

59TH CONGRESS : : 2D SESSION

DECEMBER 3, 1906-MARCH 4, 1907

SENATE DOCUMENTS

IN 36 VOLUMES

VOL. 10

WASHINGTON::GOVERNMENT PRINTING OFFICE::1907

J66
SERIAL 5077

JAN 15 1909
D. or D.

SPECIAL MESSAGE
OF THE
PRESIDENT OF THE
UNITED STATES

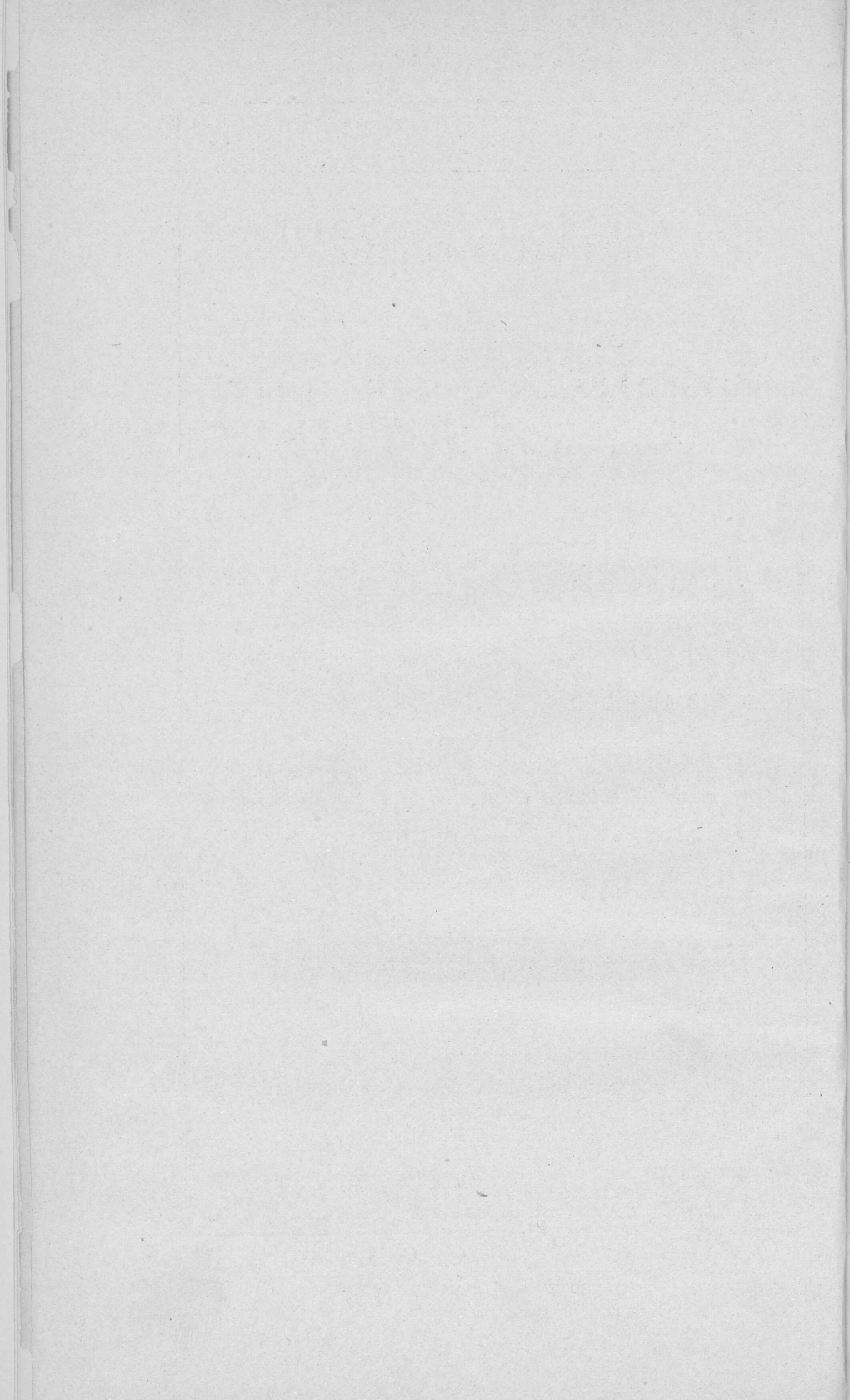
CONCERNING
THE PANAMA CANAL

COMMUNICATED TO THE TWO HOUSES OF
CONGRESS ON DECEMBER 17, 1906

SECOND SESSION OF THE
FIFTY-NINTH CONGRESS

DECEMBER 17, 1906.—Read; referred to the Committee
on Interoceanic Canals and ordered to be
printed with illustrations

WASHINGTON
GOVERNMENT PRINTING OFFICE
1906



SPECIAL MESSAGE

TO THE SENATE AND HOUSE OF REPRESENTATIVES:

In the month of November I visited the Isthmus of Panama, going over the Canal Zone with considerable care; and also visited the cities of Panama and Colon, which are not in the Zone or under the United States flag, but as to which the United States Government, through its agents, exercises control for certain sanitary purposes.

The U. S. S. *Louisiana*, on which I was, anchored off Colon about half past 2 on Wednesday afternoon, November 14. I came aboard her, after my stay on shore, at about half past 9 on Saturday evening, November 17. On Wednesday afternoon and evening I received the President of Panama and his suite, and saw members of the Canal Commission, and various other gentlemen, perfecting the arrangement for my visit, so that every hour that I was ashore could be employed to advantage. I was three days ashore—not a sufficient length of time to allow of an exhaustive investigation of the minutiae of the work of any single department, still less to pass judgment on the engineering problems, but enough to enable me to get a clear idea of the salient features of the great work and of the progress that has been made as regards the sanitation of the Zone, Colon, and Panama, the caring for and housing of the employees, and the actual digging of the canal. The Zone is a narrow strip of land, and it can be inspected much as one can inspect 50 or 60 miles of a great railroad, at the point where it runs through mountains or overcomes other natural obstacles.

I chose the month of November for my visit partly because it is the rainiest month of the year, the month in which the work goes forward at the greatest disadvantage, and one of the two months which the medical department of the French Canal Company found most unhealthy.

Immediately after anchoring on the afternoon of Wednesday there was a violent storm of wind and rain. From that time we did not again see the sun until Saturday morning, the rain con-

tinuing almost steadily, but varying from a fine drizzle to a torrential downpour. During that time in fifteen minutes at Cristobal 1.05 inches of rain fell; from 1 to 3 a. m., November 16, 3.2 inches fell; for the twenty-four hours ending noon, November 16, 4.68 inches fell, and for the six days ending noon, November 16, 10.24 inches fell. The Chagres rose in flood to a greater height than it had attained during the last fifteen years, tearing out the track in one place. It would have been impossible to see the work going on under more unfavorable weather conditions. On Saturday, November 17, the sun shone now and then for a few minutes, although the day was generally overcast and there were heavy showers at intervals.

On Thursday morning we landed at about half past seven and went slowly over the line of the Panama Railway, ending with an expedition in a tug at the Pacific entrance of the canal out to the islands where the dredging for the canal will cease. We took our dinner at one of the eating houses furnished by the Commission for the use of the Government employees—no warning of our coming being given. I inspected the Ancon Hospital, going through various wards both for white patients and for colored patients. I inspected portions of the constabulary (Zone police), examining the men individually. I also examined certain of the schools and saw the school children, both white and colored, speaking with certain of the teachers. In the afternoon of this day I was formally received in Panama by President Amador, who, together with the Government and all the people of Panama, treated me with the most considerate courtesy, for which I hereby extend my most earnest thanks. I was driven through Panama and in a public square was formally received and welcomed by the President and other members of the Government; and in the evening I attended a dinner given by the President, and a reception, which was also a Government function. I also drove through the streets of Panama for the purpose of observing what had been done. We slept at the Hotel Tivoli, at Ancon, which is on a hill directly outside of the city of Panama, but in the Zone.

On Friday morning we left the hotel at 7 o'clock and spent the entire day going through the Culebra cut—the spot in which most work will have to be done in any event. We watched the different steam shovels working; we saw the drilling and blasting; we saw many of the dirt trains (of the two different types used), both carrying the earth away from the steam shovels and depositing it on the dumps—

First Day Ashore.

Second Day.

some of the dumps being run out in the jungle merely to get rid of the earth, while in other cases they are being used for double tracking the railway, and in preparing to build the great dams. I visited many of the different villages, inspecting thoroughly many different buildings—the local receiving hospitals, the houses in which the unmarried white workmen live, those in which the unmarried colored workmen live; also the quarters of the white married employees and of the married colored employees; as well as the commissary stores, the bath houses, the water-closets, the cook sheds for the colored laborers, and the Government canteens, or hotels, at which most of the white employees take their meals. I went through the machine shops. During the day I talked with scores of different men—superintendents and heads of departments, divisions, and bureaus; steam-shovel men, machinists, conductors, engineers, clerks, wives of the American employees, health officers, colored laborers, colored attendants, and managers of the commissary stores where food is sold to the colored laborers; wives of the colored employees who are married. In the evening I had an interview with the British consul, Mr. Mallet, a gentleman who for many years has well and honorably represented the British Government on the Isthmus of Panama and who has a peculiar relation to our work because the bulk of the colored laborers come from the British West Indies. I also saw the French consul, Mr. Gey, a gentleman of equally long service and honorable record. I saw the lieutenants, the chief executive and administrative officers, under the engineering and sanitary departments. I also saw and had long talks with two deputations—one of machinists and one representing the railway men of the dirt trains—listening to what they had to say as to the rate of pay and various other matters and going over, as much in detail as possible, all the different questions they brought up. As to some matters I was able to meet their wishes—as to others, I felt that what they requested could not be done consistently with my duty to the United States Government as a whole; as to yet others I reserved judgment.

On Saturday morning we started at 8 o'clock from the hotel. We went through the Culebra cut, stopping off to see the marines, and also to investigate certain towns; one, of white employees, as to which in certain respects complaint had been made to me; and another town where I wanted to see certain houses of the colored employees. We went over the site of the proposed Gatun dam, having on the first day inspected the sites of the proposed La Boca and Sosa dams.

Third Day.

We went out on a little toy railway to the reservoir, which had been built to supply the people of Colon with water for their houses. There we took lunch at the engineers' mess. We then went through the stores and shops of Cristobal, inspecting carefully the houses of both the white and colored employees, married and unmarried, together with the other buildings. We then went to Colon and saw the fire department at work; in four minutes from the signal the engines had come down to Front street, and twenty-one 2½-inch hose pipes were raising streams of water about 75 feet high. We rode about Colon, through the various streets, paved, unpaved, and in process of paving, looking at the ditches, sewers, curbing, and the lights. I then went over the Colon hospital in order to compare it with the temporary town or field receiving hospitals which I had already seen and inspected. I also inspected some of the dwellings of the employees. In the evening I attended a reception given by the American employees on the Isthmus, which took place on one of the docks in Colon, and from there went aboard the Louisiana.

Each day from twelve to eighteen hours were spent in going over and inspecting all there was to be seen, and in examining various employees. Throughout my trip I was accompanied by the Surgeon-General of the Navy, Doctor Rixey; by the Chairman of the Isthmian Canal Commission, Mr. Shonts; by Chief Engineer Stevens; by Doctor Gorgas, the chief sanitary officer of the Commission; by Mr. Bishop, the Secretary of the Commission; by Mr. Ripley, the Principal Assistant Engineer; by Mr. Jackson Smith, who has had practical charge of collecting and handling the laboring force; by Mr. Bierd, general manager of the railway, and by Mr. Rogers, the general counsel of the Commission; and many other officials joined us from time to time.

At the outset I wish to pay a tribute to the amount of work done by the French Canal Company under very difficult circumstances. Many of the buildings they put up were excellent and are still in use, though, naturally, the houses are now getting out of repair and are being used as dwellings only until other houses can be built, and much of the work they did in the Culebra cut, and some of the work they did in digging has been of direct and real benefit. This country has never made a better investment than the \$40,000,000 which it paid to the French Company for work and betterments, including especially the Panama Railroad.

An inspection on the ground at the height of the rainy season served to convince me of the wisdom of Congress in refusing to

adopt either a high-level or a sea-level canal. There seems to be a universal agreement among all people competent to judge that the Panama route, the one actually chosen, is much superior to both the Nicaragua and Darien routes.

The wisdom of the canal management has been shown in nothing more clearly than in the way in which the foundations of the work have been laid. To have yielded to the natural impatience of ill-informed outsiders and begun all kinds of experiments in work prior to a thorough sanitation of the Isthmus, and to a fairly satisfactory working out of the problem of getting and keeping a sufficient labor supply, would have been disastrous. The various preliminary measures had to be taken first; and these could not be taken so as to allow us to begin the real work of construction prior to January 1 of the present year. It then became necessary to have the type of the canal decided, and the only delay has been the necessary delay until the 29th day of June, the date when the Congress definitely and wisely settled that we should have an 85-foot level canal. Immediately after that the work began in hard earnest and has been continued with increasing vigor ever since; and it will continue so to progress in the future. When the contracts are let the conditions will be such as to insure a constantly increasing amount of performance.

The first great problem to be solved, upon the solution of which the success of the rest of the work depended, was the problem of sanitation. This was from the outset under the direction of Dr. W. C. Gorgas, who is to be made a full member of the Commission, if the law as to the composition of the Commission remains unchanged. It must be remembered that his work was not mere sanitation as the term is understood in our ordinary municipal work. Throughout the Zone and in the two cities of Panama and Colon, in addition to the sanitation work proper, he has had to do all the work that the Marine-Hospital Service does as regards the Nation, that the health department officers do in the various States and cities, and that Colonel Waring did in New York when he cleaned its streets. The results have been astounding. The Isthmus had been a by-word for deadly unhealthfulness. Now, after two years of our occupation the conditions as regards sickness and the death rate compare favorably with reasonably healthy localities in the United States. Especial care has been devoted to minimizing the risk due to the presence of those species of mosquitoes which have been found to propagate malarial and yellow fevers. In all the settle-

Preliminary Work
being Done.

Successful
Sanitation.

ments, the little temporary towns or cities composed of the white and black employees, which grow up here and there in the tropic jungle as the needs of the work dictate, the utmost care is exercised to keep the conditions healthy. Everywhere are to be seen the drainage ditches which in removing the water have removed the breeding places of the mosquitoes, while the whole jungle is cut away for a considerable space around the habitations, thus destroying the places in which the mosquitoes take shelter. These drainage ditches and clearings are in evidence in every settlement, and, together with the invariable presence of mosquito screens around the piazzas, and of mosquito doors to the houses, not to speak of the careful fumigation that has gone on in all infected houses, doubtless explain the extraordinary absence of mosquitoes. As a matter of fact, but a single mosquito, and this not of the dangerous species, was seen by any member of our party during my three days on the Isthmus. Equal care is taken by the inspectors of the health department to secure cleanliness in the houses and proper hygienic conditions of every kind. I inspected between twenty and thirty water-closets, both those used by the white employees and those used by the colored laborers. In almost every case I found the conditions perfect. In but one case did I find them really bad. In this case, affecting a settlement of unmarried white employees, I found them very bad indeed, but the buildings were all inherited from the French Company and were being used temporarily while other buildings were in the course of construction; and right near the defective water-closet a new and excellent closet with a good sewer pipe was in process of construction and nearly finished. Nevertheless this did not excuse the fact that the bad condition had been allowed to prevail. Temporary accommodations, even if only such as soldiers use when camped in the field, should have been provided. Orders to this effect were issued. I append the report of Doctor Gorgas on the incident. I was struck, however, by the fact that in this instance, as in almost every other where a complaint was made which proved to have any justification whatever, it appeared that steps had already been taken to remedy the evil complained of, and that the trouble was mainly due to the extreme difficulty, and often impossibility, of providing in every place for the constant increase in the numbers of employees. Generally the provision is made in advance, but it is not possible that this should always be the case; when it is not there ensues a period of time during which the conditions are unsatisfactory, until a remedy can be provided; but I never found a case where the remedy was not being provided as speedily as possible.

I inspected the large hospitals at Ancon and Colón, which are excellent examples of what tropical hospitals should be. I also inspected the receiving hospitals in various settlements. I went through a number of the wards in which the colored men are treated, a number of those in which the white men are treated—Americans and Spaniards. Both white men and black men are treated exactly alike, and their treatment is as good as that which could be obtained in our first-class hospitals at home. All the patients that I saw, with one or two exceptions, were laborers or other employees on the canal works and railways, most of them being colored men of the ordinary laborer stamp. Not only are the men carefully cared for whenever they apply for care, but so far as practicable a watch is kept to see that if they need it they are sent to the hospitals, whether they desire to go or not. From no responsible source did any complaint come to me as to the management of the hospital service, although occasionally a very ignorant West India negro when he is first brought into the hospital becomes frightened by the ordinary hospital routine.

Just at present the health showing on the Isthmus is remarkably good—so much better than in most sections of the United States that I do not believe that it can possibly continue at quite its present average. Thus, early in the present year a band of several hundred Spaniards were brought to the Isthmus as laborers, and additions to their number have been made from time to time; yet since their arrival in February last but one of those Spaniards thus brought over to work on the canal has died of disease, and he of typhoid fever. Two others were killed, one in a railroad accident, and one by a dynamite explosion. There has been for the last six months a well-nigh steady decline in the death rate for the population of the Zone, this being largely due to the decrease in deaths from pneumonia, which has been the most fatal disease on the Isthmus. In October there were ninety-nine deaths of every kind among the employees of the Isthmus. There were then on the rolls 5,500 whites, seven-eighths of them being Americans. Of these whites but two died of disease, and as it happened neither man was an American. Of the 6,000 white Americans, including some 1,200 women and children, not a single death has occurred in the past three months, whereas in an average city in the United States the number of deaths for a similar number of people in that time would have been about thirty from disease. This very remark-

Hospitals and their Treatment.

Health Showing Remarkably Good.

able showing can not of course permanently obtain, but it certainly goes to prove that if good care is taken the Isthmus is not a particularly unhealthy place. In October, of the 19,000 negroes on the roll 86 died from disease; pneumonia being the most destructive disease, and malarial fever coming second. The difficulty of exercising a thorough supervision over the colored laborers is of course greater than is the case among the whites, and they are also less competent to take care of themselves, which accounts for the fact that their death rate is so much higher than that of the whites, in spite of the fact that they have been used to similar climatic conditions. Even among the colored employees it will be seen that the death rate is not high.

In Panama and Colon the death rate has also been greatly reduced, this being directly due to the vigorous work of the special brigade

**Diminution of
Mosquitoes.**

of employees who have been inspecting houses where the *stegomyia* mosquito is to be found. and destroying its larvæ and breeding places, and doing similar work in exterminating the malarial mosquitoes—in short, in performing all kinds of hygienic labor. A little over a year ago all kinds of mosquitoes, including the two fatal species, were numerous about the Culebra cut. In this cut during last October every room of every house was carefully examined, and only two mosquitoes, neither of them of the two fatal species, were found. Unflinching energy in inspection and in disinfecting and in the work of draining and of clearing brush are responsible for the change. I append Doctor Gorgas's report on the health conditions; also a letter from Surgeon-General Rixey to Doctor Gorgas. The Surgeon-General reported to me that the hygienic conditions on the Isthmus were about as good as, for instance, those in the Norfolk Navy-Yard.

