

NEWS LETTER

PLANT QUARANTINE AND CONTROL ADMINISTRATION

UNITED STATES DEPARTMENT OF AGRICULTURE

Number 8

(NOT FOR PUBLICATION)

August, 1931.

ADMINISTRATIVE

The current addresses of the major field projects of the Administration are as follows:

Gipsy Moth and Brown-tail Moth, A. F. Burgess, in charge, headquarters 964 Main Street, Melrose Highlands, Mass., P. O. Drawer B. (After August 17, 20 Sanderson Street, Greenfield, Mass.)

European Corn Borer and Japanese Beetle, L. H. Worthley, in charge, headquarters 22 Elizabeth Street, South Norwalk, Conn.

Date Scale Eradication, B. L. Boyden, in charge, headquarters Room 6, First National Bank Building, Indio, Calif.

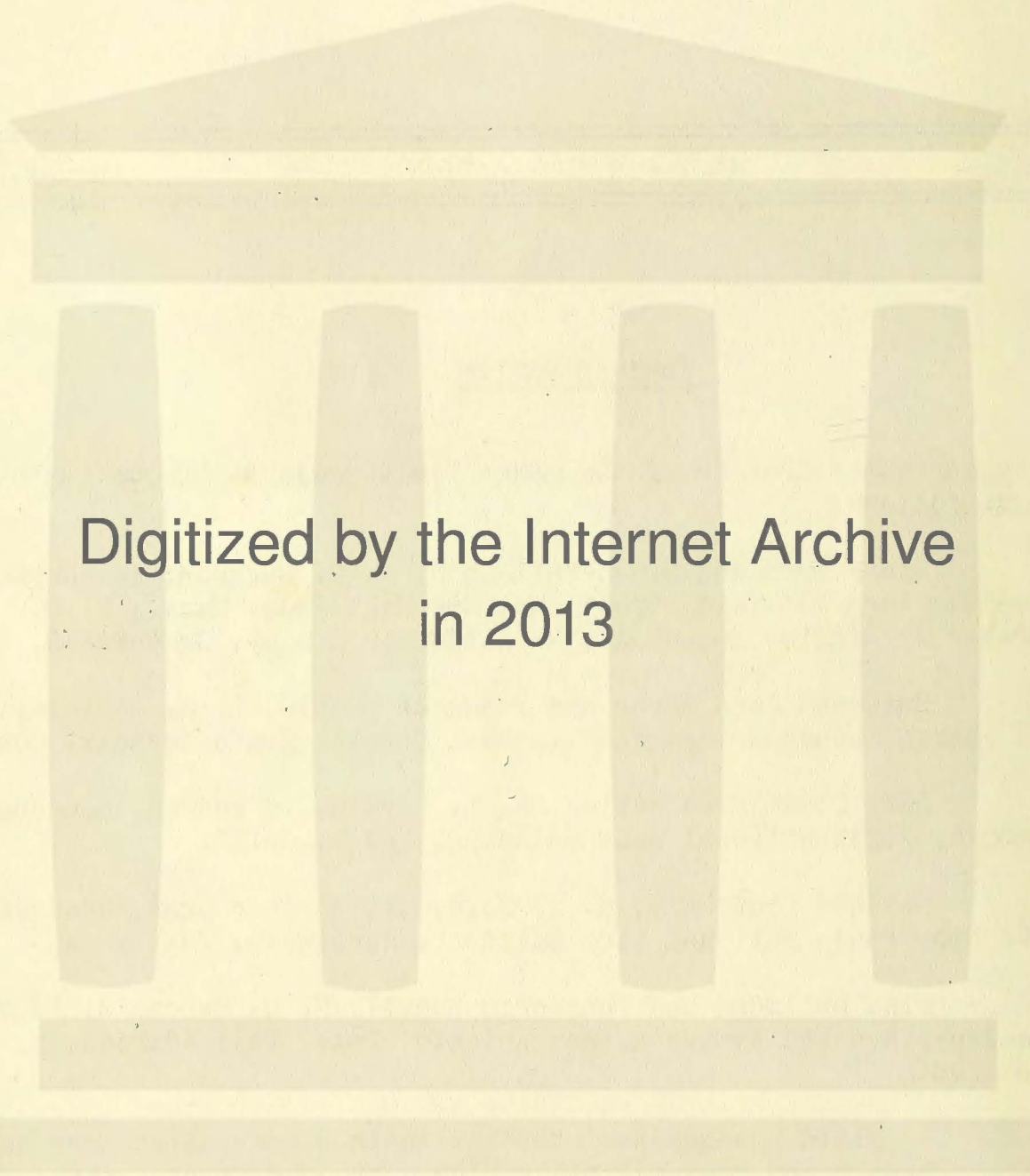
Mexican Fruit Fly, M. H. Ford, acting in charge, headquarters 503 Rio Grande National Life Building, Harlingen, Tex.

Pink Bollworm and Thurberia Weevil, R. E. McDonald, in charge, headquarters 521 Avenue A, San Antonio, Tex. Mail address, P. O. Box 798.

Field headquarters for the Western Quarantine Area has been moved from 612 Mills Bldg., to 2716 Grant Avenue, El Paso, Texas. Mail address is P. O. Box 97, Station A.

The address of the field headquarters for the Eastern Quarantine Area is 217 N. 17th Street, Alpine, Texas, P. O. Box 843.

The district office at Pecos, Texas, is now located in a road station building, located on a lot adjacent to the Electric Gin Co. Mail address is P. O. Box 8.



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TECHNOLOGICAL

Tests were made recently on the fumigation of bananas in refrigerator cars with hydrocyanic acid discoids as a method of killing Japanese beetles, which are attracted by the odor of bananas, and which are sometimes present in considerable numbers on the pier when the fruit is transferred from the ship into the refrigerator cars. The method of fumigation tested was to scatter the discs of absorbent material which had been soaked in hydrocyanic acid on a paper tray placed on the bananas in the doorway of the car, the other openings of the car being tightly closed. This method of fumigation, which was developed by the Japanese beetle laboratory of the Bureau of Entomology, in cooperation with this Administration, reduces the cost of fumigating about 70 per cent and makes possible a reduction of one-half hour in the time required to fumigate.

Freezing fruit prepared for market and cooling it to a temperature of 20° F. has recently been authorized as a condition of entry into the continental United States from foreign countries in which the Mediterranean fruit fly or other similar pests are known to exist. The frozen pack method of preparing fruit for market has been practiced for many years in the United States, particularly as applied to soft fruits, such as berries, cherries, and peaches. Over a hundred thousand 50-gallon barrels of fruit are prepared by this method each year. Recently some work has been done on the preservation of some vegetables by this method. The authorization of the process as a condition of entry allows the importation of these commodities on a commercial scale and will probably result in testing the applicability of this method to tropical fruits.

The ethylene oxide fumigation for Japanese beetle has been authorized for application to berries in the heavily infested areas as a condition for movement from that area. Considerable quantities of blackberries, dewberries, and raspberries are fumigated each year in the berry section of New Jersey to destroy the adult Japanese beetles which are sometimes present in the packed berries. Recent tests by the Japanese beetle laboratory of the Bureau of Entomology indicate that ethylene oxide is as efficacious for this purpose as carbon disulphide and can be used with safety to the fruit. No injury resulted from the use of this treatment with raspberries, dewberries, or blackberries, though some slight injury was evident when the process was applied to blueberries. This injury is mainly the loss of bloom from the surface of the fruit which, while it would not affect their edibility, might result in a slight loss in sales value.

FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

Fruit fly larvae in grapefruit.--Anastrepha serpentina was taken at Boston in grapefruit in stores from Trinidad. This represents a new interception record for the Plant Quarantine and Control Administration both from the standpoint of locality and host.

Fruit fly from Costa Rica.--The West Indian fruit fly (Anastrepha fraterculus) was intercepted at New York in mango in baggage from Costa Rica. This is our second interception record for this fruit fly from Costa Rica, it having been taken in mango in baggage from Costa Rica in 1925. (See also News Letter No. 1, January, 1931; No. 5, May, 1931, and No. 6, June, 1931.)

