

7/13/32.
Please return to
E. M. Berger

Bureau of Plant Quarant. (News Letter)

NEWS LETTER

LIBRARY
STATE PLANT BOARD

BUREAU OF PLANT QUARANTINE

UNITED STATES DEPARTMENT OF AGRICULTURE

Paul Ballman
1932

Number 19

(NOT FOR PUBLICATION)

July 1, 1932.

P. 2. *Gladiolus thrips*.

TECHNOLOGICAL

The work on installing new doors and repairing the car fumigation houses located at various ports along the Mexican border is proceeding rapidly. Contracts have been let for the installation of the new type of sliding door in the houses at Brownsville, El Paso, Eagle Pass, and Nogales. These doors are of steel in one piece and weigh about 1,800 pounds apiece. They are suspended from roller-bearing hangers which travel on steel tracks and are so constructed that in the last inch of travel they are raised one-half inch and all four edges seal simultaneously against heavy felt gaskets. The lifting and sealing of these doors is accomplished by a powerful lever cam action by which a man weighing 150 pounds can exert a pressure around 4,000 pounds to raise and seal the doors. This type of door was designed especially for these houses and has proved to be very satisfactory in the houses where it has been installed and tested.

A ventilating system is being installed at the Nogales house for removing the hydrocyanic acid from the house after fumigation. This consists of ventilating ducts, 32 inches in diameter, from the roofs of the two chambers connected to a large multivane fan, having a capacity of 11,000 cubic feet of air per minute, which exhausts into a steel stack 80 feet high. The air in the fumigation house can be changed in 14 minutes, and a thorough ventilation of the house for one-half hour exhausting the gas 80 feet in the air, will disperse the hydrocyanic acid so that it can not be detected.

The house at Eagle Pass is being extended and repaired, new steel door frames being installed at the rear of the house and new steel sliding doors at the front entrance.

FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

New to the National Museum.--Callosobruchus sp. (Bruchidae) was intercepted at El Paso, Tex., in chickpeas (Cicer arietinum) in the mail from Spain. H. S. Barber and A. G. Boving state that this seems to be an important form and more material would be appreciated. It is new to the National Museum collection.

Gladiolus thrips from Australia.--The gladiolus thrips (Taeniothrips gladioli M. & S.) was intercepted at San Francisco on gladiolus corms in the mail from Australia. This thrips attacks gladioli in the field and goes into storage with the corms. It occurs in several localities in this country.

Coffee leaf miner in Puerto Rico.--The coffee leaf miner (Leucoptera coffeella Guerin) was found infesting coffee leaves in the field at Adjuntas, Puerto Rico. This lepidopteron is a serious pest of coffee.

Scale insect from Japan.--Phenacaspis dilatata (Green) (Coccidae) was intercepted at San Francisco on palm in quarters from Japan. This or a closely related species was taken on mango from Java in 1930.

Lacebug from Argentina.--A living specimen of Gargaphia subpilosa Berg. (Tingitidae) was intercepted at New York on a peach in cargo from Argentina. This represents the first interception record of this lacebug in our files. It is not recorded from the continental United States.

Coccid on aucuba.--Phenacaspis aucubae (Cooley) (Coccidae) was intercepted at San Francisco on aucuba in quarters from Japan. This scale insect has also been taken on aucuba from Japan at Honolulu and Seattle.

Miner in Lima bean leaves.--Specimens of Agromyza inaequalis Mall. (Agromyzidae) were found in Lima bean leaves in the field at Rio Piedras, Puerto Rico. In "Insectae Portoricensis," George N. Wolcott lists Vigna repens, as well as Lima beans, as hosts of this blotch miner.

Manetti rose stocks infested.--The sorrel cutworm (Acronycta rumicis L.) was intercepted at San Francisco on Manetti rose stocks in cargo from France.