Corozal, some 4 miles from La Boca, was formerly one of the most unsanitary places on the Isthmus, probably the most unsanitary. There was a marsh with a pond in the middle. Doctor Gorgas had both the marsh and pond drained and the brush cleared off, so that now, when I went over the ground, it appeared like a smooth meadow intersected by drainage ditches. The breeding places and sheltering spots of the dangerous mosquitoes had been completely destroyed. The result is that Corozal for the last six months (like La Boca, which formerly also had a very unsanitary record), shows one of the best sick rates in the Zone, having less than 1 per cent a week admitted to the hospital. At Corozal there is a big hotel filled with employees of the Isthmian Canal Commission, some of them with their wives and families. Yet this healthy and

attractive spot was stigmatized as a "hog wallow" by one of the least scrupulous and most foolish of the professional scandal-mongers who from time to time have written about the Commission's work.

The sanitation work in the cities of Panama and Colon has been just as important as in the Zone itself, and in many respects much more difficult; because it was necessary to deal with the already existing population, which naturally had scant sympathy with revolutionary changes, the value of which they were for a long time not able to perceive. In Colon the population consists largely of colored laborers who, having come over from the West Indies to work on the canal, abandon the work and either take to the brush or lie idle in Colon itself; thus peopling Colon with the least desirable among the imported laborers, for the good and steady men of course continue at the work. Yet astonishing progress has been made in both cities. In Panama 90 per cent of the streets that are to be paved at all are already paved with an excellent brick pavement laid in heavy concrete, a few of the streets being still in process of paving. The sewer and water services in the city are of the most modern hygienic type, some of the service having just been completed.

In Colon the conditions are peculiar, and it is as regards Colon that most of the very bitter complaint has been made. Colon is built on a low coral island, covered at more or less shallow depths with vegetable accumulations or mold, which affords sustenance and strength to many varieties of low-lying tropical plants. One-half of the surface of the island is covered with water at high tide, the average height of the land being $1\frac{1}{2}$ feet above low tide. The slight undulations furnish shallow, natural reservoirs or fresh-water breeding places for every variety of mosquito, and the ground tends to be lowest in the middle. When the town was originally built no attempt was made to fill the low ground, either in the streets or on the building sites, so that the entire surface was practically a quagmire; when the quagmire became impassable certain of the streets were crudely improved by filling especially bad mud holes with soft rock or other material. In September, 1905, a systematic effort was begun to formulate a general plan for the proper sanitation of the city; in February last temporary relief measures were taken, while in July the prosecution of the work was begun in good earnest. The results are already visible in the sewerage, draining, guttering and paving of the streets. Some four months will be required before the work of sewerage and street improvement will be completed, but the progress already made is very marked.

Ditches have been dug through the town, connecting the salt water on both sides, and into these the ponds, which have served as breeding places for the mosquitoes, are drained. These ditches have answered their purpose, for they are probably the chief cause of the astonishing diminution in the number of mosquitoes. More ditches of the kind are being constructed.

It was not practicable, with the force at the Commission's disposal, and in view of the need that the force should be used in the larger town of Panama, to begin this work before early last winter. Water mains were then laid in the town and water was furnished to the people early in March from a temporary reservoir. This reservoir proved to be of insufficient capacity before the end of the dry season and the shortage was made up by hauling water over the Panama railroad, so that there was at all times an ample supply of the very best water. Since that time the new reservoir back of Mount Hope has been practically completed. I visited this reservoir. It is a lake over a mile long and half a mile broad. It now carries some 500,000,000 gallons of first-class water. I forward herewith a photograph of this lake, together with certain other photographs of what I saw while I was on the Isthmus. Nothing but a cataclysm will hereafter render it necessary in the dry season to haul water for the use of Colon and Cristobal.

One of the most amusing (as well as dishonest) attacks made upon the Commission was in connection with this reservoir. The writer in question usually confined himself to vague general mendacity; but in this case he specifically stated that there was no water in the vicinity fit for a reservoir (I drank it, and it was excellent), and that this particular reservoir would never hold water anyway. Accompanying this message, as I have said above, is a photograph of the reservoir as I myself saw it, and as it has been in existence ever since the article in question was published. With typical American humor, the engineering corps still at work at the reservoir have christened a large boat which is now used on the reservoir by the name of the individual who thus denied the possibility of the reservoir's existence.

I rode through the streets of Colon, seeing them at the height of the rainy season, after two days of almost unexampled downpour, when they were at their very worst. Taken as a whole they were undoubtedly very bad; as bad as Pennsylvania avenue in Washington before Grant's Administration. Front street is already in thoroughly satisfactory shape however. Some of the side streets are also in good condition.

In others the change in the streets is rapidly going on. Through three-fourths of the town it is now possible to walk, even during the period of tremendous rain, in low shoes without wetting one's feet, owing to the rapidity with which the surface water is carried away in the ditches. In the remaining one-fourth of the streets the mud is very deep—about as deep as in the ordinary street of a low-lying prairie river town of the same size in the United States during early spring. All men to whom I spoke were a unit in saying that the conditions of the Colon streets were 100 per cent better than a year ago. The most superficial examination of the town shows the progress that has been made and is being made in macadamizing the streets. Complaint was made to me by an entirely reputable man as to the character of some of the material used for repairing certain streets. On investigation the complaint proved well founded, but it also appeared that the use of the material in question had been abandoned, the Commission after having tried it in one or two streets finding it not appropriate.

The result of the investigation of this honest complaint was typical of what occurred when I investigated most of the other honest complaints made to me. That is, where the complaints were not

Complaints not Well Founded.	made wantonly or maliciously, they almost always proved due to failure to appreciate the fact that
---------------------------------	---

	time was necessary in the creation and completion of this Titanic work in a tropic wilderness. It is impossible to avoid some mistakes in building a giant canal through jungle-covered mountains and swamps, while at the same time sanitating tropic cities, and providing for the feeding and general care of from twenty to thirty thousand workers. The complaints brought to me, either of insufficient provision in caring for some of the laborers, or of failure to finish the pavements of Colon, or of failure to supply water, or of failure to build wooden sidewalks for the use of the laborers in the rainy season, on investigation proved, almost without exception, to be due merely to the utter inability of the Commission to do everything at once.
--	--

For instance, it was imperative that Panama, which had the highest death rate and where the chance of a yellow fever epidemic was strongest, should be cared for first; yet most of the complaints as to the delay in taking care of Colon were due to the inability or unwillingness to appreciate this simple fact. Again, as the thousands of laborers are brought over and housed, it is not always possible at the outset to supply wooden walks and bath houses, because other more vital necessities have to be met; and in consequence, while

most of the settlements have good bath houses, and, to a large extent at least, wooden walks, there are plenty of settlements where wooden walks have not yet been laid down, and I visited one where the bath houses have not been provided. But in this very settlement the frames of the bath houses are already up, and in every case the utmost effort is being made to provide the wooden walks. Of course, in some of the newest camps tents are used pending the building of houses. Where possible, I think detached houses would be preferable to the semidetached houses now in general use.

Care and forethought have been exercised by the Commission, and nothing has reflected more credit upon them than their refusal

either to go ahead too fast or to be deterred by the
 Unjust Criticism. fear of criticism from not going ahead fast enough.

It is curious to note the fact that many of the most severe critics of the Commission criticise them for precisely opposite reasons, some complaining bitterly that the work is not in a more advanced condition, while the others complain that it has been rushed with such haste that there has been insufficient preparation for the hygiene and comfort of the employees. As a matter of fact neither criticism is just. It would have been impossible to go quicker than the Commission has gone, for such quickness would have meant insufficient preparation. On the other hand, to refuse to do anything until every possible future contingency had been met would have caused wholly unwarranted delay. The right course to follow was exactly the course which has been followed. Every reasonable preparation was made in advance, the hygienic conditions in especial being made as nearly perfect as possible; while on the other hand there has been no timid refusal to push forward the work because of inability to anticipate every possible emergency, for, of course, many defects can only be shown by the working of the system in actual practice.

In addition to attending to the health of the employees, it is of course necessary to provide for policing the Zone. This is done by a police force which at present numbers over 200 men, under Captain Shanton. About one-fifth of the men are white and the others black. In different places I questioned some twenty or thirty of these men, taking them at random. They were a fine set, physically and in discipline. With one exception all the white men I questioned had served in the American Army, usually in the Philippines, and belonged to the best type of American soldier. Without exception the black policemen whom I questioned had served either in the British army or in the Jamaica or Barbados police. They

were evidently contented, and were doing their work well. Where possible the policemen are used to control people of their own color, but in any emergency no hesitation is felt in using them indiscriminately.

Inasmuch as so many both of the white and colored employees have brought their families with them, schools have been established, the school service being under Mr. O'Connor. For the white pupils white American teachers are employed; for the colored pupils there are also some white American teachers, one Spanish teacher, and one colored American teacher, most of them being colored teachers from Jamaica, Barbados, and St. Lucia. The schoolrooms were good, and it was a pleasant thing to see the pride that the teachers were taking in their work and their pupils.

There seemed to me to be too many saloons in the Zone; but the new high-license law which goes into effect on January 1 next will probably close four-fifths of them. Resolute and successful efforts are being made to minimize and control the sale of liquor.

The cars on the passenger trains on the Isthmus are divided into first and second class, the difference being marked in the price of tickets. As a rule second-class passengers are colored and first-class passengers white; but in every train which I saw there were a number of white second-class passengers, and on two of them there were colored first-class passengers.

Next in importance to the problem of sanitation, and indeed now of equal importance, is the problem of securing and caring for the mechanics, laborers, and other employees who

Care of Employees. actually do the work on the canal and the railroad. This great task has been under the control

of Mr. Jackson Smith, and on the whole has been well done. At present there are some 6,000 white employees and some 19,000 colored employees on the Isthmus. I went over the different places where the different kinds of employees were working; I think I saw representatives of every type both at their work and in their homes; and I conversed with probably a couple of hundred of them all told, choosing them at random from every class and including those who came especially to present certain grievances. I found that those who did not come specifically to present grievances almost invariably expressed far greater content and satisfaction with the conditions than did those who called to make complaint.

Nearly 5,000 of the white employees had come from the United States. No man can see these young, vigorous men energetically doing their duty without a thrill of pride in them as Americans.

They represent on the average a high class. Doubtless to Congress the wages paid them will seem high, but as a matter of fact the only general complaint which I found had any real basis among the complaints made to me upon the Isthmus was that, owing to the peculiar surroundings, the cost of living, and the distance from home, the wages were really not as high as they should be. In fact, almost every man I spoke to felt that he ought to be receiving more money—a view, however, which the average man who stays at home in the United States probably likewise holds as regards himself. I append figures of the wages paid, so that the Congress can judge the matter for itself. Later I shall confer on the subject with certain representative labor men here in the United States, as well as going over with Mr. Stevens, the comparative wages paid on the Zone and at home; and I may then communicate my findings to the canal committees of the two Houses.

The white Americans are employed, some of them in office work, but the majority in handling the great steam shovels, as engineers and conductors on the dirt trains, as machinists in the great repair shops, as carpenters and time-keepers, superintendents, and foremen of divisions and of gangs, and so on and so on. Many of them have brought down their wives and families; and the children when not in school are running about and behaving precisely as the American small boy and small girl behave at home. The bachelors among the employees live, sometimes in small separate houses, sometimes in large houses; quarters being furnished free to all the men, married and unmarried. Usually the bachelors sleep two in a room, as they would do in this country. I found a few cases where three were in a room; and I was told of, although I did not see, large rooms in which four were sleeping; for it is not possible in what is really a vast system of construction camps always to provide in advance as ample house room as the Commission intend later to give. In one case, where the house was an old French house with a leak in the roof, I did not think the accommodations were good. But in every other case among the scores of houses I entered at random, the accommodations were good; every room was neat and clean, usually having books, magazines, and small ornaments; and in short just such a room as a self-respecting craftsman would be glad to live in at home. The quarters for the married people were even better. Doubtless there must be here and there a married couple who, with or without reason, are not contented with their house on the Isthmus; but I never happened to

Quarters Good and Satisfactory.

strike such a couple. The wives of the steam-shovel men, engineers, machinists, and carpenters into whose houses I went, all with one accord expressed their pleasure in their home life and surroundings. Indeed I do not think they could have done otherwise. The houses themselves were excellent—bathroom, sitting room, piazza, and bedrooms being all that could be desired. In every house which I happened to enter the mistress of the home was evidently a good American housewife and helpmeet, who had given to the home life that touch of attractiveness which, of course, the bachelor quarters neither had nor could have.

The housewives purchase their supplies directly, or through their husbands, from the commissary stores of the Commission. All to

Food Supplies.
A Thirty-Cent
Meal.

whom I spoke agreed that the supplies were excellent, and all but two stated that there was no complaint to be made; these two complained that the prices were excessive as compared to the prices in

the States. On investigation I did not feel that this complaint was well founded. The married men ate at home. The unmarried men sometimes ate at private boarding houses, or private messes, but more often, judging by the answers of those whom I questioned, at the government canteens or hotels where the meal costs 30 cents to each employee. This 30-cent meal struck me as being as good a meal as we get in the United States at the ordinary hotel in which a 50-cent meal is provided. Three-fourths of the men whom I questioned stated that the meals furnished at these government hotels were good, the remaining one-fourth that they were not good. I myself took dinner at the La Boca government hotel, no warning whatever having been given of my coming. There were two rooms, as generally in these hotels. In one the employees were allowed to dine without their coats, while in the other they had to put them on. The 30-cent meal included soup, native beef (which was good), mashed potatoes, peas, beets, chili con carne, plum pudding, tea, coffee—each man having as much of each dish as he desired. On the table there was a bottle of liquid quinine tonic, which two-thirds of the guests, as I was informed, used every day. There were neat tablecloths and napkins. The men, who were taking the meal at or about the same time, included railroad men, machinists, shipwrights, and members of the office force. The rooms were clean, comfortable, and airy, with mosquito screens around the outer piazza. I was informed by some of those present that this hotel, and also the other similar hotels, were every Saturday night turned into clubhouses where the American officials, the school-teachers,

and various employees, appeared, bringing their wives, there being dancing and singing. There was a piano in the room, which I was informed was used for the music on these occasions. My meal was excellent, and two newspaper correspondents who had been on the Isthmus several days informed me that it was precisely like the meals they had been getting elsewhere at other Government hotels. One of the employees was a cousin of one of the Secret-Service men who was with me, and he stated that the meals had always been good, but that after a time he grew tired of them because they seemed so much alike.

I came to the conclusion that, speaking generally, there was no warrant for complaint about the food. Doubtless it grows monotonous after awhile. Any man accustomed to handling large masses of men knows that some of them, even though otherwise very good men, are sure to grumble about something, and usually about their food. Schoolboys, college boys, and boarders in boarding houses make similar complaints; so do soldiers and sailors. On this very trip, on one of the warships, a seaman came to complain to the second watch officer about the quality of the cocoa at the seamen's mess, saying that it was not sweet enough; it was pointed out to him that there was sugar on the table and he could always put it in, to which he responded that that was the cook's business and not his! I think that the complaint as to the food on the Isthmus has but little more foundation than that of the sailor in question. Moreover, I was given to understand that one real cause of complaint was that at the government hotels no liquor is served, and some of the drinking men, therefore, refused to go to them. The number of men using the Government hotels is steadily increasing.

Of the nineteen or twenty thousand day laborers employed on the canal, a few hundred are Spaniards. These do excellent work.

Chinese and Other Labor. Their foremen told me that they did twice as well as the West India laborers. They keep healthy and no difficulty is experienced with them in any

way. Some Italian laborers are also employed in connection with the drilling. As might be expected, with labor as high priced as at present in the United States, it has not so far proved practicable to get any ordinary laborers from the United States. The American wage-workers on the Isthmus are the highly paid skilled mechanics of the types mentioned previously. A steady effort is being made to secure Italians, and especially to procure more Spaniards, because of the very satisfactory results that have come from

their employment; and their numbers will be increased as far as possible. It has not proved possible, however, to get them in anything like the numbers needed for the work, and from present appearances we shall in the main have to rely, for the ordinary unskilled work, partly upon colored laborers from the West Indies, partly upon Chinese labor. It certainly ought to be unnecessary to point out that the American workingman in the United States has no concern whatever in the question as to whether the rough work on the Isthmus, which is performed by aliens in any event, is done by aliens from one country with a black skin or by aliens from another country with a yellow skin. Our business is to dig the canal as efficiently and as quickly as possible; provided always that nothing is done that is inhumane to any laborers, and nothing that interferes with the wages of or lowers the standard of living of our own workmen. Having in view this principle, I have arranged to try several thousand Chinese laborers. This is desirable both because we must try to find out what laborers are most efficient, and, furthermore, because we should not leave ourselves at the mercy of any one type of foreign labor. At present the great bulk of the unskilled labor on the Isthmus is done by West India negroes, chiefly from Jamaica, Barbados, and the other English possessions. One of the governors of the lands in question has shown an unfriendly disposition to our work, and has thrown obstacles in the way of our getting the labor needed; and it is highly undesirable to give any outsiders the impression, however ill founded, that they are indispensable and can dictate terms to us.

The West India laborers are fairly, but only fairly, satisfactory. Some of the men do very well indeed; the better class, who are to be found as foremen, as skilled mechanics, as policemen, are good men; and many of the ordinary day laborers are also good. But thousands of those who are brought over under contract (at our expense) go off into the jungle to live, or loaf around Colon, or work so badly after the first three or four days as to cause a serious diminution of the amount of labor performed on Friday and Saturday of each week. I questioned many of these Jamaica laborers as to the conditions of their work and what, if any changes, they wished. I received many complaints from them, but as regards most of these complaints they themselves contradicted one another. In all cases where the complaint was as to their treatment by any individual it proved on examination that this individual was himself a West India man of color, either a policeman, a storekeeper, or an assist-

Negro Laborers
and their Quarters.

ant storekeeper. Doubtless there must be many complaints against Americans; but those to whom I spoke did not happen to make any such complaint to me. There was no complaint of the housing; I saw but one set of quarters for colored laborers which I thought poor, and this was in an old French house. The barracks for unmarried men are roomy, well ventilated, and clean, with canvas bunks for each man, and a kind of false attic at the top, where the trunks and other belongings of the different men are kept. The clothes are hung on clotheslines, nothing being allowed to be kept on the floor. In each of these big rooms there were tables and lamps, and usually a few books or papers, and in almost every room there was a Bible; the books being the property of the laborers themselves. The cleanliness of the quarters is secured by daily inspection. The quarters for the married negro laborers were good. They were neatly kept, and in almost every case the men living in them, whose wives or daughters did the cooking for them, were far better satisfied and of a higher grade than the ordinary bachelor negroes. Not only were the quarters in which these negro laborers were living much superior to those in which I am informed they live at home, but they were much superior to the huts to be seen in the jungles of Panama itself, beside the railroad tracks, in which the lower class of native Panamans live, as well as the negro workmen when they leave the employ of the canal and go into the jungles. A single glance at the two sets of buildings is enough to show the great superiority in point of comfort, cleanliness, and healthfulness of the Government houses as compared with the native houses.