Gipsy moth from Japan.--A larva of the gipsy moth (Porthetria dispar) was intercepted at Seattle on an azalea plant in furnishings from Japan. In 1930 both larvae and pupae of this insect were found at Honolulu, Hawaii, on maple, pine, and rose from Japan. The gipsy moth is more commonly intercepted in the egg stage.

Scale insect from Costa Rica.--Pseudischinaspis bowreyi (Coccidae) was intercepted at Miami, Fla., on orchid in express by airplane from Costa Rica. This scale insect has been intercepted previously on Agave fourcroydes (henequen), A. sisalana (sisal) from Porto Rico, guava and cherimoya fruit from Cuba, and Agave from St. Thomas, Virgin Islands.

Live pink bollworm intercepted.--Live larvae of the pink bollworm (Pectinophora gossypiella) were intercepted in cottonseed as follows: In baggage at Baltimore from Porto Rico, in mail at Boston from Cyprus, and in baggage at Boston from St. Kitts. The infested seeds from Cyprus were found in three pounds of raw cotton used as packing for antiques. (See also News Letter No. 1, January, 1931; No. 3, March, 1931, and No. 6, June, 1931.)

Pink bollworm from Antigua and Nevis.--Larvae of the pink bollworm were also intercepted at Washington, D. C., in seed cotton, in baggage from Antigua and Nevis, British West Indies. These are our first interception records for the pink bollworm from Antigua and Nevis.

Coccid on orchid.--The scale insect Furcaspis biformis was collected at Washington, D. C., on Cattleya sp. in cargo from Venezuela. It has also been taken on orchids from Brazil, Canal Zone, Chile, Colombia, Guatemala, Java, Panama, and the Philippines. According to H. Morrison, the species F. biformis has been variously assigned to each of the following genera: Aspidiotus, Chrysomelanus, Furcaspis, and Targionia.

Chalcid in soursop seed.--Adults of Bephrata cubensis (Eurytomidae) were intercepted at Philadelphia in the seeds of soursop in crew's quarters from

Jamaica. This chalcid breeds in the seeds of several species of Annona in Cuba and is recorded from Florida.

Soursop fruit infested.--A larva of Stenomoma anonella (Stenomidae) was found at New Orleans in soursop fruit in baggage from Guatemala. This is our first interception record of this insect from Guatemala. It has been taken in soursop from the Canal Zone and Honduras.

Weevil in avocado.--Larvae of Conotrachelus sp. (Curculionidae) have been intercepted on several occasions in deseeded avocados from Mexico. Larvae of this weevil have been found both in the seed and in the flesh of avocados. Interceptions of this weevil in avocados have recently been made at Brownsville, Eagle Pass, El Paso, Laredo, and Thayer International Bridge, Tex. (See also News Letter No. 6, June, 1931.)

Coccid on yam.--The scale insect Targionia hartii was found at Tampa, Fla., on yam in stores from Cayman Brac, West Indies. This coccid is not recorded from continental United States.

Chrysomelid in rutabaga.--A larva of Psylliodes chrysocephala was intercepted at Philadelphia in rutabaga in stores from England. This is our first interception record of this insect in rutabaga. It has been taken in turnip from Denmark, England, France, and Spain. (See also News Letter No. 1, January, 1931, and No. 4, April, 1931.)

Sour limes infested with coccid.--Parlatoria cinerea (Coccidae) was taken at San Francisco on sour limes in express from Mexico. This scale insect, which is not recorded from continental United States, has also been intercepted on bougainvillea, grapefruit, lemon, and orange. Besides Mexico, it has arrived from the Canal Zone, Panama, Polynesia, Raratonga, Salvador, and Tahiti.

Coccid on Hibiscus sp.--The scale insect Pseudaonidia clavigera was found at San Francisco on Hibiscus sp. in mail from Hawaii. This coccid is not reported from continental United States.

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

A smut, Entyloma ellisii, was intercepted in cargo at New York in spinach from Cuba. This is the first record we have seen of this disease since it was originally reported in New Jersey by B. D. Halsted (N. J. Bul. 70, 1890). This smut produces white spots on the leaves and is of interest because the spores germinate in the leaf tissues and produce needle-like basidiospores in groups on the leaf surface.

A leaf rust of Daphne was intercepted at New York in baggage from France. The only Daphne rust of which we can find a record was reported from Hongkong. Thus far we have been unable to get this interception definitely determined.

Gloeosporium oleandri, a leaf disease of oleander, was intercepted at New York in baggage from Bermuda.

Fusicladium eriobotryae was intercepted in baggage at New York on loquat fruit from Italy. This disease is listed in Stevenson's manual as affecting leaves, stems, and fruit of loquat in Australia, Russia, and Italy. It has been reported from California and Florida also.

Rose rust.--Ten rose cuttings intercepted at New York in baggage from Italy had leaves infected with Phragmidium sp. Although several species of Phragmidium occur on roses in this country there are additional species that are not yet known to occur here.

Cephaleuros mycoidea, an alga, was determined as the cause of a leaf spot on lemon leaves from Porto Rico intercepted in baggage at Philadelphia.

PORT INTERCEPTIONS RECEIVED IN WASHINGTON, D. C., DURING JUNE, 1931

The following list includes all foreign interceptions of insects and plant diseases as well as those collected in conjunction with special permit field inspection, and also a few local insects and diseases sent in by port inspectors:

Interceptions collected at the maritime ports are: Baltimore, 6; Bellingham, 15; Boston, 22; Buffalo, 1; Charleston, 49; Chicago, 15; Detroit, 14; Gulfport, 2; Hawaii, 2; Mobile, 2; New Orleans, 134; New York, 90; Norfolk, 46; Philadelphia, 164; Port Arthur, 14; San Francisco, 1; San Juan, 18; Savannah, 7; Seattle, 54, and Wilmington, 5.

Interceptions collected at the Mexican Border ports are: Brownsville, 23; Del Rio, 2; Eagle Pass, 6; El Paso, 21; Fabens, 2; Laredo, 3; Mercedes (Thayer), 1; Nogales, 2; Presidio, 2; Rio Grande, 4; San Ysidro, 13; Sasabe, 1, and Ysleta, 1.

INSPECTION OF SPECIAL PERMIT PLANTINGS

J. M. R. Adams, of the Washington Office, is making a field inspection of materials imported under special permit and grown under agreement with this Administration in Western Pennsylvania, Ohio, and Kentucky. Similar field inspection is being carried out in Minnesota, Michigan, Wisconsin, and North and South Dakota by H. W. Hecker.

GULF INSPECTION CHANGES

R. L. Trigg has been transferred from the Gulfport, Miss., station to take charge of the newly opened port at Corpus Christi, Tex., with office address at 822 Nixon Building. The office at Gulfport has been given up and the inspection at this point will be handled from Mobile, Ala. To take care of

the extra work thus placed on the Mobile staff S. S. Sheffield, formerly on the Mediterranean fruit fly force in Florida, has been reinstated and assigned to this station.

MR. SCOTT GOES TO CANADIAN BORDER

L. M. Scott has been transferred from the Washington office to special duty on the Canadian border with present headquarters at Rouses Point, N. Y. Mr. Scott is scheduled to make a survey of the plants and plant products entering this country from other countries via Canada at the various customs ports from Buffalo east, and to gather information on the seasonal volume of imports of plants and plant products from Canada at the various ports of entry. He is expected at the same time to have general supervision over the plant quarantine inspection work in this section of the border, and as local liaison officer with the customs officials, to develop as much as possible a high degree of cooperation with that branch of the service in plant quarantine inspection matters.