Scale insect from the Orient.--Aspidiotus cryptoxanthus Ckll. (Coccidae) was intercepted at Washington, D. C., on Castanea scions in the mail from China. This scale insect has been intercepted previously on Castanea sp. from Japan and on walnut from China.

Cotton pest from Ceylon.--An adult moth of the Egyptian cotton bollworm (Earias insulana Bdv.) was intercepted at Honolulu, Hawaii, in packing material in the mail from Ceylon. The larva of this moth severely injures the bolls and squares of cotton. It is reported from several localities in

the Eastern Hemisphere.

Coccid on palm.--Hemichionaspis dracaenae Cooley (Coccidae) was intercepted at San Francisco on palm in quarters from Hawaii. This represents the first record in our files of the interception of this scale insect.

Tenebrionid from Central America.--Paratenetus tibialis Champ. (Tenebrionidae) was intercepted at Mobile, Ala., on banana in cargo from Guatemala. This beetle arrived with bananas in cargo from Honduras in 1930.

Scale insect on coconuts.--Phenacaspis inday (Banks) (Coccidae) was intercepted at San Francisco on coconuts in quarters from the Philippines. This coccid has also been taken on coconuts from Hawaii and on palms from Guam and Polynesia.

Thrips on Hibiscus blooms.--Frankliniella cubensis Hood (thrips) was collected in the field at Mayaguez, Puerto Rico, from flowers of Hibiscus. J. R. Watson, of Gainesville, Fla., makes the following statement concerning this collection: "I believe this is the first report of this insect from Puerto Rico, or any other place, except Cuba."

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

Rust on garlic tops.--The dry tops of some garlic from Brazil, braided to keep the bulbs in bunches, were found by an inspector at Philadelphia to be heavily infected with a rust. The **rust** is a Puccinia, and teliospores were found, so it may be possible to determine the species.

Orchid disease.--A disease on leaves of Cymbidium from India was found in a shipment when it reached the inspection house in Washington, and was determined as Septoria thelymitrae, a disease listed by Stevenson as occurring on leaves of Thelymitra aristata in Australia only.

Rare nematode found.--A specimen consisting of Emperor narcissus leaves apparently infested with Tylenchus dipsaci was received from Puyallup, Wash. Careful examination of the entire specimen failed to reveal any T. dipsaci. Both Cephalobus sp. and Acrobeles sp. were present, and a single specimen of what appeared to be Pathoaphelenchus demani was found. P. demani was described from specimens infesting bananas and has been reported on grass in Holland since that time.

Botrytis interceptions during May.--Interceptions of Botrytis continued to be rather frequent during May, including specimens on coconut from the Philippine Islands, papaya from Panama, iris from Washington, narcissus from Long Island, N. Y., and Washington, peony from Ohio and Oregon (3), rose stem from Italy, onion from England, France, and Spain, rutabaga from France (2), and turnip from Belgium and Sweden.

Sclerotinia interceptions increasing.--Interceptions of Sclerotinia sp. have shown some increase during May and include specimens in carrot from Belgium, Denmark, and France, celeriac from Sweden, garlic from Argentina,

rutabaga from England and Sweden, turnip from Brazil and England, and water-nut from China.

Violet root rot.--A diseased rutabaga from England intercepted at Philadelphia had a growth of sterile mycelium and the bright violet color characteristic of Rhizoctonia crocorum, the violet root rot which is widespread in Europe and is known to occur in this country.

Pathoaphelenchus changed to Aphelenchoides.--A letter from Dr. G. Steiner, Senior Nematologist, states that those species of nema recently placed in the genus Pathoaphelenchus must be given the name Aphelenchoides, which was published by Fischer in 1894 and antedates Cobb's genus Pathoaphelenchus.

It is suggested that interception records be changed to accord with this ruling, which Dr. Steiner hopes is final.