The negroes generally do their own cooking, the bachelors cooking in sheds provided by the Government and using their own pots.

Negroes Do their Own Cooking. In the different camps there was a wide variation in the character of these cooking sheds. In some, where the camps were completed, the kitchen or cooking sheds, as well as the bathrooms and water-closets, were all in excellent trim, while there were board sidewalks leading from building to building. In other camps the kitchens or cook sheds had not been floored, and the sidewalks had not been put down, while in one camp the bath houses were not yet up. In each case, however, every effort was being made to hurry on the construction, and I do not believe that the delays had been greater than were inevitable in such work. The laborers are accustomed to do their own cooking; but there was much complaint, especially among the bachelors, as to the quantity, and some as to the quality, of the

food they got from the commissary department, especially as regards yams. On the other hand, the married men and their wives, and the more advanced among the bachelors, almost invariably expressed themselves as entirely satisfied with their treatment at the commissary stores; except that they stated that they generally could not get yams there, and had to purchase them outside. The chief complaint was that the prices were too high. It is unavoidable that the prices should be higher than in their own homes; and after careful investigation I came to the conclusion that the chief trouble lay in the fact that the yams, plantains, and the like are rather perishable food, and are very bulky compared to the amount of nourishment they contain, so that it is costly to import them in large quantities and difficult to keep them. Nevertheless, I felt that an effort should be made to secure them a more ample supply of their favorite food, and so directed; and I believe that ultimately the Government must itself feed them. I am having this matter looked into.

The superintendent having immediate charge of one gang of men at the Colon reservoir stated that he endeavored to get them to substitute beans and other nourishing food for the stringy, watery yams, because the men keep their strength and health better on the more nourishing food. Inasmuch, however, as they are accustomed to yams it is difficult to get them to eat the more strengthening food, and some time elapses before they grow accustomed to it. At this reservoir there has been a curious experience. It is off in the jungle by itself at the end of a couple of miles of a little toy railroad. In order to get the laborers there, they were given free food (and of course free lodgings); and yet it proved difficult to keep them, because they wished to be where they could reach the dramshop and places of amusement.

I was struck by the superior comfort and respectability of the lives of the married men. It would, in my opinion, be a most admirable thing if a much larger number of the men had their wives, for with their advent all complaints about the food and cooking are almost sure to cease.

I had an interview with Mr. Mallet, the British consul, to find out if there was any just cause for complaint as to the treatment of the West India negroes. He informed me most emphatically that there was not, and authorized me to give his statement publicity. He said that not only was the condition of the laborers far better than had been the case under the old French Company, but that year by year the condition was improving under our own régime. He stated that complaints were continually brought to him, and that

he always investigated them; and that for the last six months he had failed to find a single complaint of a serious nature that contained any justification whatever.

One of the greatest needs at present is to provide amusements both for the white men and the black. The Young Men's Christian Association is trying to do good work and should be in every way encouraged. But the Government should do the main work. I have specifically called the attention of the Commission to this matter, and something has been accomplished already. Anything done for the welfare of the men adds to their efficiency and money devoted to that purpose is therefore properly to be considered as spent in building the canal. It is imperatively necessary to provide ample recreation and amusement if the men are to be kept well and healthy. I call the special attention of Congress to this need.

This gathering, distributing, and caring for the great force of laborers is one of the giant features of the work. That friction will from time to time occur in connection therewith is inevitable. The astonishing thing is that the work has been performed so well and that the machinery runs so smoothly. From my own experience I am able to say that more care had been exercised in housing, feeding, and generally paying heed to the needs of the skilled mechanics and ordinary laborers in the work on this canal than is the case in the construction of new railroads or in any other similar private or public work in the United States proper; and it is the testimony of all people competent to speak that on no other similar work anywhere in the Tropics—indeed, as far as I know, anywhere else—has there been such forethought and such success achieved in providing for the needs of the men who do the work.

I have now dealt with the hygienic conditions which make it possible to employ a great force of laborers, and with the task of gathering, housing, and feeding these laborers. There remains to consider the actual work which has to be done; the work because of which these laborers are gathered together—the work of constructing the canal. This is under the direct control of the Chief Engineer, Mr. Stevens, who has already shown admirable results, and whom we can safely trust to achieve similar results in the future.

Our people found on the Isthmus a certain amount of old French material and equipment which could be used. Some of it, in addition, could be sold as scrap iron. Some could be used for furnish-

ing the foundation for filling in. For much no possible use could be devised that would not cost more than it would bring in.

The work is now going on with a vigor and efficiency pleasant to witness. The three big problems of the canal are the La Boca dams,

**Work of
Construction.**

the Gatun dam, and the Culebra cut. The Culebra cut must be made, anyhow; but of course changes as to the dams, or at least as to the locks adjacent to the dams, may still occur. The La Boca dams offer no particular problem, the bottom material being so good that there is a practical certainty, not merely as to what can be achieved, but as to the time of achievement. The Gatun dam offers the most serious problem which we have to solve; and yet the ablest men on the Isthmus believe that this problem is certain of solution along the lines proposed; although, of course, it necessitates great toil, energy, and intelligence, and although equally, of course, there will be some little risk in connection with the work. If the huge earth dam now contemplated is thrown across from one foothill to the other we will have what is practically a low, broad, mountain ridge behind which will rise the inland lake. This artificial mountain will probably show less seepage, that is, will have greater restraining capacity than the average natural mountain range. The exact locality of the locks at this dam—as at the other dams—is now being determined. In April next Secretary Taft, with three of the ablest engineers of the country—Messrs. Noble, Stearns, and Ripley—will visit the Isthmus, and the three engineers will make the final and conclusive examinations as to the exact site for each lock. Meanwhile the work is going ahead without a break.

The Culebra cut does not offer such great risks; that is, the damage liable to occur from occasional land slips will not represent what may be called major disasters. The work will merely call for intelligence, perseverance, and executive capacity. It is, however, the work upon which most labor will have to be spent. The dams will be composed of the earth taken out of the cut and very possibly the building of the locks and dams will take even longer than the cutting in Culebra itself.

The main work is now being done in the Culebra cut. It was striking and impressive to see the huge steam shovels in full play, the dumping trains carrying away the rock and earth they dislodged. The implements of French excavating machinery, which often stand a little way from the line of work, though of excellent

construction, look like the veriest toys when compared with these new steam shovels, just as the French dumping cars seem like toy cars when compared with the long trains of huge cars, dumped by steam plows, which are now in use. This represents the enormous advance that has been made in machinery during the past quarter of a century. No doubt a quarter of a century hence this new machinery, of which we are now so proud, will similarly seem out of date, but it is certainly serving its purpose well now. The old French cars had to be entirely discarded. We still have in use a few of the more modern, but not most modern, cars, which hold but 12 yards of earth. They can be employed on certain lines with sharp curves. But the recent cars hold from 25 to 30 yards apiece, and instead of the old clumsy methods of unloading them, a steam plow is drawn from end to end of the whole vestibuled train, thus immensely economizing labor. In the rainy season the steam shovels can do but little in dirt, but they work steadily in rock and in the harder ground. There were some 25 at work during the time I was on the Isthmus, and their tremendous power and efficiency were most impressive.

As soon as the type of canal was decided this work began in good earnest. The rainy season will shortly be over and then there will be an immense increase in the amount taken out; but even during the last three months, in the rainy season, steady progress is shown by the figures: In August, 242,000 cubic yards; in September, 291,000 cubic yards, and in October, 325,000 cubic yards. In October new records were established for the output of individual shovels as well as for the tonnage haul of individual locomotives. I hope to see the growth of a healthy spirit of emulation between the different shovel and locomotive crews, just such a spirit as has grown on our battle ships between the different gun crews in matters of marksmanship. Passing through the cut the amount of new work can be seen at a glance. In one place the entire side of a hill had been taken out recently by 27 tons of dynamite, which were exploded at one blast. At another place I was given a Presidential salute of 21 charges of dynamite. On the top notch of the Culebra cut the prism is now as wide as it will be; all told, the canal bed at this point has now been sunk about 200 feet below what it originally was. It will have to be sunk about 130 feet farther. Throughout the cut the drilling, blasting, shoveling, and hauling are going on with constantly increasing energy, the huge shovels being pressed up, as if

New Records for Excavation.

they were mountain howitzers, into the most unlikely looking places, where they eat their way into the hillsides.

The most advanced methods, not only in construction, but in railroad management, have been applied in the Zone, with corresponding economies in time and cost. This has been shown in the handling of the tonnage from ships into cars, and from cars into ships on the Panama Railroad, where, thanks largely to the efficiency of General Manager Bierd, the saving in time and cost, has been noteworthy. My examination tended to show that some of the departments had (doubtless necessarily) become overdeveloped, and could now be reduced or subordinated without impairment of efficiency and with a saving of cost. The Chairman of the Commission, Mr. Shonts, has all matters of this kind constantly in view, and is now reorganizing the government of the Zone, so as to make the form of administration both more flexible and less expensive, subordinating everything to direct efficiency with a view to the work of the Canal Commission. From time to time changes of this kind will undoubtedly have to be made, for it must be remembered that in this giant work of construction, it is continually necessary to develop departments or bureaus, which are vital for the time being, but which soon become useless; just as it will be continually necessary to put up buildings, and even to erect towns, which in ten years will once more give place to jungle, or will then be at the bottom of the great lakes at the ends of the canal.

It is not only natural, but inevitable, that a work as gigantic as this which has been undertaken on the Isthmus should arouse every species of hostility and criticism. The conditions are so new and so trying, and the work so vast, that it would be absolutely out of the question that mistakes should not be made. Checks will occur. Unforeseen difficulties will arise. From time to time seemingly well-settled plans will have to be changed. At present 25,000 men are engaged on the task. After a while the number will be doubled. In such a multitude it is inevitable that there should be here and there a scoundrel. Very many of the poorer class of laborers lack the mental development to protect themselves against either the rascality of others or their own folly, and it is not possible for human wisdom to devise a plan by which they can invariably be protected. In a place which has been for ages a by-word for unhealthfulness, and with so large a congregation of strangers suddenly put down and set to hard work there will now

Railway
Improvements.

Critics and
Doubting Thomases.

and then be outbreaks of disease. There will now and then be shortcomings in administration; there will be unlooked-for accidents to delay the excavation of the cut or the building of the dams and locks. Each such incident will be entirely natural, and, even though serious, no one of them will mean more than a little extra delay or trouble. Yet each, when discovered by sensation mongers and retailed to timid folk of little faith, will serve as an excuse for the belief that the whole work is being badly managed. Experiments will continually be tried in housing, in hygiene, in street repairing, in dredging, and in digging earth and rock. Now and then an experiment will be a failure; and among those who hear of it, a certain proportion of doubting Thomases will at once believe that the whole work is a failure. Doubtless here and there some minor rascality will be uncovered; but as to this, I have to say that after the most painstaking inquiry I have been unable to find a single reputable person who had so much as heard of any serious accusations affecting the honesty of the Commission or of any responsible officer under it. I append a letter dealing with the most serious charge, that of the ownership of lots in Colon; the charge was not advanced by a reputable man, and is utterly baseless. It is not too much to say that the whole atmosphere of the Commission breathes honesty as it breathes efficiency and energy. Above all, the work has been kept absolutely clear of politics. I have never heard even a suggestion of spoils politics in connection with it.

I have investigated every complaint brought to me for which there seemed to be any shadow of foundation. In two or three cases, all of which I have indicated in the course of this message, I came to the conclusion that there was foundation for the complaint, and that the methods of the Commission in the respect complained of could be bettered. In the other instances the complaints proved absolutely baseless, save in two or three instances where they referred to mistakes which the Commission had already itself found out and corrected.

So much for honest criticism. There remains an immense amount of as reckless slander as has ever been published. Where the slanderers are of foreign origin I have no concern with them.

Where they are Americans, I feel for them the
 Slanderers and Libelers. heartiest contempt and indignation; because, in a
 spirit of wanton dishonesty and malice, they
 are trying to interfere with, and hamper the execution of, the
 greatest work of the kind ever attempted, and are seeking to
 bring to naught the efforts of their countrymen to put to the credit

of America one of the giant feats of the ages. The outrageous accusations of these slanderers constitute a gross libel upon a body of public servants who, for trained intelligence, expert ability, high character and devotion to duty, have never been excelled anywhere. There is not a man among those directing the work on the Isthmus who has obtained his position on any other basis than merit alone, and not one who has used his position in any way for his own personal or pecuniary advantage.

After most careful consideration we have decided to let out most of the work by contract, if we can come to satisfactory terms with the contractors. The whole work is of a kind suited to the peculiar genius of our people; and our people have developed the type of contractor best fitted to grapple with it. It is of course much better to do the work in large part by contract than to do it all by the Government, provided it is possible on the one hand to secure to the contractor a sufficient remuneration to make it worth while for responsible contractors of the best kind to undertake the work; and provided on the other hand it can be done on terms which will not give an excessive profit to the contractor at the expense of the Government.

After much consideration the plan already promulgated by the Secretary of War was adopted. This plan in its essential features was drafted, after careful and thorough study and consideration, by the Chief Engineer, Mr. Stevens, who, while in the employment of Mr. Hill, the president of the Great Northern Railroad, had personal experience of this very type of contract. Mr. Stevens then submitted the plan to the Chairman of the Commission, Mr. Shonts, who went carefully over it with Mr. Rogers, the legal adviser of the Commission, to see that all legal difficulties were met. He then submitted copies of the plan to both Secretary Taft and myself. Secretary Taft submitted it to some of the best counsel at the New York bar, and afterwards I went over it very carefully with Mr. Taft and Mr. Shonts, and we laid the plan in its general features before Mr. Root. My conclusion is that it combines the maximum of advantage with the minimum of disadvantage. Under it a premium will be put upon the speedy and economical construction of the canal, and a penalty imposed on delay and waste. The plan as promulgated is tentative; doubtless it will have to be changed in some respects before we can come to a satisfactory agreement with responsible contractors—perhaps even after the bids have been received; and of course it is possible that we can not come to an agreement, in which case the Government

will do the work itself. Meanwhile the work on the Isthmus is progressing steadily and without any let-up.

A seven-headed commission is of course a clumsy executive instrument. We should have but one commissioner, with such heads of departments and other officers under him as we may find necessary.

A Single
Commissioner
Desired.

We should be expressly permitted to employ the best engineers in the country as consulting engineers.

I accompany this paper with a map showing substantially what the canal will be like when it is finished. When the Culebra cut has been made and the dams built (if they are built as at present proposed) there will then be at both the Pacific and Atlantic ends of the canal, two great fresh-water lakes, connected by a broad channel running at the bottom of a ravine, across the backbone of the Western Hemisphere. Those best informed believe that the work will be completed in about eight years; but it is never safe to prophesy about such a work as this, especially in the Tropics.

I am informed that representatives of the commercial clubs of four cities—Boston, Chicago, Cincinnati, and St. Louis—the membership of which includes most of the leading business men of those cities, expect to visit the Isthmus for the purpose of examining the work of construction of the canal. I am glad to hear it, and I shall direct that every facility be given them to see all that is to be seen in the work which the Government is doing. Such interest as a visit like this would indicate will have a good effect upon the men who are doing the work, on one hand, while on the other hand it will offer as witnesses of the exact conditions men whose experience as business men and whose impartiality will make the result of their observations of value to the country as a whole.

Of the success of the enterprise I am as well convinced as one can be of any enterprise that is human. It is a stupendous work upon which our fellow-countrymen are engaged down there on the Isth-

mus, and while we should hold them to a strict accountability for the way in which they perform it, we should yet recognize, with frank

Confident of
Ultimate Success.

generosity, the epic nature of the task on which they are engaged and its world-wide importance. They are doing something which will redound immeasurably to the credit of America, which will benefit all the world, and which will last for ages to come. Under Mr. Shonts and Mr. Stevens and Doctor Gorgas this work has started with every omen of good fortune. They and their worthy associates, from the highest to the lowest, are

entitled to the same credit that we would give to the picked men of a victorious army; for this conquest of peace will, in its great and far-reaching effect, stand as among the very greatest conquests, whether of peace or of war, which have ever been won by any of the peoples of mankind. A badge is to be given to every American citizen who for a specified time has taken part in this work; for participation in it will hereafter be held to reflect honor upon the man participating just as it reflects honor upon a soldier to have belonged to a mighty army in a great war for righteousness. Our fellow-countrymen on the Isthmus are working for our interest and for the national renown in the same spirit and with the same efficiency that the men of the Army and Navy work in time of war. It behooves us in our turn to do all we can to hold up their hands and to aid them in every way to bring their great work to a triumphant conclusion.

THEODORE ROOSEVELT.

THE WHITE HOUSE,

December 17, 1906.

APPENDIX I.

Address of President Roosevelt to the employees of the Isthmian Canal Commission, at Colon, Panama, November 17, 1906.

LADIES AND GENTLEMEN:

It was without precedent for a President to leave the United States, but this work is without precedent. You are doing the biggest thing of the kind that has ever been done, and I wanted to see how you were doing it. I am profoundly thankful that I shall be able to take back to the United States the message that the nation's picked sons are carrying themselves so well here that I can absolutely guarantee the success of the mighty work which they are doing. It is not an easy work. Mighty few things that are worth doing are easy. Sometimes it is rough on the men and just a little rougher on the women. It has pleased me particularly to see, as I have met the wives who have come down here with their husbands, the way in which they have turned in to make the best of everything and to help the men do their work well.

I want to say this word to you men, right through, to all of you, who are engaged in the work of digging this canal, whether you are here as superintendent, foreman, chief clerk, machinist, conductor, engineer, steam-shovel man—and he is the American who is setting the mark for the rest of you to live up to, by the way—whoever you are, if you are doing your duty you are putting your country under an obligation to you just as a soldier who does his work well in a great war puts the country under an obligation to him. As I have seen you at work, seen what you have done and are doing, noted the spirit with which you are approaching the task yet to be done, I have felt just exactly as I should feel if I saw the picked men of my country engaged in some great war. I am weighing my words when I say that you here who do your work well in bringing to completion this great enterprise will stand exactly as the soldiers of a few, and only a few, of the most famous armies of all the nations stand in history. This is one of the great works of the world; it is a greater work than you yourselves at the moment realize. Some of you, a good many of you, are sons of men who fought in the civil war. When your

fathers were in the fighting, they thought a good deal of the fact that the blanket was too heavy by noon and not quite heavy enough by night, that the pork was not as good as it might be, and the hard-tack was sometimes insufficient in amount, and that they were not always satisfied with the way in which the regiments were led. Those were the things they talked about a good deal of the time. But when the war was done—when they came home, when they looked at what had been accomplished, all those things sank into insignificance, and the great fact remained that they had played their part like men among men; that they had borne themselves so that when people asked what they had done of worth in those great years all they had to say was that they had served decently and faithfully in the great armies. So you men here, in the future, each man of you will have the right to feel, if he has done his duty and a little more than his duty right up to the handle in the work here on the Isthmus, that he has made his country his debtor; that he has done more than his full share in adding renown to the nation under whose flag this canal is being built.