MEXICAN BORDER TO BE DISTRICTED

In order to provide better unification and closer and more frequent supervision over the inspection work on the Mexican border, a districting system was inaugurated on July 1, 1931. This plan divides the chain of border ports into three numbered districts with a leader in each district. District 1 will extend from Brownsville to and including Del Rio, Tex., with O. D. Deputy as leader; District 2 will include the stations from Presidio, Tex., to Columbus, N. Mex., with T. A. Arnold in charge; and C. E. Bellis will be responsible for District 3, which will comprise the ports from Douglas, Ariz., to San Ysidro, Calif., inclusive. The leader in each case will have general supervisory charge of the inspection work in his district and is expected to visit the ports in that district at frequent intervals during the year to gather information, assist in solving local problems, and to bring about more uniform handling of inspection matters. It is expected that this supervision, supplemented by the usual visits from the Washington office, will result in a greatly increased uniformity and efficiency in inspection all along the border.

On June 22 and 23, E. R. Sasscer visited the Mexican border and held a conference with the above-mentioned district leaders at Laredo, Tex., taking up with them various problems of organization and procedure arising out of the new arrangement.

MR. SASSCER VISITS GULF PORTS

While in the South in connection with the conference mentioned above, Mr. Sasscer also met in a conference on June 27 at Houston, Tex., the following port inspectors: C. P. Trotter, Port Arthur, Tex.; H. C. Millender, Houston, Tex.; L. R. Dorland, Galveston, Tex.; and W. T. Dillard, New Orleans, La. Among the important items discussed at this conference were the inspection of the holds of ships engaged in the transportation of American flour to European countries, and the entry at southern ports of secondhand bagging that has been used as cotton covers.

INSECT ATTACKS WRAPPINGS AND BOX

Peter Bisset reports that on July 1 a box of seeds of Cassia fistula, from India, was received at the Washington, D. C., Inspection House, badly infested with a Bruchid, Caryedon fuscus Goetz. The case is of interest because the insect in question had not only attacked the seeds but had riddled the wooden box and paper wrappings with perforations, almost as if a charge of shot had been fired through it. This insect has already been noted in the News Letter of April, 1931 (No. 4, page 3). One of the synonyms for this insect gives the species name "languidus," which seems to be not very appropriate under the circumstances.

SPECIAL PORTS FOR ENTRY OF CACTUS FROM MEXICO

Cactus plants entering through Mexican border ports have heretofore been shipped on to Washington, D. C., or to San Francisco, Calif., for inspection and treatment before being released for shipment to the consignee. This procedure sometimes involved long hauls and heavy transportation charges to and from the point of inspection. An arrangement instituted July 1, 1931, provides for inspection, and treatment if necessary, at the ports of Laredo, El Paso, and Nogales, thus permitting direct shipment to destination from these ports. Mexican border ports other than the three mentioned have as yet no adequate facilities for treatment; cactus plants entering through such ports will therefore continue to be sent on to Washington or San Francisco as in the past.

MR. BECKER VISITS PORTO RICO

Geo. G. Becker spent the period June 1-11 in Porto Rico making a study of the plant quarantine work carried on in the island. While there he also visited the various ports and made observations on the methods used in the inspection and certification of fruits and vegetables for shipment to mainland destinations.

DOMESTIC PLANT QUARANTINES

TRANSIT INSPECTION

A summing up of the transit inspection activities for the 6-month period closing June 30 shows that shipments of nursery stock and other plants and plant products were inspected in transit to the number of 854,698, in addition to 206 car lots of nursery stock or livestock. These were examined at 24 different inspection points, the greater number of shipments being seen at Chicago, New York, Philadelphia, Boston, St. Paul, Kansas City, and Pittsburgh. Trucks checked at various city stockyards totaled 1,997. The parcel-post shipments inspected represented approximately 77 per cent of the total, express nearly 21 per cent, and freight about 2 per cent. The violations of

domestic plant quarantines found in these shipments totaled 1,250, or 146 to each 100,000 shipments. The Japanese beetle quarantine was violated more than any other, 670 of these shipments representing infringements of the regulations of this quarantine. A considerable number of these, however, were minor infringements, consisting either of shipments originating outside the regulated areas and reconsigned from points within these areas without the required permit, or of shipments of tuberose and other bulbs which were not dormant or which had a small amount of soil adhering to the roots. Fifty-one per cent of the violations of the various quarantines were consigned by persons apparently unfamiliar with the regulations. During the same period in 1930, 715,675 shipments were inspected, 390 constituting quarantine violations, or 55 violations to each 100,000 shipments inspected. This season's increase in the number of violations per 100,000 shipments appears largely due to the relatively high proportion of violations being intercepted at Boston, no transit inspection having been carried on at that point prior to the present fiscal year.

A recent check on correspondence with persons violating domestic plant quarantines shows that replies are received promptly in response to the first request for an explanation in nearly 98 per cent of the cases. A printed form letter is used for these notices of violation. Previous to last year the form letter that was sent to persons unfamiliar with plant quarantines was worded in the same way as that forwarded to those commercially engaged in shipping the restricted articles. In many instances, it was found that reference to possible legal proceedings caused undue mental suffering on the part of those who had had no idea that plant shipments are restricted by law. Accordingly the form letter sent to shippers of noncommercial packages was modified a year ago to approach the subject from a more educational standpoint. The purpose of plant quarantines is explained by inclosing a copy of a general circular on that subject (PQCA 295). The results of the use of this notice seem as effective as the more severe letter, the responses indicating, for the most part, a desire to cooperate with the work, and assurance that no further infringements will occur. Investigation through direct correspondence with the shipper is made by the Washington office in the case only of violations of quarantines relating to the white-pine blister rust, narcissus bulbs, the black stem rust, and other quarantines for which no field units are established. Violations of the Japanese beetle, European corn borer, gipsy moth, brown-tail moth, and satin moth quarantines, as well as others for which field units have been established, are referred to the field officers for investigation either by personal call, letter, or by such other methods as may seem advisable.

BLACK STEM RUST QUARANTINE

Federal quarantine No. 38 was revised, effective August 1, 1931. Under this revision the quarantine was extended to cover shipments between as well as into, the 13 barberry eradication States which consist of the group extending from Ohio to Montana, Wyoming, and Colorado. Under an additional change in the regulations, nurseries which grow only immune species of *Berberis* and *Mahonia* will be supplied with Federal permits for the shipment of immune species into and between the 13 protected States. The nursery inspections to determine that only immune species are present on the premises of applicants for permits are being carried out by the Barberry Eradication Office of the Bureau of Plant

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Industry. That Bureau, on the basis of such inspections, will make recommendations to the Administration on the approval or disapproval of the applications.

NARCISSUS BULB PESTS

C. R. Stillinger is rendering some assistance to State inspectors of the Pacific Northwest in the inspection of narcissus bulbs in storage.

PHONY PEACH DISEASE

Phony peach disease infections have been discovered at a considerable number of new locations in the Southern States, both by members of the Administration staff checking on peach-growing nurseries and by the scouts of the Bureau of Plant Industry. Florida is the only new State involved thus far, no infections having been discovered north of the States of Arkansas, Tennessee, and North Carolina. The Florida infections are largely located near the Georgia border.

DATE SCALE

During the past seven months only three infested palms have been found by the routine crews that inspect the commercial gardens. On two of these palms only a single scale each was found. During the previous year scale was found each month, and 139 infested palms were found in the 11 months preceding. The effect on the inspectors was noticeable as evidenced by the number of man-days necessary to inspect the various infested gardens. At first the time increased perceptibly as the inspectors felt that they were overlooking scale that would be discovered behind them. After two or three inspections without finding scale the time decreased until at present it is a little less than when scale was being found consistently. While it is quite possible that under the present conditions light infestations may be overlooked, the inspectors are all experienced and undoubtedly will locate infestations before there is any great danger of spread.

A number of date gardens have windbreaks of Tamarisk trees. A scale insect somewhat similar in appearance to the Parlatoria scale breeds on these trees and occasionally single specimens are found on date palm leaves. The number of Tamarisk scales reported by the inspectors indicate to a certain extent the thoroughness of the inspection.