NOTES ON BEAN INSPECTION IN PUERTO RICO

Richard Faxon, Associate Plant Quarantine Inspector stationed at San Juan, Puerto Rico, submits under date of May 3, 1932, the following notes on the past season's inspection of beans on the island, with reference to pod borer and Lima bean scab:

Fundella cistipennis was usually present in small numbers in Lima beans that were being shipped to the States, and a rather heavy infection of Elsinoe canavaliae was found in practically all of the shipments.

In previous seasons Etiella zinckenella appeared to be more prevalent than Fundella, but this season the situation was reversed, as Fundella larvae were found more frequently in the pods of Lima beans than either Maruca testulalis or E. zinckenella. The infestations of Fundella cistipennis were light, the highest being 3 per cent found in a hamper from Isabel. It was found to be present in shipments from Loiza, Vega Baja, Arecibo, Isabel, and Adjuntas. Fifteen collections were forwarded to Washington for determination and many more could have been sent from other shipments. E. zinckenella was found in only three shipments of Lima beans and four of gandules.

Maruca testulalis was difficult to find until January, 1932, and the later infestations in Lima and string beans and gandules were usually light. This was particularly true of gandules as only one interception was made in cull pods at Arecibo, although hundreds of boxes were shipped to the States. Practically the only serious infestation in Lima beans was found at Cidra, February 26, 1932, where 11 per cent of the pods in a 3-acre field of bush Limas were infested with Maruca larvae. Sixteen collections were sent to Washington for determination from beans grown at Loiza, Rio Piedras, Vega Baja, Arecibo, Isabel, Cidra, and Cayey.

The pod infection of Lima beans by Elsinoe canavaliae varied from 5 to 100 per cent. Forty-three interceptions were forwarded to Washington in contrast to one sent the previous season. The infection was 25 per cent or over

in 15 of these cases. Leaf and stem infections were also common in our collections of material. The disease was well distributed over the Island, being present in shipments from Humacao, Loiza, Rio Piedras, Vega Baja, Arecibo, Isabela, Adjuntas, Yauco, Ponce, Cayey, and Cidra. Apparently the past season was very favorable for the development of the disease, as there was a great deal of rain up to the middle of February. After that date there followed a drought for over 60 days at Loiza, and the Elsinoe almost disappeared from plantings there but continued in other districts where the drought was not so severe.

SPECIAL-PERMIT IMPORTATIONS TREND TOWARD SMALLER AMOUNTS AND INCREASE OF MAIL SHIPMENTS

From the records supplied by Table 40 of the Annual Report for 1931, a bit of simple calculation demonstrates that since 1920, when Quarantine 37, the Nursery Stock, Plant, and Seed Quarantine, became fully operative, the average number per permit of plants, bulbs, etc., imported under special permit has shown two high points, one in 1920 and one again in 1926. The average number per permit authorized entry in 1920 was approximately 35,000, which average dropped rapidly in ensuing years until by 1925 the average plant importation per permit amounted to only about 8,000. When the entry of narcissus bulbs was brought under special permit in 1926, the average number per permit rose abruptly to about 56,000, only to drop again in succeeding years until in 1931 the average was about 6,000. The indications are that the 1932 average will be about 3,000 bulbs or plants per permit.

Several factors are no doubt involved in this noticeable trend toward smaller importations. Although since 1925 the actual number of permits issued each year has varied only within narrow limits, yet a steadily increasing number of these have been for importation by mail, which, of course, involves smaller lots. Success in building up domestic stocks of the main standard varieties has also tended to lessen the larger importations of many popular ornamentals, so that the newer and more costly foreign productions comprise more and more of the bulk of special permit introductions, with these expensive novelties coming in smaller numbers. The gradual lessening of quantity limits and the removal of well-established varieties from the authorized list to lessen pest risk have also influenced the situation somewhat, as well as the tense economic conditions of the last two years.

Whatever the proportionate effects of these various factors may have been, the records indicate that the gradual reduction of imports to the basic minimum needs of the country is being rapidly accomplished.