(A voice in the audience: "How about Mr. Bigelow?")

Why, gentlemen, there never was a great feat done yet that there were not some men evil enough, small enough, or foolish enough to wish to try to interfere with it and to sneer at those who are actually doing the work. From time to time little men will come along to find fault with what you have done, to say that something could have been done better, that there has been some mistake, some shortcoming, that things are not really managed in the best of all possible manners, in the best of all possible worlds. They will have their say, and they will go down stream like bubbles, they will vanish; but the work you have done will remain for the ages. It is the man who does the job who counts, not the little scolding critic who thinks how it ought to have been done.

I go back a better American, a prouder American, because of what I have seen the pick of American manhood doing here on the Isthmus. You will have hard times. Each of you will sometimes think that he is misunderstood by some one above him. That is a common experience of all of us, gentlemen. Now and then you will feel as if the people at home were indifferent and did not realize what you were doing. Do not make a mistake; they do realize it, and they will realize it more and more clearly as the years go by. I can not overstate the intensity of the feeling I have (and therein I merely typify the sentiment of the average man of our country) as to the vital importance of the task that you are doing; and

to each of you who does his share of that task there will come in the end the proud assurance of vital duty well done. This assurance can come to but a limited number of men in each generation; and you are to be congratulated that you are among that limited number. I do not pity you because you have before you a hard task. I would feel ashamed of you if I thought you wanted pity. I admire you. I wish that any one of my boys was old enough to take part in the work. I feel that to each of you has come an opportunity such as is vouchsafed to but few in each generation. I shall see if it is not possible to provide for some little memorial, some mark, some badge, which will always distinguish the man who for a certain space of time has done his work well on this Isthmus, just as the button of the Grand Army distinguishes the man who did his work well in the civil war. Another thing. In the Grand Army the spirit that appeals to me most is the spirit of full and frank comradeship among its members. Whether a man was a lieutenant-general of the Army of the United States, or whether he was the youngest recruit whose age would permit him to serve in the ranks, makes no difference; if he did his duty well he is a comrade to his fellows, and acclaimed as such in a spirit of full equality in every Grand Army post. The point is not the position, but the way in which the man handled himself in the position. So here, whatever the work, whether it be that of chief engineer, assistant engineer, machinist, foreman, or steam-shovel man, the only question that need be asked is, did the man do it well? And to do it well, gentlemen, you must do just a little more than merely earn the salary. Each man must have in him the feeling that, besides getting what he is rightfully entitled to for his work, that aside and above that must come the feeling of triumph at being associated in the work itself, must come the appreciation of what a tremendous work it is, of what a splendid opportunity is offered to any man who takes part in it. As I came up the line through the Culebra cut yesterday, on one of the steam shovels they had out the legend, "We will do our best to help you dig it." I liked to look at that motto. That is the right spirit. Another man called out to me as the train past, "We are going to put it through." That is the spirit I like to see, and it is the spirit that you have in you.

In any army there are some men who, to use a homely phrase, can't stand the pace. So, here on their Isthmus, there is an occasional man who means well, but who does not know how; there is an occasional man who does not mean well at all; and when a man of either type gets out and goes home it is much more comfortable for

him not to say that he failed, but that somebody else was not really a good man. There will always be a certain percentage of men in any work who for one cause or another become disgruntled, become sulky, and then try to run down the work and run down those who are doing it; and they are the natural and legitimate sources of the misinformation and slander of the yellow writers, of the men who preach the gospel of despair, whether in magazine or in newspaper. If there is any veteran of the civil war here he will tell you there were "coffee coolers" in those days, too; there are some of them to be found everywhere and at all times. These men, as they go home beaten, will give a totally wrong impression of the rest of the men down here, a totally wrong impression, not to their countrymen as a whole, but to a few people of little faith who measure the standard of you who succeed in doing the work by the standard of those who fail in the effort to do the work. We can disregard them. No man can see as I have seen the character of the men engaged in doing this work and not glow with pride to think that they are representatives of his country. No man can see them and fail to realize that our honor and interest are safe in their hands—are safe in your hands.

In closing, all I have to say is this: You are doing a work the like of which has not before been seen in the ages, a work that shall last through the ages to come, and I pledge you, as President of the United States, and speaking for the people of the United States, every ounce of support and help and assistance that it is in my power to give you, so that we together, you backed by the people of the United States, may speedily bring this greatest of works to a triumphant conclusion.

APPENDIX 2.

ISTHMIAN CANAL ZONE,
DEPARTMENT OF HEALTH,
OFFICE OF CHIEF SANITARY OFFICER,
Ancon, C. Z., November 23, 1906.

Mr. WILLIAM LOEB,
*Secretary to the President,
White House, Washington, D. C.*

DEAR SIR: In accordance with the direction of President Roosevelt, I herewith forward report concerning the disposal of night soil on the Zone. The report covers the territory from La Boca to Gatun,

but does not include the cities of Colon and Panama. I had a careful inspection made on a fixed day of all the closets in this territory. The reports of inspectors are herewith appended and will explain themselves.

You will note that we have three methods of disposing of night soil: First, water-closets, which discharge into regular sewerage systems; second, pit closets, constructed according to a standard plan and made fly proof; third, bucket closets. Eventually the disposal of night soil will be entirely by water, wherever we have a water supply and a sewerage system, and this condition will exist nearly everywhere on the Isthmus.

We have two styles of water-closets—the ordinary porcelain flush closet for the white and married quarters and the range closet for the laborers' barracks. The range closet consists of a trough capable of seating about 17 men, which is automatically flushed sufficiently often to keep it clean. You will see that already a large majority of the white quarters and family quarters have been supplied with water-closets. Pit closets are used as a temporary means of disposal wherever possible until water and sewerage systems can be installed, and where for local reasons they were not objectionable. The pit closet is made by digging an ordinary pit and placing over it a fly-proof closet. Bucket closets are used where for various reasons the other two systems can not be used; for instance, where the ground is of such a character that the subsoil water is high and a pit would rapidly fill with water, or where the pit closet would be especially inconvenient. The bucket closet is constructed by placing a galvanized-iron bucket in a fly-proof box arranged in a convenient building. The bucket is emptied and cleaned nightly.

Of course, with the ordinary machinery, and the very unreliable labor we have to deal with, and the shortage of labor that frequently exists, it is bound to occur that now and then a bucket will not be emptied, but this very rarely occurs. You will see from the report that on this particular inspection not a single bucket was found unemptied, though it does occur every now and then. The system, I think, is a very safe, good, and sanitary system, and no sanitary harm is caused from these occasional accidents.

The system of emptying buckets is as follows: The area is divided up into sections so that 2 negro scavengers are assigned from 50 to 80 buckets, according to distance from point of disposal. According to area every 6 scavengers have a negro foreman who supervises them. These negro foremen are under white inspectors.

Each white inspector is required to go about his district and inspect every closet once daily. This white inspector makes a daily report to the chief inspector of the district regarding the condition of the pit and pail closets. All pit and pail closets are cleaned and washed daily.

Upon our taking over the buildings from the French, we found the bucket system installed in the hospitals, the public buildings, and the better class of white houses. In the barracks and other buildings no provision was made for the disposal of night soil. The individuals were expected to care for themselves in this respect and used the neighboring jungle for this purpose.

From my personal knowledge and frequent inspections (for the past two years I have been out at least twice a week inspecting this and other sanitary matters, and every time I go out I inspect some closets) I am confident that the disposal of night soil is well looked after, and that the general conditions in this respect are entirely sanitary. The conditions as found according to the inclosed report, I think, will bear me out in this statement.

In the particular case at house No. 51, at Empire, where the President found the buckets filled, upon investigation I find that the buckets had not been emptied the previous night. The foreman stated that they had been. He acknowledged afterwards that he was lying. This building contained 24 white employees and had 5 buckets, which is an ample allowance. In my recommendation, I have advised 1 bucket to 10 men. This I have found sufficient. There had never been any complaint of insanitary conditions of this closet from anybody concerned, either to the inspector or to anyone else in authority. The white foreman in charge of the negro foreman in this district, and who has been in charge of this district about three weeks, tells me that this is the first time since he has been in charge that this particular closet had not been emptied during the night. The President will remember that during the preceding night there had been an unusual rainfall, such as had not occurred on the Isthmus before in several years.

As the President ordered, 6 additional buckets have already been installed. Sewerage connections are being made, and within a few days water-closets will be in this house.

Very respectfully,

W. C. GORGAS,
Chief Sanitary Officer.

APPENDIX 3.

[Personal.]

COLON, *September 13, 1906.*

Mr. JNO. F. STEVENS,

Vice-President, Culebra, Canal Zone.

DEAR SIR: Referring to and answering your personal letter of September 6, on the subject of the Panama Railroad lands and the selling or leasing of them to officials of the railroad company or the Canal Commission:

A little time has been required to check up all of the leases now outstanding, hence the delay. But I now beg to advise that—

First. No lands belonging to the Panama Railroad have been sold to any official of either the Commission or the railroad company, or to any employee of either of them. The only land or lots of any description sold by the railroad company were sold many years ago—one lot to the Pacific Mail Steamship Company, upon which their office stands; a sea frontage of half a lot to the Royal Mail Steam Packet Company, upon which their office stands and to which their pier adjoins, and one lot upon which is located the residence of their general agent in Colon.

The Panamanian Government owns 88 lots on Manzanillo Island which they own and reserved to themselves when the other lands were transferred to the railroad company by the Colombian Government.

In Panama a large number of lots in past years have been sold, exchanged, and transferred, but no such sale or transfer of property has been made by the railroad company during your administration as vice-president of the railroad, or, in fact, none in recent years.

Second. As to any lands or property of any description on the Isthmus leased to officials of either the Commission or the railroad by the Panama Railroad, I have to advise you that there are only two such lots. These are two Bolivar street lots that were leased to Mr. Yung, our present land agent, about seven months ago. These are in no way choice lots and have no particular value. They are lots located in what is known as the "Fire Zone"—a strip of land bordering the company's docks and houses and commissary to protect the property in event of fire in adjacent buildings.

No buildings have ever been erected on these lots or in this "Fire Zone" in recent years, and when the lots were leased to Mr. Yung it was with the understanding that he should not build upon them

until such time as ample fire protection, in the way of water supply, etc., was furnished and had in Colon. Mr. Yung has paid his rental regularly in advance on these lots, but has never received one dollar of income from them and will not receive any such income until he is permitted to build on them.

Mr. Yung is one of the oldest employees in the service of this company—having been in its employ for nineteen years—and he was given the two lots in question under the same terms and for the same rental that any other person would lease them, but they were leased to him principally as a reward for his long years of service with the company.

Third. As to the employees of the Commission or railroad leasing lots from the company, I beg to advise you that the following employees now hold leases for certain lots in Colon:

John Gregory, former foreman of the blacksmith shops of the Panama Railroad, has lease for one lot which Mr. Gregory leased from the railroad some ten years ago. Mr. Gregory is not and has not been in the service of the Panama Railroad for the past seven months.

H. E. Koch, one of our train conductors, has a lease for one lot located on Bolivar street, and on this lot he has erected a dwelling house. The lot was leased to Mr. Koch four years ago. Koch has been in the service of the Panama Railroad Company for the past ten years, serving, respectively, as locomotive engineer, master mechanic, and now as conductor. The lot in question was leased by the Panama Railroad Company to a gentlemen by the name of Canavaggio, and the lease was purchased by Mr. Koch from Canavaggio, the same being transferred by the Panama Railroad Company.

W. S. O'Brien, also a train conductor, also has a lease to one lot on Bolivar street, upon which a dwelling and business house has been located by Mr. O'Brien. This lot was leased by the railroad company to a Mrs. de Cooke some ten years ago, and the lease was bought by Conductor O'Brien from Mrs. de Cooke, the same being transferred by the Panama Railroad Company after Mr. O'Brien purchased the same. This lot was purchased by Mr. O'Brien a little over a year ago and before the time of your administration as vice-president.

C. S. Clark, also a train conductor, has a lease for five lots on Bolivar street. The lease on these lots was purchased by Mr. Clark from a Mr. de Leon in 1903—the lease being transferred in the proper manner by the Panama Railroad Company.

J. E. Stevens, also a train conductor, has a lease for one lot on Bolivar street, upon which he has erected a dwelling house. This lot was leased by the railroad company to a Mrs. de Cooke, and the lease Stevens now holds was purchased from Mrs. de Cooke, and the lease was properly transferred to Stevens in October, 1905, by the railroad company.

In Panama there is not a lot leased to or held by any white employee or official—such lot being situated in the business portion of the city.

You will note by the above that none of these lots, with the exceptions of the one held by Mr. Gregory and the two held by Mr. Yung, were ever leased directly to an employee of the Panama Railroad Company. In all other cases the employee holding the lease purchased same from the original holder. In this connection I beg to advise you that these employees paid for these lots prices ranging from \$100 to \$1,000 gold, which will convey to you an idea of their value.

As to other lots leased to employees: We have in Colon and Panama leased about 40 lots, that is, of the small outlying lots, to colored employees, switchmen, clerks, brakemen, yardmen, and colored employees of this class. Upon these lots they have built their little homes, and they pay to the railroad company an average yearly rental of \$9 gold. This will also give you an idea of the value of these lots.

Along the line of the road in the various villages there is not one lot leased to an official or white employee. There are a few of these lots, however, that have been leased to colored employees who work for the railroad company from time to time, and who are, generally speaking, treated or considered as nonemployees.

By the above statement you will note that during the administration of the present officials, or, in fact, any official since the ownership of the United States Government on the Isthmus, but two lots have ever been leased to an official or white employee.

The lots leased to colored employees are transferred to them from time to time, as they desire to build their little homes.

The above is a true statement of the facts, as will be shown at any time by the records of our land office and the register of such leases.

Trusting this will serve your purposes, I remain,

Yours, very truly,

W. G. BIERD, *General Manager.*

The following is the scale of wages paid by the Isthmian Canal Commission in the department of engineering and construction to men in various outdoor employments, including mechanical and building trades, railroad and engineering positions on the Isthmus, with brief statements of the qualifications required in each case:

Foreman (not special).—\$125 per month. Experience in handling men and material on construction work.

Dump foreman.—\$100 per month. Experience with skeleton track on construction.

Municipal foreman.—\$100 to \$150 per month. Experience in laying iron and vitrified pipe lines and in concrete work and road construction.

Rock foreman.—\$100 to \$150 per month. Experience with various classes of explosives and in directing machine drill work in heavy cuts on railroads.

Track foreman.—\$100 to \$150 per month. Experience in laying and surfacing new track, with knowledge of details of work and capacity to instruct laborers in doing work, as well as managing them. Only construction men wanted.

Wrecking foreman.—\$125 to \$150 per month. Experience in picking up wrecks, assembling wrecking tools and outfit, and directing work.

General foreman.—\$150 per month.

In all above classes, experience in directing subforemen.

Rodman.—\$83.33 per month. Must have actual experience of at least one year as such on railroad or other heavy construction work; must be active and have equivalent to high school or technical education, and not over 30 years of age.

Levelman.—\$125 per month. Must be technical graduate in civil engineering, and have actual experience as such on large construction works.

Transitman.—\$150 per month. Must be technical graduate in civil engineering, and have considerable practical experience as such on railroad or other large construction works.

Bricklayer.—72 cents per hour. Must have experience as such and able to lay a lead, or corner, or jamb, plumb and true to line, and to lay not less than 200 bricks per hour, in a workmanlike manner.

Copper and tinsmith combined.—65 cents per hour. Must have experience in general tinning and coppersmithing work in locomotive and tin shops, such as roofing, guttering and making of cans, oilers, ventilators, etc., and making and placing copper pipes on locomotives.

Iron worker.—56 cents per hour. Must have experience in bending angle iron, lining boats, and doing all kinds of erection work on boat hulls, and able to do all kinds of sheet metal work.

Molder.—65 cents per hour. Must have experience in locomotive and general foundry work in both green and dry sand, and in core making for both brass and iron.

Painter (house).—65 cents per hour. Must have good experience as brush men and in mixing colors. Persons having experience in handling a gang of painters preferred.

Painter (locomotive).—56 cents per hour. Must have experience in lettering, striping, and varnishing in both locomotive and coach work.

Pipe fitter.—65 cents per hour. Must have experience in locomotive and car, steam, and air piping, and in handling, working, and bending all kinds of wrought-iron pipes from smallest size to 10 inches in diameter.

Plumber.—75 cents per hour. Must have experience as such and capable of getting up and connecting all kinds of sanitary fixtures, putting in roughing work, wiping joints in workmanlike manner.

Car inspector and repairer.—44 and 56 cents per hour. Must have at least one year's experience as such in railroad service. A person experienced in repairs to both steel and wooden cars preferred.

Carpenter (bridge and dock).—56 cents per hour. Must have good experience as such in railroad bridge or other bridge and dock work, in which heavy timbers are used.

Carpenter (car).—65 cents per hour. Must have at least two years' experience as such during last four years either in railroad car repair shops or regular car construction plants. A person experienced in repairs to both steel and wooden cars preferred. Only first-class, high-grade men wanted.

Carpenter (house).—65 cents per hour. Must have experience in framing, be able to fit, hang, and trim doors and windows, build stairways, and be expert with use of common tools. Must be competent to build frame houses from plans, etc.

Carpenter (ship).—56 cents per hour. Must have experience as such in hull and boat construction and finishing of vessels.

Coach cabinetmaker.—56 cents per hour. Must have experience as such in regular coach shop.

Pattern maker.—65 cents per hour. Must have experience in making light and heavy patterns on machinery, including gearing, locomotive, and car work.

Planing mill machine hand.—56 cents per hour. Must have experience in running heavy woodworking machinery, such as planers, surfacers, matchers, badders, rip and cut-off saws, mortising and boring machines, in *general car work*.

Conductor.—\$170 per month. Must have actual experience as such in construction and work-train work; must be able to pass standard rule and efficiency examination; clearance papers from American surface steam railroad required.

Crane man (steam shovel).—\$185 per month. Must have actual experience as such in handling American-built steam shovels.

Drill runner.—\$125 per month. Must have actual experience on railroad or other heavy excavation work, with steam or air drills, where down holes are used for a depth of between 20 and 30 feet.

Powder man.—\$125 per month. Must have actual experience in directing drilling and blasting and handling explosives on railroad or other large construction work.

Telegraph operator.—\$83.33 per month. Must have actual experience as railroad operator; must be capable operator with good clerical ability.

Timekeeper.—\$100 per month. Must have actual experience as such on large construction work, be quick and accurate at figures, able to write rapidly and neatly and legibly; must be physically sound and have perfect eyesight; knowledge of bookkeeping desirable.