EUROPEAN CORN BORER AND JAPANESE BEETLE

Exhibits and demonstrations of corn-borer-control farm equipment, designed by engineers of the Bureau of Public Roads working in conjunction with the Plant Quarantine and Control Administration and the Bureau of Entomology, were held during June at Kingston, R. I., and East Bridgewater, Mass. Binder with low cutting attachment, plows with covering equipment, plow with coulter, jointers, and wires, and hand hoes were shown. At Kingston the event was under the auspices of the Rhode Island Experiment Station and at East Bridgewater the exhibition was in connection with the field day of the State Dairymen's Association. Attendance on the first named was reduced by rain but the farmers present manifested much interest in the machinery shown. About 2,000 dairymen were present for the second of the demonstrations, nearly all of whom grow corn for ensilage and are interested in the harvesting problem faced in compliance with State clean-up regulations on account of the corn borer. Several county agents attended the meetings, most of whom expressed desire to have demonstrations put on this fall in their territories. Appointments have been made with other extension workers by engineers of the Department for discussion of the methods deemed best for use in low cutting, under conditions prevailing in this territory.

Fumigation of blackberries in the fumigation house of the Hammonton, N. J., market commission began on June 29. The Hammonton berry market was officially opened on June 22, but the emergence of adult Japanese beetles did not necessitate the fumigation of berries as a requirement for certification until a week later. An air thermograph has been installed on the inside of the house in order to obtain an accurate record of the temperature during the 2-hour fumigation period. This is the third season during which carbon disulphide fumigation of berries has been made in the house. It was erected by the borough of Hammonton and is maintained by the market commission. All treating operations are supervised by employees of the treating division of the project. An inspector is also stationed at the market to certify the fumigated berries and to inspect other farm products offered. Last year 7,745 crates of berries were fumigated at Hammonton. Hundreds of dead beetles were collected on the floor of the house. Large numbers of beetles were also killed in the crates. The only alternative to the fumigation requirements is the careful inspection of each quart of berries, a tedious procedure which causes considerable delay in their shipment. Consequently, with very few exceptions, all berries from South Jersey intended for movement from the generally infested area are fumigated at Hammonton.

Organization of a division of information within the combined European corn borer and Japanese beetle project was undertaken early in June and some progress made by the end of the month. The activities will be devoted principally, for the present at least, to the preparation and release of news stories relating to procedure in which the public will be interested and the dissemination of which may tend to better cooperation in the observance of quarantine regulations. During the summer, these releases will deal largely with matters concerning highway station inspection and produce certification. Later in the

season material probably will be prepared for farm papers and miscellaneous periodicals, giving the latest available data as to the control measures which have been found to be the most effective. In the main, if not altogether, the division of information will confine itself to project occurrences and progress, avoiding discussion of policies. Jefferson Thomas, formerly associated in a similar capacity with the Mediterranean fruit fly work in Florida, has been transferred from Orlando to South Norwalk, for duties connected with the new division.

Applications of arsenate of lead as a spray to the sites of Japanese beetle infestations in Portsmouth, Va., began on May 25 and were completed in that city on June 2. The apparatus was then moved to the infested areas in Norfolk. Five days were required for applying the treatments in that city. The sprayers and men were then taken to Newport News, where treatments were applied on June 9, 10, and 11. Four high-pressure sprayers were used in these operations, two in applying the spray and two for furnishing the water with which to wash in the arsenate of lead. With the completion of the treatments in Virginia, the outfit was moved to Sayre, Pa. Here the spraying crew joined a similarly equipped crew which had moved down from Westerly, R. I., and started treating on June 15. Both crews operated in Sayre from June 17 to 25, inclusive. One crew moved out of Sayre on June 26 and treated a small infestation in Waverly, N. Y., on that day. The work in Sayre was also completed on June 26. Both crews then moved to Binghamton, N. Y., where two and one-half days' work of the combined crews was required to finish treating the infestations.

Farm produce inspection platforms were erected during June at Bridgeport and New Haven, in the Connecticut area. All requests for inspections of products requiring certification in the vicinity of these towns are referred to the platforms. The inspection facilities at New Haven will be open 24 hours a day, with the exception of Saturday nights, while the Bridgeport platform is to be operated from 5 a.m. to 6 p.m., except on Saturday nights and Sundays. Inspections will be made for both Japanese beetle and European corn borer infestations. A platform has also been opened at Berman and Steinberg's Commission House, on Water Street, South Norwalk, and another has been located at S. Cohen's Commission House, Canal Street, Stamford. It has been necessary further to place inspectors at the Economy Stores warehouse in East Hartford, and in the A. & P. Tea Company warehouse in Springfield, Mass., because of the movement of quarantined products to points outside the regulated area.

Considerable traffic congestion caused by trucks bringing farm products for inspection and certification to the Baltimore, Md., inspection platform has been eliminated by the assignment of a farm products inspector to the warehouses of two large chain stores in that city. Previous to this arrangement all trucks of these stores loaded with farm products intended for movement from the main generally infested area were required to present such articles at the inspection platform. Here it usually required an hour for each truck to unload, have its produce inspected, and reload. Farmers and independent truckmen thus

were frequently delayed. One concern requires the services of an inspector Monday, Wednesday, and Friday nights from 6 p.m. to 2 a.m. The same inspector works at the other warehouse on Thursday nights from 8 p.m. to 5 a.m. On the remaining days the inspector is available for duty on inspection platform. It is estimated that 13,000 packages of certified farm products are transported weekly from the two chain-store warehouses in question.

While engaged in observation of sundry governmental activities in New England, Mr. Allen, Executive Assistant to the Director of the Bureau of the Budget, and Mr. Jump, Budget Officer of the Department of Agriculture, visited the headquarters of the European corn borer and Japanese beetle project late in June, accompanied by Mr. Rohwer, Assistant Chief of the Bureau of Entomology. Offices of the eastern division of corn borer control, in Boston, were called on by the Washington officials during their stay in that city on June 27. South Norwalk was reached by the party on the 29th. From this point Mr. Jump and Mr. Rohwer were compelled to return to Washington but Mr. Allen remained over, and the next day he made a more careful survey of the offices and warehouses, after which, piloted by Mr. Worthley, Mr. Allen saw some of the field work, the trip having been concluded at the New York offices.

Cooperation of an excellent type from farmers in Erie and Warren Counties, Pa., with reference to proper disposition of the debris of last year's corn crop, has been reported by State officials administering corn borer control. Inspectors for the Pennsylvania Department of Agriculture, which is cooperating in the matter with the Plant Quarantine and Control Administration, visited 6,863 farms, on 4,958 of which it was found that all corn stubble had been plowed under and all refuse and remnants cleaned up. Of 21,369 acres inspected, it was necessary for the State authorities to clean only 36 7/12 acres. In addition, 43 1/2 hours of labor were devoted to the premises from which some stubble and other material remained to be removed. Total cost of the clean-up done by the inspection force, involving 12 separate cases, was only \$171.05.

Agricultural engineers of the Bureau of Public Roads, engaged in corn borer control work cooperatively with the Plant Quarantine and Control Administration and the Bureau of Entomology, made considerable progress in June on experiments intended to develop changes in farm machinery for disposal of crop debris which will better adapt it to the New England situation, especially in the area infested by the two-generation strain. Plows which can be operated successfully in stony soil and hand hoes suited to this section are having special attention. Modifications of the binder attachments originally perfected for use in the West also are receiving consideration, and experiments are under way intended to simplify the sled-type cornstalk shaver so it may be made on the average northeastern farm, with the tools at the command of the owner.

Under an official order issued on June 1 by the Pennsylvania Secretary of Agriculture, a number of additional townships in Wayne and Wyoming Counties of that State were added to the area designated as generally infested in

State Quarantine No. 22 (first revision) pertaining to Japanese beetle. The additional territory was included in the generally infested area in order to permit the unrestricted movement of farm products by individuals commuting from Scranton and vicinity to near-by mountain resorts, which previously had been short distances beyond the boundary of the quarantined zone. It is not contemplated that the area under Federal regulation will be similarly enlarged until the next revision of the quarantine regulations, since the movement of quarantined articles concerned is wholly local and intrastate restrictions are sufficient to take care of the situation at present.