HIDING THEM FROM THE INSPECTOR

W. W. Wood, Plant Quarantine Inspector at Detroit, reports that on May 15 a customs inspector, in the course of examination of automobiles arriving from Canada, found about three-fourths of a bushel of corn on the cob concealed under the hood of one motor car, with some few ears held in the drip pan. The corn was seized and destroyed.

CIPOLLINI BRINGS NEW INSECT

Shipments of cipollini (Muscari comosum), imported from Europe and Africa, are at times found infested with the greater bulb fly (Merodon equestris) and other insects. In a recent shipment of cipollini from Morocco entered at San Francisco January 20, 1932, a number of larvae were found, which on rearing proved to be largely Merodon, but among which occurred a specimen of Exosoma lusitanica. This latter species was first intercepted December 20, 1929, and since that time it has been intercepted 57 times in cipollini from Morocco and once in this host from Italy. Dr. A. G. Boving states that E. lusitanica is a potential pest closely related to the genera Diabrotica and Phyllotreta.

DOMESTIC PLANT QUARANTINES

The plan recently suggested by the National Plant Board, under which compliance with State plant quarantines would be required for the delivery of plant shipments moving by parcel post and providing that the shipper of plant material would release the Post Office Department from all responsibility for any action which might be taken with respect to the shipment in relation to such quarantines, was recently taken up by members of the Administration with the Division of Classification of the Post Office Department. The latter pointed out difficulties involved in a recognition of State plant quarantines owing to the variety and lack of uniformity of State orders. The waiver plan was also felt not to prevent the public's adverse reaction to the loss of apparently uninfested plants shipped in good faith and refused at destination. If a unified program of State quarantines could be worked out and adopted by the various States, the Superintendent of Classification felt that such a program might be made the basis of a Federal order by the Department of Agriculture. It would then be in such form that the Post Office Department might cooperate in its enforcement.

Gladiolus thrips, Taeniothrips gladioli M. & S., which has during the last year or two proven seriously injurious in New York, Massachusetts, Ohio, and other eastern States, has recently been found infesting gladiolus corms in Washington, D. C., and vicinity, according to a memorandum received from the Bureau of Entomology. A brief survey by Bureau entomologists among local growers and dealers resulted in finding infested corms at two Washington stores from which many lots had been purchased, and an infested shipment had just been received by a local grower. Experiments to find improved control measures will be undertaken this year at the Bureau's laboratory. An effort is also being made to determine whether or not this is a foreign species of thrips introduced into the United States.

TRANSIT INSPECTION

A tentative proposal that transit inspection be set up at Jacksonville, Fla., during the latter part of the summer, was discussed at a conference held in Washington on June 1, attended by Dr. J. H. Montgomery, Quarantine Inspector of the Florida State Plant Board, and by representatives of the Division of Classification of the Post Office Department and of the Plant Quarantine and Control Administration. It is expected that the work will be carried on co-operatively by the State Plant Board and the Administration.

Transit inspection is being discontinued at St. Louis at the close of June, and the forces at other cities are also being decreased.

A package of dahlia tubers refused at the post office window at Springfield, Mass., on May 25, because no Japanese beetle certificate was attached, was later brought back by a different person who declared the contents as merchandise or dress goods. The postal employees became suspicious and notified the transit inspector at Springfield, who intercepted and returned the shipment. This is but one example of the excellent cooperation extended by the Post Office Department in preventing uninspected plants from being moved out of the infested areas.

Inspectors enforcing the Japanese beetle quarantine at Philadelphia have been obliged recently to intercept over 4,000 cabbage plants, with soil, consigned by one shipper located in a part of Virginia infested with the Japanese beetle. The shipments were consigned to 17 various addresses and were turned back in transit. It has not yet been learned in Washington whether the shipper had failed to have the plants and premises inspected or had merely failed to attach Japanese beetle certificates.