Trainman.—\$100 per month. Must have actual experience as such on surface American steam railroads; able to pass standard rule examination; clearance papers required.

Engineer (locomotive).—\$180 per month. Must have experience in construction and work-train work; able to stand efficiency examination on machinery and air as well as on standard train rules. Clearance papers required.

Engineer (marine).—\$135 per month. Must have United States marine license not lower than that of second assistant engineer.

Engineer (steam shovel).—\$210 per month. Must have experience as such in handling American-built steam shovels.

Fireman (locomotive).—\$75 to \$83.33 per month. Must have experience as such on American surface steam railroad in firing bituminous coal and working injectors.

Fireman (steam shovel).—\$83.33 per month. Must have experience as such in handling American-built steam shovels.

Blacksmith.—65 cents per hour. (Horseshoers are not wanted.)

General: Experience in general railway work, and with Bradley and other small steam hammers.

Heavy fire: Experience with heavy forgings, use of cranes and power hammers.

Machine: Experience with bolt-heading and bulldozing machines.

Springmaker: Experience in flat spring work for locomotive driving wheels, also spiral springs.

Tool dresser: Experience in forging tools for lathes and other machines, in tempering, cutting and forging tools, and knowledge of classes of steel up to high-speed steel.

Tool sharpener: Experience in sharpening tools for rock work, particularly steel drills.

Blacksmith's helper: Forty-four cents per hour. Experience as helper to any class of mechanic, as above set forth.

Boiler maker.—65 cents per hour.

General: Capable of doing all-round locomotive boiler work, including flanging, putting on patches, making steam-tight joints, and doing chipping and calking. Marine or structural men not wanted.

Sheet-iron worker.—56 cents per hour. Experienced in locomotive front-end work and used to working black iron up to No. 10 gage, converting it into cans, pans, stacks, up to 12 inches diameter, and other work of a similar nature.

Boiler-maker's helper.—44 cents per hour. Experience as helper to any class of mechanic above mentioned.

Axle turner.—65 cents per hour. Must have experience in turning and fitting driving-wheel and car axles.

Car-wheel borer.—44 cents per hour. Must have experience in operating car-wheel boring machines and in boring wheels either to gauge or to fit old axles to pressure fit.

Machinist (air-brake).—65 cents per hour. Must have experience in repairs and application of locomotive air and drive brakes and car air-brake equipment.

Machinist (brass lathe).—65 cents per hour. Must have good experience in operating Fox Monitor and Universal Turret lathes, and other machines of like nature, on locomotive and steam-appliance work.

Machinist (drill press).—44 cents per hour. Must have experience in running radial and upright drills in general locomotive and car work; able to set up work to lines and bring it up true and accurate.

Machinist (floor).—65 cents per hour. Must have experience in all kinds of locomotive floor and bench work.

Machinist (general).—65 cents per hour. Must have experience in floor and machine, and running repair work.

Machinist (helper).—44 cents per hour. Must have experience as such of at least one year during last three years in railroad roundhouse or floor work.

Machinist (machine).—65 cents per hour. Must have experience in all kinds of locomotive work on lathes, planers, boring mills, shapers, and other machines in railroad shops.

Machinist (marine).—65 cents per hour. Must have experience in erecting and repairing marine engines, lining shafts and bearings, and doing machine and bench work in connection with such repairs.

Machinist (tool room).—65 cents per hour. Must have experience on bench and machine work and in making dies, taps, reamers, and other small tools, and caring for same in tool-room work.

APPENDIX 5.

ISTHMIAN CANAL ZONE,
DEPARTMENT OF HEALTH,
OFFICE OF CHIEF SANITARY OFFICER,
Ancon, C. Z., November 20, 1906.

MR. WILLIAM LOEB,

Secretary to the President, Washington, D. C.

DEAR SIR: I herewith forward certain statistics covering the first ten months of the year 1906, which President Roosevelt, on his recent visit to Panama, directed me to compile.

You will note in these statistics the small death rate among our white population as compared with our negro population, the total death rate among the whites for the ten months being but 17.41 per thousand. Also the small number of deaths from disease among our American employees. With an average of 4,000 Americans during the ten months, we had but 16 deaths from disease, a rate for the year of 4.8 per thousand.

Our sick rate for the ten months has averaged 28 per thousand—that is, out of our 26,000 employees we had, out of every thousand, 28 excused from work on account of sickness every day in the ten months. This is very small and would compare favorably with a similar body of men laboring in the Temperate Zone.

It is rather singular that the disease which caused the greatest number of deaths among our employees was pneumonia, with 372 deaths. Pneumonia is not ordinarily looked upon as a tropical disease. Next is malaria, a tropical disease, with 186 deaths. Next dysentery, another tropical disease, with 62 deaths, and fourth, traumatisms, with 44 deaths. The very large number of traumatisms is due principally to railroad accidents.

I also inclose a short account describing an attack made by an alligator upon one of our nurses while he was in bathing near Miraflores Hospital. The President requested me to send him this account.

Very respectfully,

M. C. GORGAS,
Chief Sanitary Officer.

On the evening of March 28, 1906, at about 5.30 p. m., Mr. William N. Pettit and Mr. Frank Graham, nurses of this hospital, were bathing in the Rio Grande River about 250 yards from this institution. The current at this point is quite swift, and to escape its force they entered a small cove. A few minutes after entering Mr. Pettit, who was floating by the aid of a log of wood, felt both legs seized by something below the water. He shouted for assistance and his companion immediately swam to his aid. The water at this point is about 6 or 7 feet deep, and by the time Mr. Graham reached him Mr. Pettit was all but pulled under. Mr. Graham succeeded in dragging his companion to the near-by bank, and in the commotion that was caused the alligator loosened its hold. After leaving the water it was found that Mr. Pettit had sustained injuries to both legs, consisting of three deep punctured wounds on the outer side of the right foot and three punctured wounds and two long lacerated wounds on the left leg. Mr. Pettit was brought to this hospital and treated, and on the following morning was sent in to Ancon Hospital.

The wounds, though severe, healed by first intention, and there has been no impairment of the limbs.

ISTHMIAN CANAL COMMISSION,

ANCON HOSPITAL,

Canal Zone, Isthmus of Panama, November 19, 1906.

THE SUPERINTENDENT, ANCON HOSPITAL.

SIR: I have the honor to report the case of William M. Pettit from the history, as follows:

While bathing in the Rio Grande near Miraflores, March 28, 1906, he was attacked by an unseen animal beneath the water. He was assisted by a man on the bank and got away after quite a struggle. He received a lacerated wound of the left calf about the size of a hand palm, also three punctured wounds in right heel anterior to the tendon achilles about one-fourth to three-eighths inch in size. Both feet were very sore and showed the effects of a severe sprain. He was transferred to Taboga April 10, 1906.

Very respectfully,

A. B. HERRICK, *Chief of Clinic.*

GENERAL STATISTICS.

Table showing population, number of employees, deaths and death rates.

[The population of the cities of Panama, Colon, and Cristobal, and the Canal Zone is estimated from the results of a recent census. These figures include employees and civil population. The deaths credited to the Canal Zone include those of employees who died in the territorial limits of the Zone.]

	Popu- lation.	Deaths during month.	Annual average per 1,000 for the month.
January, 1906:			
Employees of the Canal Commission and Panama Railroad Company	22,000	74	40.36
Panama, Colon, and Zone	46,249	178	46.18
February, 1906:			
Employees of the Canal Commission and Panama Railroad Company ..	23,135	56	29.09
Panama, Colon, and Canal Zone	49,951	176	42.24
March, 1906:			
Employees of the Canal Commission and Panama Railroad Company	25,002	78	37.44
Gold employees of the Canal Commission and Panama Railroad Company	4,377	10	27.41

Table showing population, number of employees, deaths and death rates—Continued.

	Popu- lation.	Deaths during month.	Annual average per 1,000 for the month.
March, 1906—Continued.			
Silver employees of the Canal Commission and Panama Railroad Company	20,625	68	39.61
Panama, Colon, and Canal Zone.....	51,577	183	42.57
April, 1906:			
Employees of the Canal Commission and Panama Railroad Company	27,219	68	30.00
Gold employees of the Canal Commission and Panama Railroad Company.....	4,918	6	14.64
Silver employees of the Canal Commission and Panama Railroad Company	22,301	62	33.36
Panama, Colon, and Canal Zone	53,671	157	34.91
May, 1906:			
Employees of the Canal Commission and Panama Railroad Company	26,136	54	24.79
Gold employees of the Canal Commission and Panama Railroad Company	5,094	5	11.78
Silver employees of the Canal Commission and Panama Railroad Company	21,042	49	27.94
Panama	26,000	114	52.61
Colon and Cristobal	13,000	40	36.92
Canal Zone	21,000	109	62.28
June, 1906:			
Employees of the Canal Commission and Panama Railroad Company.....	28,010	97	41.55
Gold employees of the Canal Commission and Panama Railroad Company	4,975	3	7.23
Silver employees of the Canal Commission and Panama Railroad Company	23,035	94	48.96
Panama	26,199	87	39.84
Colon and Cristobal.....	13,099	83	76.03
Canal Zone.....	21,161	147	83.36
July, 1906:			
Employees of the Canal Commission and Panama Railroad Company	28,041	151	64.71
Gold employees of the Canal Commission and Panama Railroad Company	5,052	13	30.87
Silver employees of the Canal Commission and Panama Railroad Company	22,989	138	72.03
Panama	26,199	111	50.84
Colon and Cristobal	13,578	88	77.77
Canal Zone.....	35,000	223	76.45
August 1906:			
Employees of the Canal Commission and Panama Railroad Company	29,555	153	62.12
Gold employees of the Canal Commission and Panama Railroad Company	5,269	8	18.22
Silver employees of the Canal Commission and Panama Railroad Company	24,286	145	71.60
Panama	26,400	122	55.45
Colon and Cristobal.....	14,078	70	60.00
Canal Zone	35,500	214	72.33
September, 1906:			
Employees of the Canal Commission and Panama Railroad Company	28,264	135	57.34
Gold employees of the Canal Commission and Panama Railroad Company	5,603	7	15.00
Silver employees of the Canal Commission and Panama Railroad Company	22,661	128	67.81
Panama	26,500	100	45.28
Colon and Cristobal.....	14,379	70	58.33
Canal Zone.....	36,079	180	60.00
Total population (Panama, Canal Zone, and Colon).....	76,959	350	54.54
October, 1906:			
Employees of the Canal Commission and Panama Railroad Company	25,445	99	46.68
Gold employees of the Canal Commission and Panama Railroad Company	5,520	7	15.27
Silver employees of the Canal Commission and Panama Railroad Company	19,925	92	55.20
Panama	26,700	98	44.04
Colon and Cristobal.....	14,710	76	62.04
Canal Zone.....	36,680	128	41.85
Total population (Panama, Canal Zone, and Colon).....	78,090	302	46.40

Average number employees for ten months.....	26, 280
Average number of deaths per month.....	96.5
Annual death rate per thousand.....	44.03
Average number gold employees for eight months.....	5, 101
Average number of deaths per month.....	7.4
Annual death rate per thousand.....	17.41
Average number silver employees for eight months.....	22, 108
Average number of deaths per month.....	97
Annual death rate per thousand.....	52.90

Deaths, by color, for total population of the Zone.

White:		Color not known:	
Male	315	Male	2
Female	102	Sex unknown	19
Black:		Total	3, 030
Male	1, 849		
Female	686		
Chinese:			
Male	52		
Female	5		

Deaths, by nationalities, for total population of the Zone.

Africa	1	India	1
Antigua.....	39	Ireland	1
Australia.....	1	Italy	10
Austria	3	Jamaica	504
Barbados.....	424	Japan	1
Bolivia	1	Martinique.....	112
Brazil.....	1	Mexico	11
British Guiana.....	3	Montserrat.....	10
Canada	2	Nicaragua	5
China.....	57	Panama	1, 010
Chile	3	Peru	11
Colombia	206	Philippines	1
Costa Rica	17	Porto Rico.....	1
Cuba	6	Russia.....	2
Curaçao.....	2	San Salvador	6
Demerara	8	Santo Domingo.....	1
Denmark	2	Scotland	1
Dominica	5	Spain	37
East Indies.....	6	Sweden	1
Ecuador	12	Switzerland	1
England	20	St. Kitts	14
France.....	29	St. Lucia.....	81
French Guiana	1	St. Thomas.....	5
Fortune Islands.....	5	St. Vincent.....	7
Greece	2	Trinidad	9
Germany	3	Unknown	46
Grenada	36	United States.....	55
Guadaloupe.....	4	Venezuela.....	12
Guatemala	2	Watling's Island.....	1
Haiti	7	West Indies	161
Holland	3		
Honduras.....	1	Grand total.....	3, 030

Deaths, by ages, for total population of the Zone.

Under 1 year.....	339	From 60 to 70 years.....	93
From 1 to 4 years	153	From 70 to 80 years.....	53
From 4 to 10 years	75	From 80 to 90 years.....	18
From 10 to 20 years.....	202	From 90 to 100 years.....	3
From 20 to 30 years.....	799	Ages unknown	132
From 30 to 40 years.....	516		
From 40 to 50 years.....	408	Total	3,030
From 50 to 60 years.....	239		

Deaths of Isthmian Canal Commission and Panama Railroad employees, by nationality.

Antigua	37	Ireland	1
Australia	1	Italy	2
Austria	2	Jamaica	197
Barbados	362	Martinique.....	68
British Guiana	1	Montserrat.....	7
Canada	2	Nicaragua	1
Colombia	20	Panama	21
Costa Rica	1	San Salvador.....	2
Cuba	3	Scotland.....	1
Demerara	4	Spain	9
Denmark	1	St. Kitts	10
Dominica	1	St. Lucia	29
East Indies	2	St. Thomas	3
England	7	St. Vincent	4
France	9	Trinidad	5
Germany	2	United States	34
Greece	2	Venezuela	4
Grenada	27	West Indies	64
Guadeloupe	2	Not stated	12
Haiti	4		
Holland	1	Total	965

Causes of death of employees of Commission and Panama Railroad Company.

Accidental traumatisms.....	44	Empyema	3
Alcoholism	3	Enteritis, acute	2
Anemia	1	Epilepsy	1
Aneurism	1	Fever:	
Ankylostomiasis.....	7	Hemoglobinuric.....	9
Arthritis	3	Malaria	186
Beriberi	6	Typhoid	32
Brain, tumor of	1	Filiriasis.....	1
Broncho pneumonia	18	Gangrene	1
Bronchitis, acute	2	Heart, organic disease of.....	12
Bright's disease.....	26	Hemorrhage:	
Burns	2	Stab wound	1
Cellulitis	2	Cerebral	3
Debility	1	Hepatitis, acute	1
Drowning:		Hernia, strangulated.....	1
Accidental	2	Liver:	
Suicide by	1	Abscess of	5
Dysentery	62	Cancer of	1

Causes of death of employees of Commission and Panama Railroad Company—
Continued.

Liver—Continued.		Pleurisy	1
Cirrhosis of	4	Pneumonia	372
Lung:		Poisoning, accidental	2
Congestion of	1	Pyemia	5
Gangrene of	6	Rheumatism	2
Edema of	1	Septicæmia	7
Tuberculosis of	36	Skull, fracture of	1
Mastoid, abscess of	1	Spleen, abscess of	1
Meningitis:		Stomach, cancer of	2
Simple	12	Suicide	2
Cerebro-spinal	9	Tetanus	1
Pneumococcic	2	Tongue, cancer of	1
Myocarditis	2	Uremia	1
Nephritis, acute	23	Not stated	9
Paralysis	1		
Pericarditis	8	Total	965
Peritonitis	11		

List of deaths of white employees on the Isthmus, giving name, nationality, occupation, length of time on the Isthmus, age, and cause of death.

Name.	Nationality.	Occupation.	Time on Isthmus.	Age.	Cause of death.
January:					
Anderson, John	Canada	Clerk	2 years	55	Poisoning by chloride, accidental.
Diaz, Martin	Spain	Engineering department	6 years	44	Lobar pneumonia.
Donahue, James	United States	do	3 months	40	Tumor of brain.
Jackson, John	Australia	do	8 months	46	Malarial fever.
Laino, Nicola	Italy	Materials and supplies department	2 months	54	Broncho-pneumonia.
Petersen, P. E.	Denmark	Engineering department	Unknown	25	Alcoholism.
Shields, S. H.	United States	Miner	7 years	28	Railroad accident.
Spencer, Albert	do	Engineering department	2 months	53	Malarial fever.
Tray, James	do	do	Unknown	(?)	Lobar pneumonia.
Vautrin, Victor	France	Watchman	9 months	65	Cerebral hemorrhage.
Wilson, Ed. J.	United States	Policeman	10 weeks	28	Amoebic dysentery.
Zelaya, J. W.	Spain	Panama Railroad	6 months	27	Lobar pneumonia.
Cognelin, Louis	Martinique	Engineering department	4 months	28	Do.
February:					
Allen, Percy	England	Labor and quarters	7 weeks	32	Broncho-pneumonia.
Devoc, Wm. F.	Venezuela	(?)	(?)	50	Malarial fever.
Hutchinson, E. F.	America	Building and construction	5 months	36	Malaria.
Murphy, Wm.	England	Engineer department	4 months	26	Crushed thigh and foot (shock).
Navio, Fred	Colombia	Miner	Lifetime	29	Pyæmia.
Stamata, Juan	Greece	Engineer department	2 years	42	Malaria, hæmoglobinuria.
March:					
Cover, Chas.	United States	Machinist	6 months	48	Pneumonia.
Duque, Nerico	Colombia	Health department	2 years	25	Malarial fever.
Fernandez, Ramon	Spain	Engineering department	35 days	58	Do.
Grattis, Robert.	United States	Machinist	16 months	27	Alcoholism.
Hurst, Fred	do	Mining department	3 weeks	23	Shock following explosion.
Joyeux, Vandal	France	(?)	(?)	49	Debility.
La Boice, Stenacha	Austria	Engineering and construction	3 months	19	Malarial fever.
Platt, G. H.	United States	Maintenance and supplies department	1 year	29	Amoebic dysentery.
Rodriguez, J. R.	Cuba	Track employee	2 months	18	Drowning.
Robertson, Chas	United States	Plumber	3 months	27	Dysentery.
April:					
Baath, Charles	Germany	Sanitary department	5 months	54	Pneumonia.
Cloyd, S. O.	United States	Police sergeant	6 months	26	Do.
Ebaro, Pedro	Spain	Excavation department	(?)	36	Typhoid fever.
Gutierrez, Mario	Colombia	Engineering and construction	3 weeks	31	Amoebic dysentery.
Martin, James P.	United States	Storekeeper, material and supplies	2 months	45	Railroad accident.
Miner, Charles.	do	(?)	4 months	51	Chronic dysentery.
May:					
Anderson, John	United States	Clerk	5 months	21	Lobar pneumonia.
Geny, Theophilis	France	Meteorological department	14 years	36	Organic disease of heart.
Kremer, Edward	United States	Building contractor	7 months	33	Malarial fever.
Patton, David	do	Carpenter	4 months	61	Amoebic dysentery.
Slattery, Thomas	do	Machinist	3 years	45	Lobar pneumonia.