Inspection of fruit and produce under the Japanese beetle quarantine was commenced in New York City on June 15. At a specially erected platform, 40 feet long, in the middle of West Street, foot of Murray Street, inspectors are on duty 24 hours a day. Several other men are engaged in responding to telephone calls from small stores and shippers. Inspectors also have been located at three up-state points, Middletown, Newburgh, and Peekskill. Their duties mostly relate to movement into the resort sections of Sullivan and Ulster Counties. Additional field men engaged in inspecting and certifying flowers and produce are stationed in Nassau and Westchester Counties, and principally occupied with shipping by estate owners to their summer homes.

Early in June Avery S. Hoyt, who had joined the Administration several months ago for assignment to European corn borer and Japanese beetle work, arrived in South Norwalk, his departure from California having been postponed by reason of delay in acceptance of his resignation as Director of Agriculture for that State. On this project it was the intention that Mr. Hoyt should serve as executive assistant to Mr. Worthley, and immediately the former had reached headquarters he undertook an intensive study of current activities, dividing his time between the main offices and the field. Before the end of the month, Mr. Hoyt was called to Washington to assume the more responsible duties of Assistant Chief of the Plant Quarantine and Control Administration.

Headquarters of the European corn borer and Japanese beetle project in South Norwalk, Conn., was visited in June by Lon A. Hawkins, of Washington, in charge of the Plant Quarantine and Control Administration's studies of sterilization and related investigations. Cooperation will be extended by Doctor Hawkins and his associates in outlining experimental work which seeks to develop more efficient and less expensive systems of treatment of nursery premises and stock as a means of removing the danger of infestation from the Japanese beetle. While at South Norwalk, Doctor Hawkins conferred with Mr. Worthley and the heads of several divisions and later he will contact with phases of the field work in beetle control.

School for inspectors stationed in the New Jersey territory was held for the third successive year at the New Jersey district headquarters in White Horse, from June 1 to 4. The curriculum, arranged by State Supervisor G. K. Handle, included an opening address by Hon. W. B. Duryee, New Jersey Secretary of Agriculture, lectures and demonstrations by three of the personnel from the Moorestown Japanese beetle research laboratory, and the presentation of papers on important quarantine problems by members of the inspection force most

These specimens are the first of their kind ever found. The specimens were found in the same place, and it is very probable that they were found by the same person. The specimens are very similar to each other, and it is very probable that they were found by the same person. The specimens are very similar to each other, and it is very probable that they were found by the same person.

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familiar with the work. The school was held on June 1 and 2 for one-half the New Jersey personnel, and was repeated for the remainder of the men on the following two days.

Additional Japanese beetle scouting crews were placed in the field during the month. Three new crews of four men each started work in Virginia during the first three days of the month. Three southern crews continued their scouting work in North and South Carolina and Virginia. Crews in Maryland and Virginia were organized on June 10. Scouting in southern New Jersey was started on June 29. Supervisors of the scout crews which will operate in the northern section of the regulated area reported for duty late in the month in order to complete final arrangements for the intensive scouting program which will commence July 1. Several scout finds of importance were made during the month.

June activities of the Eastern area in corn borer and beetle control included the inspection and certification of farm products and cut flowers on account of the European corn borer at Boston, Mass., Portland, Me., and Providence, R. I.; the inspection and classification of greenhouse and nursery establishments on account of the Japanese beetle in the lightly infested area of Bristol and Plymouth Counties, Mass., and in Rhode Island; the supervision of Japanese beetle soil treatments in Boston, Mass., Newport, Providence, and Westerly, R. I., and preparations for border patrol, trap control, and scouting.

Inspection of farm products in the Boston Wholesale Market was approximately 75 per cent lighter during June, 1931, than for the corresponding month of last year. This was partly due to the elimination of string beans from the quarantine and the extension of the regulated area, and partly to damage to native-grown products by heavy rainstorms which considerably reduced the quantity brought in from the greater Boston market garden district. Most of the gladiolus shipped from the Boston Wholesale Flower Market in June were greenhouse grown. The first native field-grown flowers were from Dighton, Mass., and were received at the market on June 29.

The Boston Federal Business Association has compiled a very attractive directory of United States Government activities in Metropolitan Boston. All of the executive departments are represented in Boston, and under the Department of Agriculture eight separate bureaus are listed. The Plant Quarantine and Control Administration is represented by European Corn Borer Control, Port Inspection Service, and Prevention of Spread of Moths. An edition of 800 copies of the Directory was published, the printing and paper having been supplied by the Boston Post Office.

Quarantine line personnel selection in the western area was begun in June, and all equipment placed in first class condition for the opening of highway activities. Divisions by States have been assigned, and all supervisors and highways have been approved for the erection of road stations. Ten divisions will operate under the direct supervision of the Springfield, Ohio, office.

in West Virginia, Ohio, Indiana, and Michigan. An approximate total of 110 road stations, and 15 ports of inspection on the west shore line of Michigan, will be in operation this season.

Transfer of all corn-borer-control supplies and equipment from Toledo, Ohio, to Springfield, Ohio, began April 1 and was completed June 30. A total of 204 checked loads was moved by truck between the points mentioned--a distance of 135 miles. Incident to the confusion and inconvenience of moving headquarters, the task of assembling lists of prospective scouts was accomplished. When letters from scout applicants were received, their records of previous employment were examined. Each candidate was classified and listed accordingly, thus facilitating later selection of the personnel.

Quarantine inspectors in the Boston Wholesale Market occasionally come in contact with tarantulas, which are brought into the wholesale fruit and vegetable establishments with bunches of green bananas from the tropics. These specimens are sent to Nathan Banks, Curator, Department of Entomology, Harvard Museum of Comparative Zoology. Recently a specimen which proved to be a rather uncommon species from Honduras was taken alive and delivered to Doctor Banks.

Training school of the western area in corn borer control for this season will start about July 13 and is to be located on a 100-acre experimental farm operated by the Bureau of Entomology and the Bureau of Agricultural Engineering. On a convenient woodlot office tents will be erected. A plot of corn has been set aside for use in illustrating the methods practiced in connection with field operation. In the neighborhood of 400 scouts will be employed for the summer season.

Distribution of Japanese beetle traps in various cities throughout Maryland and Virginia started early in the month and all were placed and in operation by July 1. Traps and the necessary bait and equipment had been distributed to cities in West Virginia, Pennsylvania, New York, Connecticut, Rhode Island, Massachusetts, Ohio, and Michigan in anticipation of the trap work to start in these States early in July.

New York offices of the European corn borer and Japanese beetle project are in constant touch with the transit inspection service of the Administration, effecting close cooperation between the two units. Inspectors from the former assisted the transit inspectors on the night of June 26 in a check-up of flower shipments which were believed to have been made under unauthorized certification.

Notwithstanding a large correspondence and many personal visits to greenhouse and nursery establishments during June by inspectors working out of the Boston headquarters, transit inspectors noted a number of minor violations in the shipment of cut flowers, very largely due to misunderstanding of the Japanese beetle quarantine regulations covering the movement thereof.

Temporary chemists employed by the project and working under the supervision of the Bureau of Entomology Japanese beetle research laboratory at Moorestown, N. J., during June completed their analyses of samples of lead arsenate treated soil collected from treated plots in nurseries. The accumulated data are now being compiled as a basis for the re-treatment of the nursery plots.

Additional inspectors have reported for duty at the various wholesale flower and vegetable markets in the New York City area, in order to take care of increased demands for European corn borer and Japanese beetle inspection and certification. It is believed that these enlargements of the force make it sufficient to handle the situation in this area.

All equipment and supplies at the former administrative offices of the Japanese beetle project, Camden, N. J., were moved during the month to the South Norwalk headquarters. The building was vacated a few days previous to the expiration of the Department's lease on June 30. A large wooden shed was razed at Camden and reerected at South Norwalk.