WHITE-PINE BLISTER RUST

As a basis for applying such measures as may be necessary to protect the white pine stock in the Maryland State Forest Nursery from infection by white-pine blister rust, a survey of the surroundings to locate currant and gooseberry plants was made during the latter part of April by Mr. L. W. Hodgkins of the Bureau of Plant Industry. Mr. R. A. Sheals of the Administration accompanied Mr. Hodgkins during a part of the survey. No wild Ribes were found within 1,500 feet, nor were any cultivated black currants found within a mile radius of the nursery. Information concerning a few cultivated red currants and gooseberries found within the 1,500-foot zone was turned over to the State authorities for such action as might seem advisable.

NARCISSUS BULB PESTS

Federal Quarantine No. 62 was amended effective June 20, as the result of a conference held in Washington on March 28 to consider the revocation of the quarantine or revision of the regulations. "The amendment," the introductory comment states, "eliminates the requirement of fumigation on account of lesser

bulb fly (Eumorus spp.) infestation. The certification of bulbs as free from infestation is also authorized on the basis of the warehouse inspection where the planting has not been examined during the growing season, provided the Plant Quarantine and Control Administration issues a special approval of that procedure based on evidence of an intensive inspection of the bulbs in storage by inspectors competent to discover eelworm infestations in such dormant bulbs.

"The specific designation of treatment methods is removed from the quarantine regulations themselves and will be issued in the form of administrative instructions. This change is made for the purpose of rendering the regulations more flexible and more easily subject to modification when further research work results in the development of improved methods."

BLACK-STEM RUST

A revision of the lists of species of barberry and Mahonia which are susceptible to black-stem rust, and those which are nonsusceptible, is being completed by the Barberry Eradication Division of the Bureau of Plant Industry. An outdoor garden to test the susceptibility of the various species has been started by the Bureau at Bell, Md., to supplement greenhouse experiments carried out elsewhere.

PHONY PEACH DISEASE

Examination of the environs of peach-growing nurseries was started in Georgia and Florida about June 1. Under the phony-peach disease quarantine, nursery stock is certified for interstate movement if no trees infected with the disease have been found within a mile of the premises for the preceding two years. One or more large nurseries are arranging to insure compliance with the certification requirements by seeing that there are no peach trees of any kind growing within a mile of the nursery blocks. In such cases the nurserymen purchase such few mature trees as are found already growing within a mile of their premises or make other arrangements for disposing of them. The first work of the inspectors consists of checking on the surroundings of nurseries which have made arrangements of this kind.

DATE SCALE

During the month of May, routine inspection was continued in the infested area in the Coachella Valley. Many of the recently infested gardens were inspected and no scale found. The section-by-section survey was discontinued because of hot weather until fall. All of the infested area and most of the border zone has been covered. Inspection was interrupted for two or three days and 270 abandoned seedling palms were dug out. Very few abandoned palms difficult to inspect now remain in the infested area. A group of fan palms ranging from 15 to 55 feet tall, which were infested in 1930, were inspected and no scale found. This group of palms is on the Southern Pacific Railway Station

grounds mingled with other trees and shrubbery and in many cases near buildings. The inspection is done from extension ladders, the men wearing safety belts so that both hands may be used to manipulate the leaves. One of the inspectors shifting his position on a palm accidentally unsnapped the catch on his belt and dropped about 25 feet to the hard adobe soil beneath. He lit on his feet, breaking five bones in one foot and one in the other, and wrenching his back and knees. Prompt medical attention was given him and he will soon be able to move about some on crutches. His feet will be in casts for several weeks, however.

In the Imperial Valley, section-by-section scouting is being conducted to locate unlisted palms in the infested area. The inspection of fan and Canary Island palms on infested and adjoining properties was completed. Routine inspection of all varieties of palms in the infested area was begun, and a scouting inspection was begun in the uninfested part of the Valley.