June:		Austria	Mining department	3 months	42	Malarial fever.
Basta, Pedro		Jamaica	Policeman	2 years	34	Do.
Kennedy, Edw.		Scotland	Foreman municipal engineering	16 months	33	Meningitis.
Masterson, Dickson						
July:		America	Engineer Panama R. R.	(?)	(?)	Drowning.
Dunn, R. T.		England	Machinist	2 years	48	Lobar pneumonia.
Lawrence, Fred		America	Engineering department	(?)	45	Alcoholism and malarial fever.
Morgan, David A.		France	Engineering and construction	8 months	41	Acute peritonitis.
Poinboeuf, C. A.		Barbados	do	1 year	24	Hæmoglobinuric fever.
Ramsey, J. P.		Italy	Sanitary department	6 months	21	Lobar pneumonia.
Salerno, Camelo		Jamaica	(?)	(?)	32	Organic disease of heart.
Small, Henry		America	Assistant engineer	25 months	36	Malarial fever.
Smith, Elmer C.		do	Panama R. R.	(?)	(?)	Drowning (Panama R. R.) accident.
Smith, H. E.						
August:		France	Engineering department	23 months	43	Pneumonia.
Calender, George		United States	Mining department	4 months	34	Burns.
Frye, Charles		Spain	Engineering department	6 months	38	Dysentery.
Fontenal, Edward		Germany	Machinist	(?)	28	Burns.
Knaust, Franz		United States	Panama R. R. steamship Allianca	(?)	52	Myocarditis (chronic).
Nelson, Gilbert B.		France	Building construction	(?)	(?)	Cerebral hemorrhage.
Retty, Alfonse		United States	General traction foreman	8 months	47	Railroad accident.
Scott, Robt. F.		Spain	Engineering department	7 months	38	Dyentery.
Sevarry, Miguel						
September:		United States	Engineer, Panama Railroad	27 days	(?)	Railroad accident.
Currie, Eben		do	do	(?)	49	Do.
Faherty, Thomas		Jamaica	Building construction	8 months	56	Pneumonia.
Gale, Milword		Holland	Track foreman	15 months	32	Railroad accident.
Milliery, J. F.		United States	Engineer, Panama Railroad	27 days	(?)	Do.
Nash, William		Greece	Engineer department	8 months	53	Pneumonia.
Scrutis, Eftimo		United States	Engineer, Panama Railroad	4 months	(?)	Railroad accident.
Walker, George L.						
October:		Colombia	Government and sanitation	6 months	19	Pneumonia.
Garcia, Simon		Spain	Track department	7 months	25	Railroad accident.
Lopez, Pegerto		United States	Powder man	(?)	50	Do.
Nester, Charles		do	Mechanical department	(?)	71	Alcoholism.
O'Brien, Lawrence		Spain	Maintenance of way	(?)	21	Dynamite explosion.
Rivero, Saturnino		Venezuela	Government and sanitation	18 months	56	Dysentery.
Vasquez, Antonio		England	Sanitary inspector	1 year	39	Railroad accident.
Wells, Chas. F.						

Causes of death.

[Panama, Colon, Canal Zone, including employees of the Isthmian Canal Commission and Panama Railroad Company, from January 1, 1906, to October 31, 1906.]

Classification.	Panama.	Colon and Cristobal.	Ancon hospital.	Line hospitals.	Colon hospital.	Zone.	Total.
<i>I. General diseases.</i>							
Typhoid fever.....	7	1	23	9	8	1	49
Relapsing fever.....					1		1
Malarial fever.....	141	108	33	85	78	145	590
Malarial fever estivo autumnal.....			1				1
Malarial cachexia.....	5	3	1	3			12
Hæmoglobinuric fever.....	1		7	3	4		15
Smallpox.....		1			1		2
Diphtheria and croup.....	1						1
Influenza.....						3	3
Dysentery.....	35	13	25	21	12	17	123
Amœbic dysentery.....	9	5	7	3	9	4	37
Yellow fever.....					1		1
Leprosy.....						1	3
Beriberi.....	40		4	7	2		53
Erysipelas.....						1	1
Purulent infection and septicæmia.....		3	18	3	8	2	42
Tuberculosis of the lungs.....	134	23	16	29	17	20	239
Abdominal tuberculosis.....	1						1
Tuberculosis of other organs.....	1						1
General tuberculosis.....			3	2			5
Syphilis.....	2			2	1		5
Cancer and other malignant tumors of the bucal cavity.....			1				1
Cancer and other malignant tumors of stomach and liver.....	1		1	2		1	5
Cancer and other malignant tumors of the female genital organs.....		1					1
Cancer and other malignant tumors of organs not specified.....	1					1	2
Other tumors.....	2	1	1			1	5
Acute articular rheumatism.....	1						1
Chronic rheumatism and gout.....						2	2
Diabetes.....	1		1				2
Anæmia, chlorosis.....	3				1	1	5
Other general diseases.....	2		2		2		6
Acute and chronic rheumatism.....	1	1		1		4	7
<i>II. Diseases of the nervous system and organs of special sense.</i>							
Simple meningitis.....	17	1	9	6	2	3	38
Epidemic cerebro-spinal meningitis.....	5		8	1	1		16
Pneumococcus meningitis.....			1		2		3
Congestion and hemorrhage of the brain.....	12	6	2	8		4	32
General paralysis.....	6	2	1	1		1	11
Epilepsy.....		2		1		1	4
Convulsions (nonpuerperal 5 years and over).....		2				3	5

Convulsions (under 5 years).....	2	7	1			21	31
Tetanus	17	3			2	3	52
Other diseases of the nervous system.....	3	1	1	2	1		8
Diseases of the ear	1				1		2
<i>III. Diseases of the circulatory system.</i>							
Pericarditis.....	1		7	2	1		11
Acute endocarditis.....	2	1		3		2	8
Organic disease of the heart.....	26	11	4	5	4	17	67
Angina pectoris	1						1
Diseases of the arteries (atheroma, aneurism)	2		1	2	1		6
Hemorrhages.....	5	1				3	9
Other diseases of the circulatory system	9	1			3		13
<i>IV. Diseases of the respiratory system.</i>							
Acute bronchitis	16	1	2	1		5	25
Broncho-pneumonia.....	15	4	18	9	1	4	51
Pneumonia	97	32	152	133	138	34	586
Pleurisy	2		1				3
Congestion and apoplexy of the lungs.....	8		1				9
Gangrene of the lungs		1	1	1	3		6
Other diseases of the respiratory system, phthisis excepted	10	1	3	1		1	16
<i>V. Diseases of the digestive system.</i>							
Diarrhea and enteritis (under 2 years)	54	24		1	1	15	95
Chronic diarrhea and enteritis (under 2 years).....	1	1		1		3	6
Diarrhea and enteritis (2 years and over)	48	6	4	2	3	5	69
Intestinal parasites	1					6	7
Uncinariasis.....	1	2	5	4		3	15
Hernia and intestinal obstruction	11		1				12
Other diseases of the intestines	8	1					9
Cirrhosis of the liver.....	3		4	3		1	11
Other diseases of the liver	11	5	4	3	6		29
Diseases of the spleen.....					1		1
Simple peritonitis.....	6	3	8	5	2	1	25
Other diseases of the digestive system, cancer and tuberculosis excepted.....	4		1		1	1	7
Appendicitis.....	2		1				3
<i>VI. Diseases of the genito-urinary system and its adnexa.</i>							
Acute nephritis	18	6	10	4	11	4	53
Bright's disease	25	5	18	15	7	6	76
Other diseases of the kidneys and adnexa	4	2	2		2		12
Diseases of the bladder.....	1						1
Uterine tumors (noncancerous)	1						1
<i>VII. The puerperal state.</i>							
Accidents of pregnancy.....	2		2			7	11
Puerperal hemorrhage.....	1	1					2
Puerperal albuminuria and convulsions.....	1						1

Causes of death—Continued.

[Panama, Colon, Canal Zone, including employees of the Isthmian Canal Commission and Panama Railroad Company, from January 1, 1906, to October 31, 1906.]

Classification.	Panama.	Colon and Cristobal.	Ancon hospital.	Line hospitals.	Colon hospital.	Zone.	Total.
<i>VIII. Diseases of the skin and cellular tissue.</i>							
Gangrene	2			1			3
Acute abscess, phlegmon	1		2				3
<i>IX. Diseases of the organs of locomotion.</i>							
Nontuberculous diseases of the bones	2						2
Arthritis and other diseases of the joints, tuberculosis and rheumatism excepted	2		2	1			5
<i>X. Malformations.</i>							
Congenital malformations	1						1
<i>XI. Early infancy.</i>							
Other diseases peculiar to early infancy	17	12			1	13	43
<i>XII. Old age.</i>							
Senile debility	4	6		1	1	12	24
<i>XIII. External causes.</i>							
Suicide by hanging or strangulation	1						1
Suicide by drowning					1		1
Other suicides		1					1
Fractures	3		1	2	2	1	9
Other accidental traumatisms	10	10	11	11	5	34	81
Burns and scalds	1	1	4				4
Sunstroke	1						1
Electric shock	1						1
Accidental drowning	3	5		1		10	19
Inanition (starvation)		6					2
Absorption of deleterious gases (nonsuicidal)	2	3				1	6
Other acute poisoning (including alcoholism)	5	1	2	3	1	2	16
Other external violence	4	1	2		1	6	14
<i>XIV. Ill-defined diseases.</i>							
Dropsy	2	1				14	17
Sudden death	1					1	2
Cause of death unspecified or ill-defined	29	20	12	1	1	39	102
Total	950	359	454	411	352	504	3,030

Monthly report of hospitals, 1906.

Hospital.	Patients in hospital first of month.				Admitted during month.				Died during month.				Discharged during month.				Patients in hospital end of month.			
	Canal employees.	Railroad employees.	Nonemployees.	Total.	Canal employees.	Railroad employees.	Nonemployees.	Total.	Canal employees.	Railroad employees.	Nonemployees.	Total.	Canal employees.	Railroad employees.	Nonemployees.	Total.	Canal employees.	Railroad employees.	Nonemployees.	Total.
January:																				
Ancon	177	11	69	257	786	41	121	948	25	2	5	32	730	40	123	893	208	10	62	280
Colon	126	31	34	191	490	156	100	746	16	3	10	29	487	144	82	713	113	40	42	195
Miraflores	110	7	65	182	333	1	18	352	11	1	3	15	328	1	15	344	104	6	65	175
Gorgona	19	0	0	19	107	8	1	116	1	0	0	1	104	8	1	113	21	0	0	21
Culebra	22	1	3	26	219	1	4	224	6	0	1	7	199	2	6	207	36	0	0	36
Total	454	50	171	675	1,935	207	244	2,386	59	6	19	84	1,848	195	227	2,270	482	56	169	707
February:																				
Ancon	208	10	62	280	810	48	122	980	14	4	3	21	751	34	119	904	253	20	62	335
Colon	113	40	42	195	284	112	87	483	12	2	9	23	300	118	76	494	85	32	44	161
Miraflores	104	6	65	175	295	34	19	348	10	2	0	12	290	23	1	314	99	15	83	197
Gorgona	21	0	0	21	93	3	1	97	0	1	1	2	97	1	0	98	17	1	0	18
Culebra	36	0	0	36	209	2	8	219	4	0	2	6	193	1	2	196	48	1	4	53
Total	482	56	169	707	1,691	199	237	2,127	40	9	15	64	1,631	177	198	2,006	502	69	193	764
March:																				
Ancon	253	20	62	335	801	36	113	950	20	2	10	32	778	38	97	913	256	16	68	340
Colon	85	32	44	161	357	95	94	546	11	4	8	23	289	91	74	454	142	32	56	230
Miraflores	99	15	83	197	336	35	16	387	11	2	8	21	322	32	11	365	102	16	80	198
Gorgona	17	1	0	18	98	3	0	101	0	0	0	0	97	1	0	98	18	3	0	21
Culebra	48	1	4	53	330	1	4	335	13	0	0	13	310	2	8	320	55	0	0	55
Empire	0	0	0	0	116	2	2	120	2	0	0	2	99	2	1	102	15	0	1	16
Total	502	69	193	764	2,038	172	229	2,439	57	8	26	91	1,895	166	191	2,252	588	67	205	860
April:																				
Ancon	256	16	68	340	716	57	75	848	24	1	4	29	762	51	91	904	186	21	48	255
Colon	142	32	56	230	165	70	78	313	9	4	12	25	223	66	88	377	75	32	34	141
Miraflores	102	16	80	198	82	10	20	112	7	2	5	14	146	16	6	168	31	8	89	128
Gorgona	18	3	0	21	100	5	1	106	0	1	0	1	100	5	1	106	18	2	0	20

Monthly report of hospitals, 1906—Continued.

Hospital.	Patients in hospital first of month.				Admitted during month.				Died during month.				Discharged during month.				Patients in hospital end of month.			
	Canal employees.	Railroad employees.	Nonemployees.	Total.	Canal employees.	Railroad employees.	Nonemployees.	Total.	Canal employees.	Railroad employees.	Nonemployees.	Total.	Canal employees.	Railroad employees.	Nonemployees.	Total.	Canal employees.	Railroad employees.	Nonemployees.	Total.
April—Continued.																				
Culebra	55	0	0	55	237	2	1	240	14	0	0	14	241	2	1	244	36	0	1	37
Empire	15	0	1	16	92	2	2	96	3	0	0	3	100	2	3	105	4	0	0	4
Total	588	67	205	860	1,392	146	177	1,715	57	8	21	86	1,572	142	190	1,904	350	63	172	585
May:																				
Ancon	186	21	48	255	1,071	67	94	1,232	23	4	8	35	910	56	84	1,050	324	28	50	402
Colon	75	32	34	141	205	58	75	338	10	5	9	24	199	61	60	320	71	24	40	135
Miraflores	31	8	89	128	18	9	39	66	0	0	11	11	33	9	18	60	16	8	99	123
Gorgona	18	2	0	20	94	5	1	100	2	0	1	3	94	5	0	99	16	2	0	18
Culebra	36	0	1	37	135	1	3	139	8	0	0	8	138	0	3	141	25	1	1	27
Empire	4	0	0	4	122	0	1	123	2	0	0	2	115	0	1	116	9	0	0	9
Total	350	63	172	585	1,645	140	213	1,998	45	9	29	83	1,489	131	166	1,786	461	63	190	714
June:																				
Ancon	324	28	50	402	1,218	83	117	1,418	39	2	7	48	1,173	66	97	1,336	330	43	63	436
Colon	71	24	40	135	792	148	135	1,075	27	5	18	50	663	117	100	880	173	50	57	280
Miraflores	16	8	99	123	181	27	40	248	2	0	17	19	116	15	15	146	79	20	107	206
Gorgona	16	2	0	18	121	11	0	132	1	1	0	2	109	11	0	120	27	1	0	28
Culebra	25	1	1	27	199	5	1	205	11	0	1	12	165	3	1	169	48	3	0	51
Empire	9	0	0	9	166	0	1	167	2	0	1	3	160	0	0	160	13	0	0	13
Total	461	63	190	714	2,677	274	294	3,245	82	8	44	134	2,386	212	213	2,811	670	117	227	1,014
July:																				
Ancon	330	43	63	436	1,405	69	112	1,586	72	2	11	85	1,340	80	113	1,533	323	30	51	404
Colon	173	50	57	280	854	183	235	1,272	24	4	18	46	738	183	166	1,087	265	46	108	419
Miraflores	79	20	107	206	242	11	28	281	10	0	10	20	228	26	31	285	83	5	94	182
Gorgona	27	1	0	28	140	13	4	157	3	0	2	5	140	12	1	153	24	2	1	27
Culebra	48	3	0	51	307	2	7	316	21	0	1	22	271	3	5	279	63	2	1	66
Empire	13	0	0	13	301	0	7	308	9	0	1	10	291	0	6	297	14	0	0	14

Bas Obispo	0	0	0	0	99	4	1	104	3	0	0	3	80	3	1	84	16	1	0	17
Tabernilla	0	0	0	0	381	32	9	422	17	0	0	17	309	27	6	342	55	5	3	63
Total	670	117	227	1,014	3,729	314	403	4,446	159	6	43	208	3,397	334	329	4,060	843	91	258	1,192
August:																				
Ancon	323	30	51	404	1,170	71	120	1,361	55	3	11	69	1,081	46	76	1,203	357	52	84	493
Colon	205	46	108	419	897	188	188	1,273	18	5	19	42	918	181	205	1,304	226	48	72	346
Miraflores	83	5	94	182	236	4	26	266	12	0	8	20	219	2	13	234	88	7	99	194
Gorgona	24	2	1	27	157	29	2	188	5	0	1	6	148	31	1	180	28	0	1	29
Culebra	63	2	1	66	342	4	2	348	23	0	0	23	328	6	2	336	54	0	1	55
Empire	14	0	0	14	335	0	2	337	4	0	0	4	331	0	2	333	14	0	0	14
Bas Obispo	16	1	0	17	114	10	2	126	9	0	0	9	101	11	1	113	20	0	1	21
Tabernilla	55	5	3	63	426	59	0	485	10	2	0	12	415	57	3	475	56	5	0	61
Taboga	48	5	2	55	166	14	1	196	0	0	0	0	189	18	17	224	25	1	1	27
Total	891	96	260	1,247	3,843	379	358	4,580	136	10	139	185	3,730	352	320	4,402	868	113	259	1,240
September:																				
Ancon	357	52	84	493	708	82	92	882	42	3	13	58	758	70	92	920	265	61	71	397
Colon	226	48	72	346	716	146	141	1,003	25	5	10	40	686	133	140	959	231	56	63	350
Miraflores	88	7	99	194	154	21	18	193	12	0	8	20	170	16	13	199	60	12	96	168
Gorgona	28	0	1	29	136	0	4	140	5	0	1	6	139	0	4	143	20	0	0	20
Culebra	54	0	1	55	236	0	5	241	17	0	2	19	239	0	4	243	34	0	0	34
Empire	14	0	0	14	267	0	6	273	3	0	0	3	265	0	6	271	13	0	0	13
Bas Obispo	20	0	1	21	129	4	4	137	4	0	0	4	129	1	4	134	16	3	1	20
Tabernilla	56	5	0	61	212	53	0	265	2	0	0	2	245	53	0	298	21	5	0	26
Taboga	25	1	1	27	125	4	23	152	0	0	0	0	123	2	22	147	27	3	2	32
Las Cascadas	0	0	0	0	161	2	2	165	5	0	0	5	135	2	2	139	21	0	0	21
Total	868	113	259	1,240	2,844	311	295	3,451	115	8	34	157	2,889	277	287	3,453	708	140	233	1,081
October:																				
Ancon	265	61	71	397	839	100	89	1,028	31	4	9	44	804	93	84	981	269	64	67	400
Colon	231	56	63	350	624	111	110	845	25	5	20	50	629	128	99	856	201	34	54	289
Miraflores	60	12	96	168	17	4	45	66	4	1	11	16	49	7	22	78	24	8	108	140
Gorgona	20	0	0	20	134	0	5	139	1	0	1	2	139	0	3	142	14	0	1	15
Culebra	34	0	0	34	189	0	0	189	9	0	0	9	182	0	0	182	32	0	0	32
Empire	13	0	0	13	65	0	1	66	3	0	0	3	71	0	1	72	4	0	0	4
Bas Obispo	16	3	1	20	78	3	2	83	2	0	0	2	81	6	3	90	11	0	0	11
Tabernilla	21	5	0	26	94	47	0	141	4	0	0	4	106	44	0	150	5	8	0	13
Las Cascadas	21	0	0	21	103	2	8	113	4	0	0	4	110	2	8	120	10	0	0	10
Paraiso	0	0	0	0	85	1	1	87	3	0	1	4	72	1	0	73	10	0	0	10
Taboga	27	3	2	32	133	6	25	164	0	0	0	0	127	8	24	159	33	1	3	37
Total	708	140	233	1,081	2,361	274	286	2,921	86	10	42	138	2,370	289	244	2,903	613	115	233	961

RECAPITULATION.