Requirements for the certification of farm products and cut flowers under the Japanese beetle summer quarantine became effective on June 15. Very little actual inspection of these articles prior to certification was required until late in the month, since beetles had not emerged in sufficient numbers to infest the produce marketed earlier.

Soil treatment work for the Japanese beetle with arsenate of lead, sprayed on the turf by use of power sprayers, was completed before the end of June in Hartford, Willimantic, and New London, Conn.; Springfield and Boston, Mass.; and Newport, Providence, and Westerly, R. I.

During the month Assistant Secretary Dunlap and Congressman Mouser, the latter of Marion, Ohio, inspected the new headquarters of the western area at Springfield and expressed their satisfaction with the new location.

Combined European corn borer and Japanese beetle certificates were placed in use early in June to replace the separate certificates previously used by each project.

MEDITERRANEAN FRUIT FLY

Final disposition of all records, supplies, and equipment accumulated at Orlando over a period of two years in connection with Mediterranean fruit fly eradication, was effected during June. All building and utility leases were terminated on June 30 and appointments of personnel, with the exception of a small number transferred to other projects or bureaus, were terminated as of June 30, thus bringing to a close this project which was begun in April, 1929.

On June 1 approximately two-thirds of all property had been transferred to other projects of the Administration and to other bureaus of the United States Department of Agriculture. There being no further demands within the Department of Agriculture for this equipment, the remainder had been transferred during the latter part of May to the Chief Coordinator for disposition to other departments of the Government.

No orders were received from the office of the Chief Coordinator during the first half of June and, as it was necessary to close the project by June 30, an eleventh-hour rush seemed inevitable. This, however, was averted by prompt action on the part of officials of the Administration in Washington in rushing large orders from the Department of Justice and Department of Interior for steam boilers, tractors, and other heavy equipment, and in clearing for sale, through special boards of survey, temporary sheds and remaining property for which there was no demand by government agencies.

Equipment surveyed and sold consisted of temporary sheds, 170,000 pounds of sugar, 4,200 gallons of molasses, 21 motor vehicles, 45 power sprayers, 23 stubble shredders, 200 heavy duty truck tires, and various light equipment.

Preparation of proposals for bids was begun on June 18 and final sales effected on June 29. Surprising activity was shown in bidding on most items and it was necessary to readvertise only one item, a power sprayer, which the purchaser on original bid declined to accept due to erroneously naming an item different to the one on which he intended to bid. The price received for most items was very satisfactory considering general economic conditions and the off season in Florida.

Total transfers representing 308 shipments, 98 of which were car lots, had an appraised valuation of \$439,521.34. Sales by various boards of survey represented 26 lots bringing a total of \$9,188.73.

Nonexpendable articles of no further service and having no sale value were surveyed and destroyed. These represented a cost value of \$370.20. Galvanized steel tanks constructed as part of fruit destruction units at a cost of over \$270 are included in this lot. Nonexpendable articles lost or unaccounted for totaled \$17.90.

Alterations and permanent fixtures, consisting of partition walls, lighting fixtures, and locks, placed by the Administration in the Old Court House which was used as headquarters offices throughout the project, were left intact by request and consent of the County officials.

In compliance with lease contract, alterations and fixtures placed in garage on West Central Avenue were removed and the building turned over to owner in same general condition as when leased.

Temporary storage sheds, fronting the garage on West Central Avenue, were sold on June 20 on condition that they were to be removed and ground cleaned of debris and leveled before July 1. When this work was completed a written acceptance by the owner of this land as being surrendered in compliance with lease provisions was procured from an agent of the owner.

MEXICAN FRUIT FLY

The work on the American side of the river consisted of checking groves for "off-bloom" fruit, inspecting fruit held in storage and offered for sale in stores and on stands, and working up inspection records and census sheets in preparation for next season's work.

In Matamoros, on the Mexican side of the river, inspections were continued of fruit growing locally and of imported fruit offered for sale in the markets. In the fruit from the interior of Mexico infestations were found in shipments of apricots, guavas, mangoes, oranges, and plums. Infestations were found in White Sapotes, Sargentia greggii and sour oranges growing in Matamoros. The fruit from these trees has been picked off and destroyed by burial. Of special interest in explaining how infestations are started in Matamoros was the finding of a decayed mango which had been thrown out in the yard of a house in the northwest part of the city. Upon inspection 14 larvae of the fruit fly were found in this mango. Some 200 fly traps were placed in various yards during the month in addition to the 84 which were already out. These traps are baited with an orange syrup solution and inspected twice weekly. Twenty-two adults of the fly were caught in these traps during the month.

All trees within the area of four blocks around each point of infestation are being sprayed at weekly intervals with a poison-bait spray. About a pint of this bait is applied to each tree by Mexican laborers, using knapsack sprayers.

Two employees of this project were transferred to the Bureau of Entomology for work on the cotton leaf hopper, and two were transferred to the Division of Foreign Plant Quarantines for an inspection trip on the West Coast of Mexico.

PINK BOLLWORM

The field inspection performed in the Salt River Valley of Arizona prior to July 1 has been more or less at random, in an endeavor to locate infested fields. At this time 6 such fields have been found, 3 south of Laveen and 3 in the Goodyear-to-Queen Creek area. Beginning with July, weekly

infestation counts are to be made from some 20 fields in the Salt River Valley and several fields in the vicinity of Coolidge and Casa Grande in the Gila Valley. Some of the fields are in stub cotton and others in planted cotton of both short and long staple varieties. Each of the fields selected is representative of the conditions for that particular class of field. Bolls, or squares when bolls are not available, will be collected and kept on ice until they can be inspected.

Studies begun some time ago to determine the length of time elapsing between planting and fruiting of long and short staple cotton have been completed. It was found that the average time was 49 days in the case of long staple cotton and 39 days for short staple. This would indicate that approximately 60 days must elapse from the time of planting until squares are large enough to become infested for long staple cotton, and 50 days for short staple.

The alfalfa inspection and crop survey has progressed satisfactorily during June, when 78,419 acres of alfalfa had been inspected. Cotton in some form was found to be present in approximately 30 per cent of this acreage. At the same time 81,107 acres devoted to other crops were inspected, with cotton being found present in 10 per cent of the acreage. The crop survey shows that there are $107,996\frac{1}{2}$ acres being cultivated to cotton. It has been found that 27,755 acres planted to cotton in 1930 had been abandoned; however, since the acreage was checked some of this land has been watered and is now being cultivated with a view to making a crop of stub cotton.

Observations have been made from time to time to determine the effect of mowing cotton plants at the time alfalfa hay is cut. In a number of young alfalfa fields, in which cotton was growing, it was found that volunteer plants died if cut below the branches, but survived if one or more branches were left. The stub cotton puts out new shoots as soon as the first growth is destroyed, but it is not known just how many times this will occur. In young alfalfa, stub plants "stool" or spread out close to the ground after being cut, in which case they are too low to be cut by the mower at the next cutting. These observations will have to be continued before definite information is obtained.

Some damage to young cotton by hail was reported during the month in the El Paso Valley, the Big Bend section of Texas, and the Pecos Valley of New Mexico. The most serious damage occurred in the Big Bend section, where some 200 acres were practically destroyed.

There was a decided increase in traffic at the road stations during June, due to tourist travel; however, confiscations remained about the same. On June 16, a pillow made of seed cotton was confiscated at the Valentine, Tex., station. An examination of the seed cotton resulted in the finding of one dead pink bollworm larva. At the Ft. Davis, Tex., station, on June 25 four locks of seed cotton and a small amount of cottonseed cake were intercepted. The seed cotton had apparently been damaged by the pink bollworm;

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however, no specimens were found.

The inspection of boll samples at the San Antonio laboratory was completed during June, 1,598 samples having been inspected that month. Since the laboratory was opened in January, 9,520 samples of 100 bolls each have been inspected. These samples represented fields in Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, and Texas. No signs whatever of the pink bollworm were found in any of the samples.

