121 creosoted piling, for sand wharf, Balboa; 10,000 feet yellow pine lumber, for car repairs.

Misdirected Letters.

ANCON, C. Z., August 25, 1909.

The following insufficiently addressed letters, originating in the United States and its possessions, have been received in the office of the Director of Posts, and may be secured upon request of the addressee:

Bowdry, J. S.	Loulan, Frank
Brown, J. J.	Mason, A. P.
Burson, W. B.	Miami, Mr.
Bush, E. (2d. class)	Moore, Wade
Christian, W. F.	Pentz, A. W.
Crasswell, Miss Ethel	Reese, P. W.
Demmy, John I.	Seaton, Homer
Eder, Louis M. (2d. class)	Stowell, Elery Cory
Fuller, May B. H.	(2 packages)
Grant, Freeman	Surtis, Henry
Grosvenor, Mrs. F. S.	Taylor, J. E. S.
Hart, Franklin W.	Tull, Capt. R. E.
Johnson, Nicolas	Van Fleet, Wilfred H.
Kirby, Mrs. Chapman M.	Woodford, E. T.
Kuapp, George D.	Woods, Miss Louisa
Worthy, James A.	Kulher, B. F.
	Younger, Jack

The delivery of distilled water in Cristobal was discontinued August 12, because the quality of water from Brazos Brook, as filtered through the Mount Hope filtration plant, is now so high as to make distillation superfluous. The action was taken on recommendation of the Department of Sanitation.

MOVEMENT OF OCEAN VESSELS.

The following is a list of the sailings of the Panama Railroad Steamship Company, of the Royal Mail Steam Packet Company, of the Hamburg-American Line, and of the United Fruit Company's Line, the Panama Railroad Company's dates being subject to change:

NEW YORK TO COLON.

Ancon.....P. R. R. Thursday	Aug. 19
Atrato.....R. M. Saturday	Aug. 21
Allianca.....P. R. R. Monday	Aug. 23
Prinz Joachim.....H. A. Saturday	Aug. 28
Colon.....P. R. R. Saturday	Aug. 28
Cristobal.....P. R. R. Thursday	Sept. 2
Panama.....P. R. R. Friday	Sept. 3
Tagus.....R. M. Saturday	Sept. 4
Advance.....P. R. R. Thursday	Sept. 9
Prinz Aug. Wilhelm.....H. A. Saturday	Sept. 11
Allianca.....P. R. R. Wednesday	Sept. 15
Ancon.....P. R. R. Thursday	Sept. 16
Oruba.....R. M. Saturday	Sept. 18
Colon.....P. R. R. Tuesday	Sept. 21
Prinz Joachim.....H. A. Saturday	Sept. 25
Panama.....P. R. R. Monday	Sept. 27
Cristobal.....P. R. R. Thursday	Sept. 30
Magdalena.....R. M. Saturday	Oct. 2
Clyde.....R. M. Saturday	Oct. 15
Thames.....R. M. Saturday	Oct. 30

Persons desiring to meet steamers at Cristobal should apply in advance of arrival at the Customs office, room 8, building No. 1, Cristobal, for customs line permits, which are necessary to obtain admittance beyond waiting room on pier 11.

All the steamers of the Hamburg-American and Royal Mail lines call at Kingston enroute to Colon.

COLON TO NEW YORK.

Advance.....P. R. R. Saturday	Aug. 28
Prinz Aug. Wilhelm.....H. A. Tuesday	Aug. 31
Ancon.....P. R. R. Thursday	Sept. 2
Allianca.....P. R. R. Friday	Sept. 3
Oruba.....R. M. Wednesday	Sept. 8
Colon.....P. R. R. Thursday	Sept. 9
Prinz Joachim.....H. A. Tuesday	Sept. 14
Panama.....P. R. R. Wednesday	Sept. 15
Cristobal.....P. R. R. Thursday	Sept. 16
Advance.....P. R. R. Tuesday	Sept. 21
Magdalena.....R. M. Wednesday	Sept. 22
Allianca.....P. R. R. Monday	Sept. 27
Prinz Aug. Wilhelm.....H. A. Tuesday	Sept. 28
Ancon.....P. R. R. Thursday	Sept. 30
Clyde.....R. M. Wednesday	Oct. 6
Thames.....R. M. Wednesday	Oct. 20

NEW ORLEANS TO COLON.

Atenas.....U. F. C. Saturday	Aug. 21
Turrialba.....U. F. C. Saturday	Aug. 28
Abangarez.....U. F. C. Saturday	Sept. 4
Atenas.....U. F. C. Saturday	Sept. 11
Turrialba.....U. F. C. Saturday	Sept. 18
Abangarez.....U. F. C. Saturday	Sept. 25

COLON TO NEW ORLEANS.

Atenas.....U. F. C. Tuesday	Aug. 31
Turrialba.....U. F. C. Tuesday	Sept. 7
Abangarez.....U. F. C. Tuesday	Sept. 14
Atenas.....U. F. C. Tuesday	Sept. 21
Turrialba.....U. F. C. Tuesday	Sept. 28
Abangarez.....U. F. C. Saturday	Oct. 5

COLON TO BARBADOS, CALLING AT TRINIDAD.

Atrato.....R. M. Tuesday	Aug. 31
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Sailings of the French line (Cie. Générale Transatlantique) for Venezuela ports, Martinique and Guadeloupe on the 3d and 20th of each month.

The next sailings of the Leyland Line will be as follows: *Louisianian* for New Orleans, via Kingston, Ja., on or about August 31; *Californian* on or about September 10.

The steamers *David* of the National Navigation Company, and the *Taboga* of the Pacific Steam Navigation Company, leave Panama, for David, province of Chiriqui, and intermediate points, the first and third weeks of each month.

LOST—On June 2, 1909, a South African War Medal, in the shape of a watch fob, on train No. 24, between Panama and Empire. The fob consisted of three bars and a round gold piece suspended from a black silk ribbon, and on the rim of the gold piece were the words, "Arthur E. Rex, Marshall Horse." Finder please communicate with A. E. Rex, Ancon, Canal Zone.

Proposals for Fire Station at Porto Bello.

Contract building. Sealed proposals, for labor only, will be received at the office of the Constructing Quartermaster, Culebra, until 3 p. m., August 30, 1909, and then opened, for the erection by contract of a Fire Station at Porto Bello. Plans and specifications can be obtained from the Constructing Quartermaster by making a deposit of \$5. Fifty dollars must be deposited with the proposal and \$50 when the contract is signed.

C. A. DEVOL, *Chief Quartermaster.*

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