Month.	Total number of employees remaining in hospitals.	Total number of employees constantly sick in hospitals during month.	Average number sick daily in hospitals per thousand.	Total number of employees constantly sick in sick camps during month.	Average number sick daily in sick camps per thousand.	Total number of employees constantly sick in hospitals and sick camps during month.	Total average number sick daily in hospitals and sick camps per thousand.
January	482	503.10	22.86				
February	502	472.00	20.40				
March	655	491.27	19.65				
April	413	420.60	15.42				
May	524	388.60	14.86				
June	807	687.99	24.57	77.20	2.95	465.80	17.81
July	935	888.52	31.68	169.69	6.00	857.68	30.63
August	976	995.74	33.72	219.41	7.82	1,107.93	39.50
September	848	821.88	29.09	264.83	8.95	1,260.57	42.67
October	728	719.30	28.20	243.10	8.65	1,064.98	37.74
				138.35	5.42	857.65	33.62
Average							28.05

APPENDIX 6.

[Personal.]

U. S. S. LOUISIANA,

At Sea, November 20, 1906.

MY DEAR DOCTOR GORGAS:

Following our most interesting three days' association on the Isthmus, I am writing you more fully than I had time to express personally my impressions of your great work. If you find any of my suggestions of service, I shall be amply repaid for my trouble; if not, the wastebasket may receive this letter, and there will be no harm done.

My wish is to give all that in me lies, however little it may be, to the end that this great work may be brought to a successful completion at as early a date as possible. The work done by the sanitary department is most encouraging—the practical elimination of the mosquito-borne diseases; the clear showing that the climate is more satisfactory for the white men than the colored, and this would not be the case if the colored men had even the knowledge of personal hygiene that our negroes have; the water and food supply most satisfactory, only requiring that energetic supervision that it requires everywhere in tropical countries. What else is required? In my opinion the reply is personal hygiene backed up by eternal vigilance to prevent infection from near-by infected parts, and the carrying on of the good work of clearing up and keeping clean with thorough drainage, and upon no condition allowing a body of men to be brought together and quartered without suitable provisions having been made beforehand.

The worst showing in your department was from want of such provision, which, as suggested by the President, might be as temporary as you please, but certainly such provisions should have been ample. I have had similar conditions to contend with at naval stations, and at my last visit to the Naval Station, Norfolk, Va., the sanitary conditions were found distinctly bad, and the accommodations for men, when ships in commission were in dry dock, were not sufficient. The attention of the commandant had been called to the threatening danger of epidemic diseases, and Yards and Docks, on the recommendation of the Bureau of Medicine and Surgery, has done some work, and the conditions are better, but they are still unsatisfactory and will require further action on my part. The sanitary conditions on the Canal Zone are on the whole more satisfactory than they were at Norfolk Naval Station

on the occasion of my last visit, and seeing your work on the Isthmus has stimulated me to accomplish necessary improvements. I shall quote the Isthmus to the Department as an example of what can be accomplished.

Your October report is most interesting. Of the 5,500 whites on the rolls there were only two deaths from disease, whereas of the 19,000 negroes there were 96 deaths, or in a population of negroes a little less than three and one-half times that of the whites there were 48 times the number of deaths. This is an enormous difference, and is due to the way the negro cares for himself.

My visit with the President clearly demonstrates how these negroes live, and I am of the opinion that here lies your principal work—to convince the Commission that their mode of living should be kept under observation and altered at any cost. The preparation of their food in the Tropics in filthy vessels, over a few coals, in mud holes, and their custom of having in many instances only a single suit of clothes in which they work during the day and sleep at night, leaves no hope of improvement until some means are provided for compulsory personal hygiene. How to accomplish this is like teaching the hog to change his beloved hog wallow. The necessity is great that ample and effective labor be provided, and men living as some of these Barbados and Jamaica negroes live can not be but expensive even if they worked for nothing. Just to refer to your October report of deaths among the employees of the Canal Commission and the Panama Railroad Company—of the total of deaths of 99, 48 were Barbados and 19 Jamaica negroes, and all other employees gave only 32 deaths. Every sick man is an expense, and the number is undoubtedly as great in proportion as the number of deaths. The remedy for this should be, in my opinion, to provide suitable negro eating houses, and the pay to be so much and board, no option being given to the laborer. This would seem to be a hardship where there were families, but it is more than offset by the improvement which would follow in effective work. The importance of dry clothes when sleeping should be drilled into them by their immediate gang boss. If they can not be taught, then one should look elsewhere for labor, preferably from our own people, and I believe that when they know the exact conditions which prevail in the Zone there will be plenty of those to do the work. In fact, I believe that in less than a year the work on this enterprise will be sought for even more than the work now seeks the laborer. Why should not this be so? The sanitary problem is solved, and the health conditions for the white and others who

are willing to live in a civilized way will remain as good if not better than in most sections of the United States. The bachelor laboring men get 50 per cent more pay, will be provided a comfortable lodging place and adequate and well-cooked food; the man with a family has a comfortable home for his wife and children, with white and colored schools and no rent to pay. What else does a man want who must earn his bread by the sweat of his brow? What an opportunity for the Southern negro! In my opinion, if they only knew what opportunities there are on the Isthmus, labor could be obtained in scores from the Southern States, many of them immune to danger from the mosquito-borne disease.

The President's visit and interest will bring this more clearly before the people, and I hope and believe that there will be a rush for work on the canal by the better class of laboring men, but do not let them find such accommodations as the worst you showed us—a leaky roof, a dirty canvas bunk, and walls not whitewashed. Such conditions are unnecessary and are easily and cheaply remedied, and does away with furnishing the croaker and mischief-maker even a semblance of a basis of a bad report.

The remarkable showing that in a community of 6,000 Americans, composed of women and children, none died in September or October is wonderful, and goes to prove that the Canal Zone in health conditions is more than the equal of other localities in any climate.

Following the President in an inspection, the most searching and painstaking I have ever witnessed, into every phase of this greatest work of building this waterway from ocean to ocean, I was concerned in all that specifically pertained to my profession, and I made up my mind to give you my impressions for your personal consideration. My pride in our profession and my desire to do my mite to the great work must be my excuse for writing you thus fully, but I am doing as I would be done by.

Yours, sincerely,

P. M. RIXEY.

Dr. W. C. GORGAS,

Colonel, Medical Corps,

Chief Sanitary Officer, Colon, Panama.

APPENDIX 7.

ISTHMIAN CANAL AFFAIRS,
OFFICE OF ADMINISTRATION, PANAMA CANAL BUILDING,
Washington, D. C., December 5, 1906.

MY DEAR MR. PRESIDENT:

I have before me your letters of November 27 and December 3, relating, in general, to the labor situation on the Isthmus, and more particularly to the care of the negro laborers.

With reference to your suggestion that it would be wise to make all the preparation in advance of the arrival of the men, it may be stated that it has been the general underlying policy to provide quarters before the arrival of the laborers; but during the period when the force was being assembled it occurred that the number of laborers did, in some instances, exceed the number of quarters of a proper hygienic character. Instructions have now, however, been issued that even if such action shall have the effect of at times reducing the labor force below the desired minimum, no laborers shall be brought in until quarters of a proper character have first been provided.

With reference to your second suggestion or inquiry as to whether or not we are pretty nearly in condition to make an effort to bring our labor down to the Isthmus, my impression is that the sanitary conditions are such on the Isthmus that we would be warranted in extending an invitation for unskilled labor from the United States.

The report of the chief sanitary officer for the month of October shows a continually decreasing death rate among both the Americans and the negro employees. During that month of the 5,500 whites on the rolls only two died from disease, and of the 19,000 negroes 86 died from disease. Among the 6,000 Americans on the Isthmus, including women and children, no death from disease occurred during the three months preceding October 30. Further, with a general average of 300 unskilled laborers native of Spain on the Isthmus since March 1, only one has died from disease. With such a satisfactory showing as is afforded by the actual statistics for the past few months, I am inclined to the opinion that we would be warranted in extending invitations for unskilled labor from the United States, dependent, however, upon the execution of the policy outlined in the foregoing paragraph, that proper quarters be first provided.

With reference to the feeding of the colored laborers and to the suggestions relating thereto in your letters, that we get up Govern-

ment messes, importing, if necessary, man and wife from the West India Islands to do the cooking and caring for the messes, and forcing the negroes to eat at the messes, I beg to say that instructions were issued while you were on the Isthmus not only to install sufficient facilities for the furnishing of cooked meals at 10 cents each, but that a ration be offered for sale in the commissary stores, the constituent parts of which shall be the same as the cooked meal, the price fixed to be equivalent to that of the cooked meal less the cost of preparing and serving the same. The inauguration of this policy was announced by posting in all commissaries and labor camps the schedule of such ration and that it was now available for purchase.

In this connection it may be stated that, as a means of more effectively providing proper nourishment to its unskilled labor, the Commission, several months ago, authorized the chief engineer, in future employments of labor, to adopt the policy of fixing the wage with the understanding that a certain amount was to be deducted for meals to be furnished by the Commission. The chief engineer was authorized to put this policy in effect at such time as was deemed best. Since that time the Commission has further discussed the feasibility of adopting the policy of fixing the wage at a certain figure and furnishing meals free, without further payment, such meals to be a part of the total wage earned by the laborer. It is the intention, on January 15, to put in effect a new wage scale for the present 20-cents-per-hour laborers, under which the daily wage shall include subsistence. The construction of kitchens for feeding all bachelor employees is being pushed to the utmost. Your suggestion that it might be well to bring man and wife from the West India Islands to do the cooking and caring for the messes, will be carefully gone into, and it is very probable that it can be adopted, and that it will prove to be a step in the right direction.

With respect to your request that a report be made relative to a more ample supply of yams for the colored laborers, I beg to say that while you were on the Isthmus purchase orders were placed by cable for an increased supply of yams and other West Indian products, and that meantime the Subsistence Department has been able to meet the demands for this class of food stuff with what it was able to command and obtain on the Isthmus.

With respect to your statement that the very large sick rate among the negroes seems to show that an effort should be made to teach them some of the principles of personal hygiene—notably, having one suit of underclothing to work in and another to sleep

in—and your inquiry whether or not a plan embodying this feature can be formulated and an effort made to operate it, I beg to say that some time ago, because of the prevalence of pneumonia among the negroes, the question arose of furnishing this class of labor on arrival with a suit of underclothing and a light blanket. It was the consensus of opinion that such a policy, if possible of proper execution, would bring desirable results, but it was not felt that the Commission was authorized to furnish this extra suit of clothing gratis. Furthermore, such action would possibly be the first step toward clothing the employees. We were not in a position to force the twenty or twenty-five thousand negro laborers already on the Isthmus to purchase such additional clothing, although it might be made a condition in future labor contracts.

It has been ascertained that a large percentage of the arriving laborers are already supplied with a change of underclothing, and do change their clothes frequently, and it must be admitted that if all of them were supplied with such extra suit, it would be extremely difficult to enforce changes of clothing at proper intervals if the laborers were not inclined so to do after being advised of the beneficial effects thereof.

This matter will, however, be taken up *de novo*, with a view of instilling in laborers the general principles of personal hygiene, and of seeing if a plan can not be formulated, with the cooperation of the laborers, to accomplish the end desired.

With respect to your inquiry as to what has been and is being done in the very important matter of providing recreation and amusement for the men, I beg to say that the Commission has made some progress in its efforts to provide means of amusement and recreation for its employees, but not so much as would have been the case had it not been for the continued stress of work of more vital importance, such as the creation of proper housing and feeding facilities. The Commission has authorized the construction of clubhouses at a cost not to exceed \$7,500 each, and four are now in process of construction—at Culebra, Empire, Gorgona, and Cristobal. Two of these, at Culebra and Empire, will be ready for use early in 1907. The four structures are alike in design. They provide a front building of two stories connected with a rear building of one story. The front building, which will be 133 feet by 45 feet, will contain a social parlor, a card room, a billiard and a writing room on the first floor, and an assembly hall, 67 feet by 27 feet, free from any columns to break the dancing space, on the second floor. The rear building, which will be 100 feet by 28 feet, will contain double bowling alleys

100 feet long, a gymnasium 52 feet long, shower baths, and over a hundred single lockers.

A comprehensive plan has been devised whereby the Commission, working in conjunction with the Young Men's Christian Association, will manage these and other similar buildings in the chief labor centers. Each club will have a board of directors selected from its own membership; but all clubs will be under the control, so far as broad principles are concerned, of a general board to be selected by the Commission. Authority has been given by the Commission for the construction of a suitable number of appropriate buildings to accommodate properly those who wish to attend religious services, such buildings to be available for all denominations and creeds. It is contemplated to erect at such points, as necessities seem to require, plain, two-storied buildings, the upper floors to be fitted up as lodge rooms for the various orders and societies formed, or to be formed, among the employees, and the first floors to be used for religious purposes. The use of the buildings for lodge and religious purposes is to be regulated by means of allotment or mutual agreement as to time.

There is also a well-organized and equipped musical band on the Isthmus, which gives concerts alternately at various points.

Very truly, yours,

T. P. SHONTS,
Chairman.

The PRESIDENT,
Washington.



CONCERNING THE PANAMA CANAL.



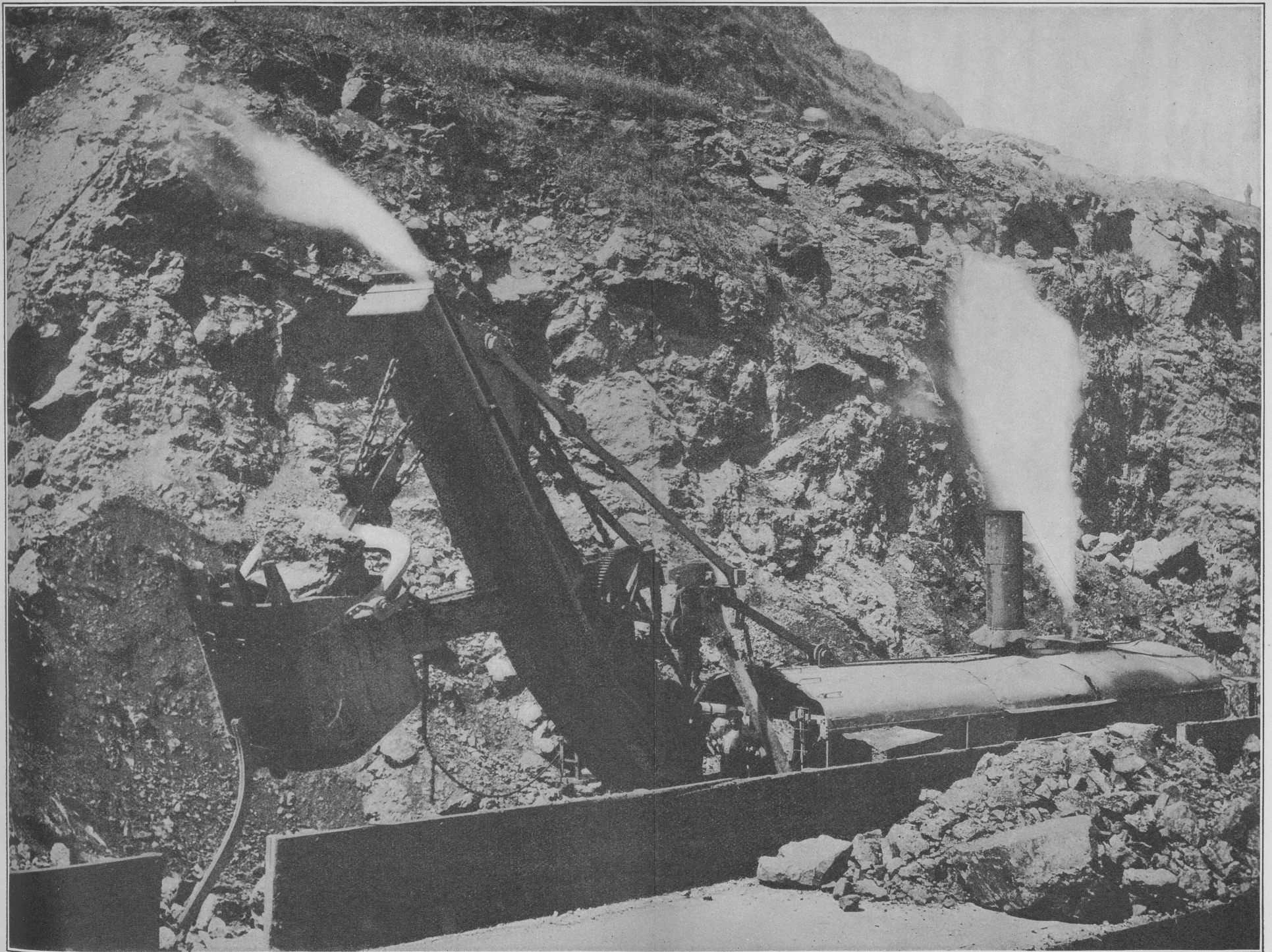
STEAM DRILLS AT WORK IN BAS OBISPO CUT.

CONCERNING THE PANAMA CANAL.



ANOTHER VIEW OF STEAM DRILLS AT WORK IN BAS OBISPO CUT.

CONCERNING THE PANAMA CANAL.