Field headquarters of the Western Quarantine Area have been moved from 612 Mills Building to a small house at 2716 Grant Avenue, El Paso, Tex.

The main headquarters of the Pink Bollworm and Thurberia Weevil Project have been moved from 801 Smith-Young Tower to a two-story house at 521 Avenue A, San Antonio, Tex., effective July 1, 1931. The mailing address is Post Office Box 798.

PREVENTING SPREAD OF MOTHS

This project has leased property at Greenfield, Mass., from the Greenfield Tap and Die Corporation, consisting of 65,000 square feet of floor space distributed in four buildings with a sufficient amount of land around each building. All of the buildings are one story except the office building which is two stories, and are of fireproof construction with cement floors. The lease is effective August 17, 1931, and moving will be started near that date. One of the buildings is to be used for a workshop and for storage. The other two large buildings are for storage, supplies, and equipment. All of the buildings are within five minutes walk of each other and are connected by a private right of way. The office building will be at 20 Sanderson Street, but this announcement should not be considered as notice of change of address. Headquarters will continue to be at Melrose Highlands until further notice.

The whole of the Connecticut Valley from Brattleboro, Vt., to Hartford, Conn., was searched for a desirable location and necessary buildings in which to centralize this activity. The arrangement of the buildings at Greenfield is very satisfactory, and geographically the location is ideal. Greenfield is a town of about 16,000 people. It is an important railway center, being the junction of two main lines of the Boston & Maine system. There are two main automobile routes through Greenfield--No. 2 from Boston through Fitchburg and Athol to Albany, and U. S. Route No. 5 from New Haven through Hartford, Conn., and Springfield, Mass., to White River Junction, Vt. Greenfield is 98 miles from Boston, 102 miles from New Haven, 81 miles from Albany, and 89 miles from White River Junction.

The present leases of property including the property in Melrose, Shelburne, and Pittsfield, Mass., will be terminated as soon after August 17 as

moving to Greenfield can be accomplished. This change in location of headquarters and centralization of the various activities of this section involves approximately 30 Federal employees, who with their families bring the total to about 100 people. This change should be advantageous to the entire project as the location of headquarters will be much nearer the Barrier Zone where a large proportion of our funds are expended.

Due to the fact that extermination work in New Jersey has progressed to the point where a smaller force is required to satisfactorily conduct the work, the office building which has been used for a number of years has been given up and quarters in a portion of the storehouse located nearby on Lincoln Road in Bound Brook is being used for office headquarters.

As is usual during June, there was a decrease in inspection work necessary for the enforcement of Quarantine No. 45. There was not much activity in the shipment of evergreen products, although there was an increase in the shipment of balsam twigs. A few laurel branches were shipped by people who took advantage of the recent revision allowing for such shipment after inspection. There were no carload lots of evergreens shipped, and the less-than-carload lots decreased from 405 during May to 114 this month. There was also a small decrease in the number of carloads of forest products inspected and certified, but 1 bargeload was shipped as was the case in May. There was a small increase in the number of less-than-carload lots, and lumber, pulpwood, and empty cable reels formed the greater part of the forest product shipments. The spring shipping season for nursery products was practically closed and only 1 carload, as compared with 45 carloads in the previous month, was inspected and certified. Only 1,410 less-than-carload lots as compared with 11,679 of May were inspected and certified. There was considerable activity in the shipment of stone and quarry products, although the number of inspected and certified carloads dropped from 1,144 in May to 800 in June. There were 2 bargeloads shipped in June after inspection, although no bargeloads were inspected in May. The less-than-carload shipments which were inspected and certified in June of stone and quarry products dropped from 42,422 to 2,945.

Some nursery stock was moved throughout the month and blooming roses in pots were in demand especially by transient automobilists. Some evergreens and shrubs were dug with a ball of soil and placed in storage where they were thoroughly wetted. This seemed to revive the plants and they were moved with no loss reported. This procedure has been reported as a new method of handling nursery stock in June.

During June an old cooper's shop in the infested area was dismantled and after inspection shipped to Michigan. Collectors of old and historic buildings occasionally arrange for moving such articles from the infested area. These usually are taken down with great care and most of the materials are saved, including the wood, hardware, nails, chimney bricks, stepping stones, and often parts of the foundation. Often such buildings or parts of them are likely to carry gipsy moth infestation and must be carefully inspected.

An unusual inspection and certification was made during June. A builder of rustic articles constructed a small log cabin on a truck body to be used for advertising purposes. In this cabin were placed samples of rustic fence and other articles and a number of evergreen trees in tubs for decoration. As the owner intended to use this truck just outside of New England, all of the material required inspection and certification. Accordingly, the driver was supplied with the certificates to be shown if necessary. As the truck is likely to re-enter the quarantined area, arrangements were made by the inspector to make additional examination in the event that it is to move outside of the area again.

On Long Island 103 lots of nursery stock and in New Jersey 28 lots of nursery stock and forest products were inspected and certified by Federal inspectors for shipment from the controlled area. The restrictions in these two States are due to State regulations which are enforced by Federal employees. No infestations were found as result of these inspections.

The scouting in the Barrier Zone planned for the fiscal year 1931 was completed during the third week of June. Four scouting crews were engaged in scouting the wooded areas in two townships in Connecticut and two in Massachusetts. In three of these the scouting was very intensive as it was carried on around the sites of infestations that were discovered and treated during the previous year. In the other town the scouting was the 40-foot strip method previously described. As result of this scouting work infestations were found in three towns where intensive scouting was carried on.

Reports from the New York State Conservation Department indicate that the scouting work planned for in Ancram, Austerlitz, and Canaan was completed early in the month and the force was transferred to spraying operations in the townships of Hillsdale, Milan, and Rhinebeck, N. Y. Spraying on Long Island, referred to in the previous News Letter, was completed during the last week of June. The equipment, such as sprayers, hose, etc., is being stored temporarily at Bound Brook, N. J.

Only a skeleton force was in New Jersey during the month, for most of the men were in New England helping with the spraying work. Two men remained in New Jersey, and about the middle of the month one returned from New England. These men made the necessary nursery and forest products inspections and attended to burlap bands which had been placed around tree trunks at the sites of infestations which appear to have been exterminated. The trees in the areas considered most dangerous in the townships of Bridgewater, Franklin, Piscataway, and Hillsboro, were banded with burlap early in June. The gipsy moth caterpillars have a tendency during the heat of the day to seek shade. For this reason bands of burlap are placed around tree trunks, in which the caterpillars are likely to hide when ascending or descending the trees. The men turning these bands of burlap discover and destroy them. The burlaping of trees to aid in discovering the presence of gipsy moth caterpillars and pupae is simply one more avenue of search for the last few specimens. The scouting for gipsy moth egg clusters during most of the

winter, the search for the caterpillars and pupae beneath the burlap bands during June, and the assembling cages (explained later) which were placed in the field last July to catch male gipsy moths, have all failed in showing any indication of the existence of a gipsy moth infestation in New Jersey this year.

June is the month for spraying in New England to control the gipsy moth. This operation may start the last of May and run into the early part of July. The length of the spraying period is governed by the season, for spraying should not be started until the foliage is of sufficient size to hold the material, and it must be concluded before the caterpillars have pupated. Accordingly the scouting work is arranged so that much of it will be completed by the last of May and early in June as most of the force of the scouting and extermination section is needed for the spraying operations. All of the detailed reports of the spraying which has just been completed have not as yet arrived at the office and it is not possible at this time to give this information. It will, however, be included in an early News Letter. With the exception of a small number of men detailed to miscellaneous work such as the erection of temporary fences, patrolling of burlap bands, and the delivery of small supplies from central concentration points in the field, the entire scouting and extermination force is required to operate the spraying outfits. Spraying at and in the vicinity of the infested locations commenced on June 2, and it was necessary to increase our force temporarily during the month. The work was hampered considerably during the first 10 days of June by abnormally rainy weather, but the conditions were favorable throughout the remainder of the month and spraying was completed early in July. Thirty spraying units were in full operation during the greater part of June by the Federal force, and six more fully equipped outfits were loaned to the New York State force to conduct its spraying in Nassau County on Long Island and in Columbia and Dutchess Counties in the Hudson River Valley in the Barrier Zone. It has been reported from the field that we were exceedingly fortunate this season in driving several sprayers over old roads that are ordinarily considered impassable to points from which extensive tracts of woodland were successfully sprayed.

In several cases this season sprayers were operated in pairs pumping lead arsenate solution in a continuous stream through a single hose line. This was accomplished by using a Y connection between the two sprayers and the main spray line, so that one sprayer delivered solution while the other was loading and mixing a tank of spray material. By previous arrangement between the foreman in charge at the nozzle end of the hose line and the operators of the sprayers, a schedule for shutting down for about five minutes at one or two hour intervals during the day allowed for the crew manning the hose line to change positions and cut off or add lengths of hose as they progressed through the woodlot. Spraying was carried on during the month by the Federal force in the townships of New Marlboro, Sandisfield, and Stockbridge, Mass., and in Canaan, Cornwall, Norfolk, Salisbury, Wallingford, Warren, and Washington, Conn. With the exception of a few small isolated locations, all known infested spots will have been thoroughly sprayed by the close of the spraying season early in July. The unsprayed infested locations have been thoroughly

treated by other control measures such as creosoting egg clusters, chopping and cleaning out of underbrush, and burlaping the remaining trees. These burlaps of course are examined throughout the caterpillar season and any caterpillars and pupae which are found are destroyed.

In the last paragraph on page 22 of the July News Letter, mention was made of the assembling cage work in the discussion of the colonization of Sturmia scutellata. Thousands of this imported gipsy moth pupal parasite are obtained each year incidental to the assembling cage work. They are liberated merely to save them and to help in building up the parasite population just east of the Barrier Zone.

For a good many years the Bureau of Entomology at the Gipsy Moth Laboratory, Melrose Highlands, Mass., has carried on experimental work to obtain an attractant for male gipsy moths. Up to this time the best attractant has been obtained by clipping the last one or two abdominal segments of virgin female moths into various solvents. The information obtained by this research work is being applied by the Plant Quarantine and Control Administration in connection with the field work. Cages are put out each year in the Barrier Zone and in New Jersey during the flying period of male gipsy moths in an attempt to attract them. This is done as an auxiliary to the scouting work, and in past years gipsy moth infestations have been discovered in this way. The present practice is to pour the solvent and the posterior tips cut from female moths onto cotton batting which is fixed in small tin cans. These are then nailed to the tree trunks and inverted to prevent rain from entering. Sticky banding material is placed on the tree around the can, and the males flutter around the attractant in the can and become caught in the sticky material.

In order to obtain a supply of the attracting material it is necessary to collect large numbers of female gipsy moth pupae during July. These are placed on coarse wire-bottom trays in racks. As the female moths issue they are picked off and placed in pasteboard boxes to prevent mating. After they have been held for 24 or more hours, the posterior abdominal tips are clipped into the solvent to be used. During the clipping the moths are held in a glass-covered case where suction is applied to draw the hair and fuzz away from the operators, for these are very irritating to the delicate membranes of the eye, nose, and throat of many people.

Because the seasonal history of the gipsy moth in New Jersey (when there are any there) is earlier than in New England, where the material must be obtained, it must be gathered during the previous year and held in cold storage during the winter. Benzol is the solvent used for the material that is going to New Jersey, as the attractant seems a little more stable in it than in other solvents when held over the winter. For several years xylene has been the solvent used for the material that is placed in the Barrier Zone. This is liberated the same season that it is obtained. This year both xylene and high test gasoline are being used as the solvent for the material that is to be used in the Barrier Zone, as experiments conducted by the Gipsy Moth Laboratory with high test gasoline have given excellent results in attracting male moths. When

clipping into benzol 30 tips are used to each ounce of material, but when the tips are clipped into xylene or high test gasoline for immediate use, 15 tips to 1 ounce of material are sufficient. Last July and early August approximately 147,500 female gipsy moth pupae were collected. From this material sufficient tips were obtained to charge 678 cages which were used in the Barrier Zone, and 590 cages which were kept in cold storage during the winter. The latter are being placed in New Jersey at this time (July 13, 1931). The material that was placed in New Jersey last summer--853 cages--was obtained the previous year.

This whole problem is still considered to be in an experimental stage, but with the slight improvements that are made annually in manipulation it seems that gradually this work will become more and more valuable as an aid in the discovery of unknown gipsy moth infestations. This will aid materially in the prevention of the spread of this pest. In using this method to attract male moths in preference to using female moths in cages, all danger of establishing an infestation through accident is eliminated, as the few eggs which may be in the clipped tips of the females are infertile, and furthermore are killed by the solvent.

Evidence based on the number of brown-tail webs which were cut in New England during the winter of 1930-31 showed that this insect was more abundant than usual in some sections. This was particularly true in southwestern Maine where the infestation was especially heavy on small groups of apple trees in villages. This also applies to a considerable extent in central and southeastern New Hampshire. In Massachusetts the webs are cut annually rather consistently by the local moth superintendents, and considerably less webs were cut last winter than during the previous winter. In Maine a total of 320,964 webs and 69 bushels of webs were cut in the 9 towns which reported, the greatest number for any one town being 307,000 webs at Biddeford. In New Hampshire a total of 655,076 webs were cut in 50 towns, the greatest number in any one town being 80,757 at Pembroke. In Massachusetts there were 36,564 webs and 312 $\frac{1}{2}$ bushels cut in the winter of 1930-31 as compared with 75,684 webs and 307 bushels cut the previous winter. In some cases the number of webs cut are reported by bushels. It is practically impossible to arrive at the average number of webs in a bushel for they vary greatly in size and also in the amount of twig that is left on each web. Figures range from 1,500 to 2,800 webs to the bushel, and if we take as an average 2,000 webs to the bushel, it gives us 763,000 webs. Using this figure, with the 1,012,604 webs which were reported cut, gives a grand total of 1,775,604 webs cut and destroyed during the winter of 1930-31 in New England. Webs were cut in several other towns especially in Maine, but no record as to the number is available.

During July each year information is gathered as to the amount of defoliation caused by the gipsy moth. Last year there was considerably less reported than the previous year, and early indications are that there will be less reported this season than last year. There is, however, severe defoliation in the area in Massachusetts south of Brockton, which will be reported on later.

During June and early July approximately 2,000 posters, depicting the life history of the gipsy moth with information pointing out the danger of spreading this insect, were distributed to Federal employees and State officials for posting in the gipsy moth area at locations where tourists and campers are likely to stop.

During June this office supplied L. S. McLaine, Chief of Division of Foreign Pests Suppression, of the Canadian Department of Agriculture, with 100 artificial gipsy moth egg clusters. These are prepared at the Melrose office and are used occasionally in the field. They are placed on trees in locations favorable for female gipsy moths to deposit their egg clusters. These are put out in sections unknown to the scouts in order to check the efficiency of their scouting and serve to keep the men on the alert in their search for gipsy moth egg clusters, especially in territory where the infestation is extremely light, if present at all.

During the month 27 members of this force made a total of 91 insect collections which were sent to the Gipsy Moth Laboratory. These consisted of 22 collections of gipsy moth, 11 of the brown-tail moth, 10 of the satin moth, and 48 of miscellaneous insects.

There were a total of 128 violations during the month. One hundred and twenty-six of these were violations of Quarantine No. 45 alone; 1 violated Quarantine No. 53 as well as Quarantine No. 45, and 1 violated Quarantine No. 63 as well as Quarantine No. 45. Sixteen violations were by express, 112 by mail. All of these violations were reported by transit inspectors of the Plant Quarantine and Control Administration. Many of the violations have been investigated and in all cases were found to be of minor nature, and no prosecutions were instituted.