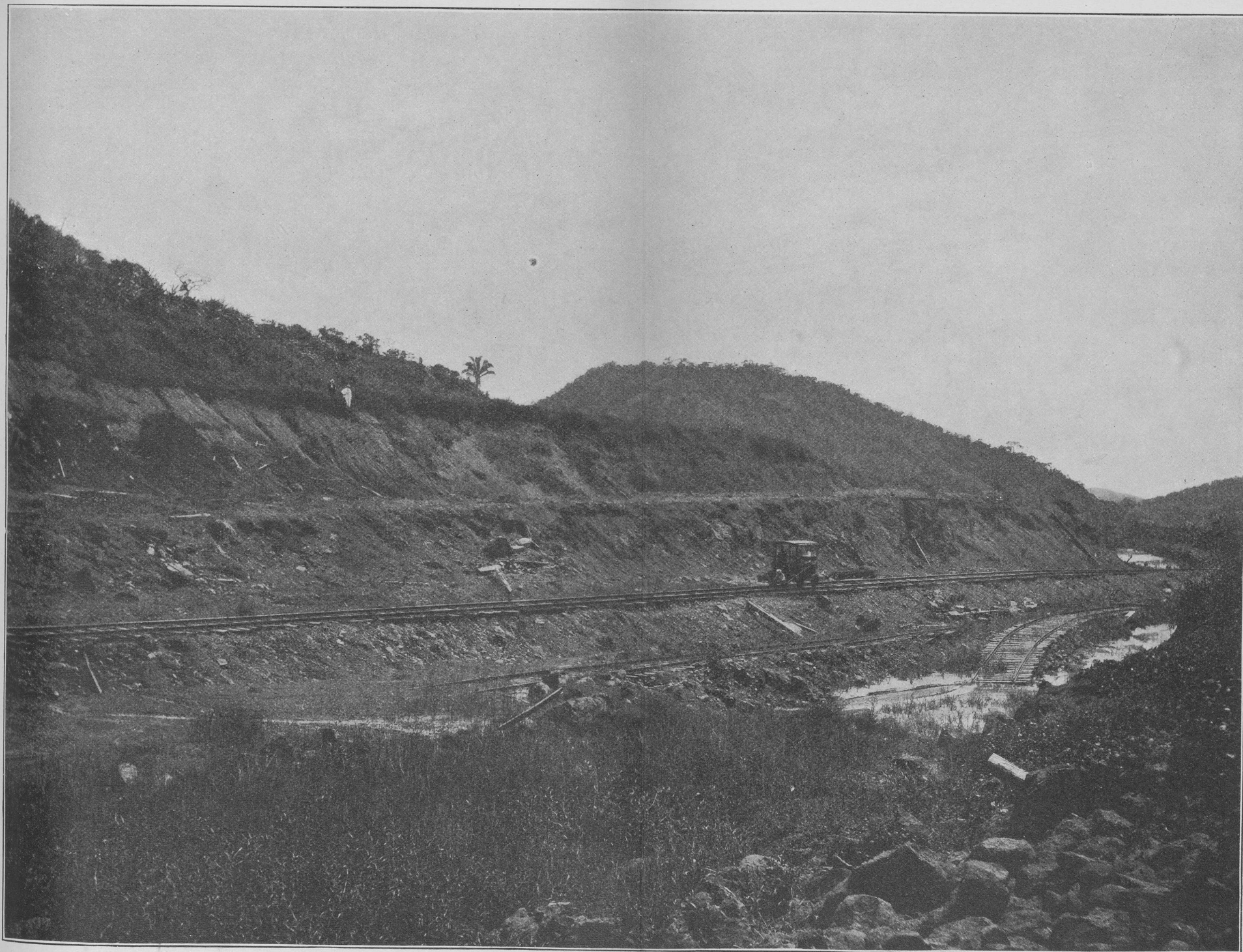
STEAM SHOVEL AT WORK IN BAS OBISPO CUT.

CONCERNING THE PANAMA CANAL.



STEAM SHOVEL AT WORK IN CULEBRA CUT, WITH LARGE ROCK IN MOUTH OF SHOVEL.

CONCERNING THE PANAMA CANAL.



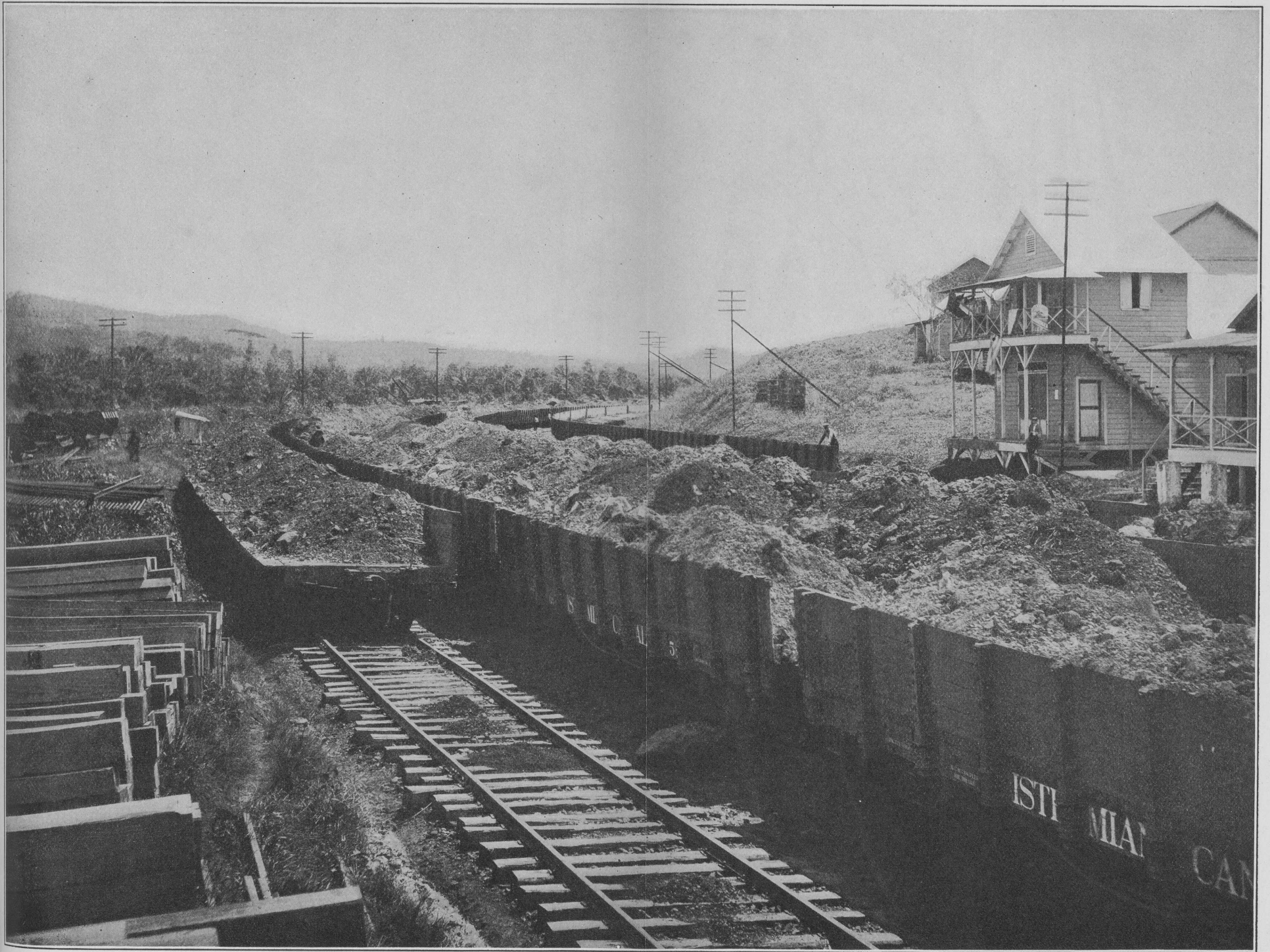
VIEW IN CULEBRA CUT. THE LEVEL AT WHICH THE TWO MEN ARE STANDING IS THAT REACHED BY THE FRENCH. THE LEVEL AT WHICH THE MOTOR CAR STANDS IS THE PRESENT AMERICAN LEVEL, 65 FEET BELOW.

CONCERNING THE PANAMA CANAL.



T.R.— INSPECTING STEAM SHOVEL NEAR ENTRANCE TO CULEBRA CUT.

CONCERNING THE PANAMA CANAL.



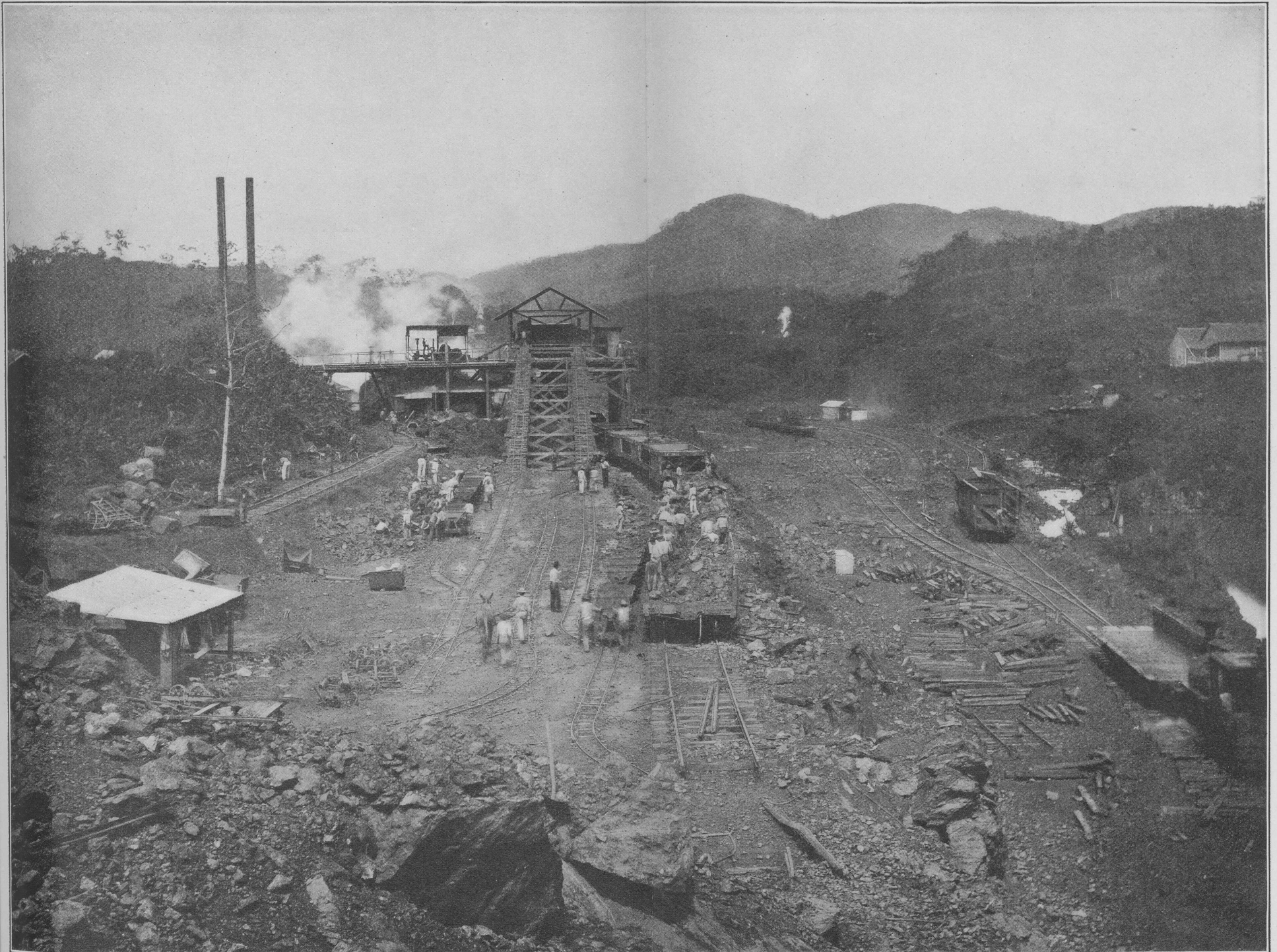
VIEW OF SECTION OF RAILWAY YARD AT LAS CASCADAS. THIS IS THE CLEARING HOUSE, ON THE ATLANTIC SIDE, FOR THE TRAINS OF SPOIL FROM THE CULEBRA CUT.

CONCERNING THE PANAMA CANAL.



VIEW OF RAILWAY YARD AT PEDRO MIGUEL. THIS IS THE CLEARING HOUSE, ON THE PACIFIC SIDE, FOR TRAINS WITH SPOIL FROM THE CULEBRA CUT.

CONCERNING THE PANAMA CANAL.



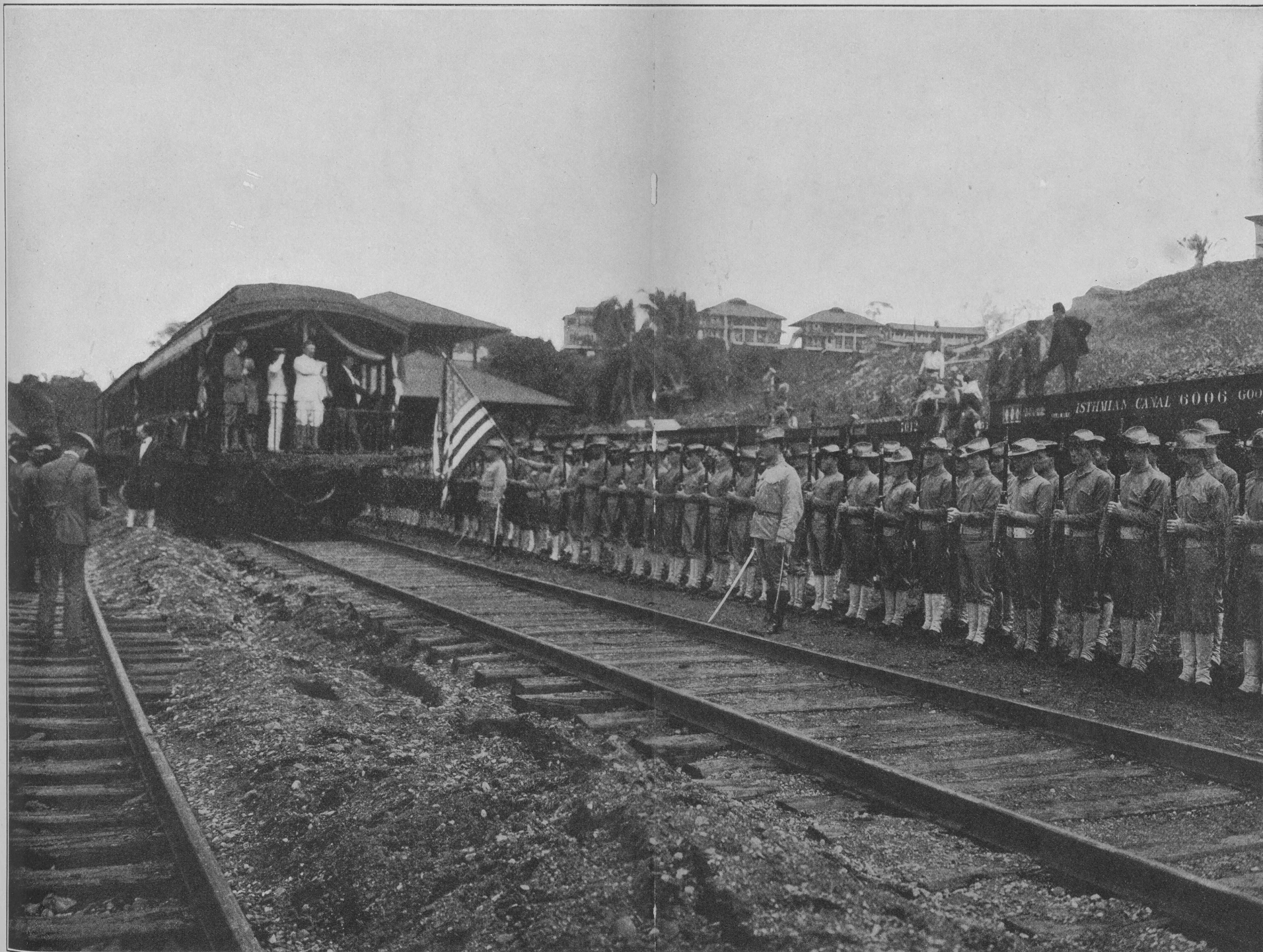
STONE CRUSHER AT WORK AT BAS OBISPO.

CONCERNING THE PANAMA CANAL.



DISPLAY OF AMERICAN FLAG ACROSS THE CUT, AWAITING APPROACH OF THE PRESIDENTIAL TRAIN.

CONCERNING THE PANAMA CANAL.



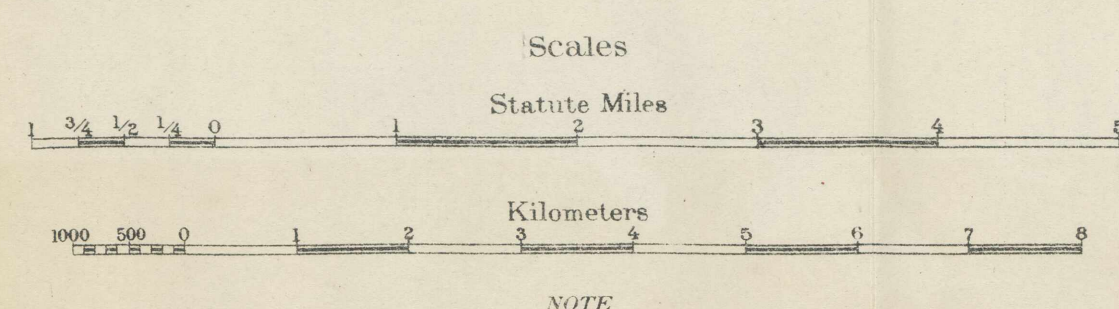
REVIEW OF MARINES AT CAMP ELLIOTT. THE BAND IS PLAYING THE "STAR SPANGLED BANNER."

CONCERNING THE PANAMA CANAL.



VIEW OF RAILWAY YARD AT CRISTOBAL.

ISTHMIAN CANAL COMMISSION
PANAMA CANAL
LOCK CANAL PROJECT
MAP
SHOWING LINE OF PROPOSED LOCK CANAL
WITH SUMMIT ELEVATION AT 85 FEET
1906



- NOTE
- Line of Canal
 - Panama Railroad, present location
 - Panama Railroad, proposed location
 - Dams
 - Indicates Land
 - Indicates shallow water with less depth than in adjacent canal
 - Indicates available water more than 41 feet deep for Atlantic entrance and more than 45 feet deep from Gatun to Pacific terminal referred to mean tides or mean lake levels

This map is taken from a map published by the Isthmian Canal Commission, showing the proposed Panama Canal, with the line of the proposed lock canal, and the summit elevation at 85 feet. The map is based on the U.S. Coast and Geodetic Survey of 1903, and the Panama Canal Survey of 1904, and the Panama Canal Survey of 1905. The map is based on the U.S. Coast and Geodetic Survey of 1903, and the Panama Canal Survey of 1904, and the Panama Canal Survey of 1905. The map is based on the U.S. Coast and Geodetic Survey of 1903, and the Panama Canal Survey of 1904, and the Panama Canal Survey of 1905.

ATLANTIC OCEAN

CARIBBEAN SEA

PANAMA OCEAN

PACIFIC OCEAN