At Yuma, Ariz., the section-by-section survey was completed and the inspectors stationed there transferred to Phoenix. While considerable inspection remains to be done, continuous inspection is not necessary, and the work will be handled from the Phoenix headquarters.

At Phoenix a final survey and inspection is being made in some of the outlying territory. In Arizona there has been little evidence of the spread of the *Parlatoria* date scale except by the movement of off-shoots.

EUROPEAN CORN BORER AND JAPANESE BEETLE

Specialized Corn Borer Activities

The State of Connecticut continued its corn borer clean-up campaign throughout the State and the work was practically completed during the latter part of the month. Good cooperation was received from the majority of the corn growers. Twenty-two inspectors were employed on this work for an approximate period of five weeks. Those farmers refusing to cooperate were given a definite date to have the work completed, and those failing to finish the work within the specified time were prosecuted. It has been necessary to carry but six cases into court. The work of rechecking will be completed about June 15.

Exclusive or Combination Japanese Beetle Work

Bait mixing began at the South Norwalk headquarters on April 28. Five men were required over a period of 12 days to mix 1,150 cans of bait, each containing 33 pounds of the material. In the mixing process, the more fluid liquid ingredients of the bait, consisting of geraniol, eugenol, glycerine, and water were first placed in an uncovered cylinder and thoroughly agitated by means of a motor-driven mixing machine having an aluminum shaft and push-pull propellers.

Hot water from the water heater was used. As soon as the mixer revolved at full speed, the molasses was added to the other liquids. During the mixing of the liquids, these fluid ingredients were heated to from 106° to 110° F., by means of a gasoline blast furnace placed directly beneath the mixing cylinder. The propellers of the agitator near the bottom of the cylinder prevented burning or scorching of the molasses. Twelve minutes were allowed for thorough mixing of the liquids. The liquid portion was then drawn off by means of a spigot at the bottom of the cylinder and added to the bran which had already been placed in a gasoline-driven tilting paddle-type plaster mixer. The heated liquids coat and penetrate the bran more quickly than do cold mixtures. The heating process also shortened by three minutes the periods required for mixing of the liquid ingredients and their final combination with bran. The latter operation now occupies 12 minutes. To facilitate the mixing operations, the tilting plaster mixer was mounted on a raised wooden platform. Bags of bran, scales, barrels of molasses, steel drums of geraniol, eugenol, and glycerine, and a constant supply of hot water were conveniently grouped about the platform. Marked measures and pails for the liquid ingredients were beneath the appropriate spigots. Each batch of bait mixed contained 8.26 quarts geraniol, 26.455 ounces eugenol, 7 quarts water, 6.44 pints glycerine, 21 quarts molasses, and 82.67 pounds bran. This quantity is sufficient for a single baiting of 500 traps. At the conclusion of the final mixing, the mixer was tilted and each batch dumped onto a shallow wooden trough, from which the bait was scooped into tin containers. Each can was filled and tamped down until the 33-pound weight was reached. Air-tight pressure covers were used to close the bait cans. Each container was then placed in a separate fiber-board carton, the date of mixing stamped thereon, and the finished product stored ready for freight shipment or truck movement along with the traps to field operation points. The quantity of bait mixed makes a total of nearly 19 tons for use during the coming trapping season.

State supervisors and section leaders throughout the Japanese beetle and European corn borer areas met in conference at the South Norwalk headquarters on May 5 for the purpose of discussing seasonal work soon to begin throughout the quarantined and adjacent territory. The greater part of the discussion related to the organization of the trapping program which this year will replace all scouting as heretofore performed outside the regulated area. Field inspection by scouts this year will be confined to surveys in classified nurseries and greenhouses within the regulated environs. State supervisors will be responsible for the distribution of traps and the direction of the trap inspectors working in their respective territories. A rather extensive 30 and 60-day trapping program has been prepared, starting in Florida and gradually working north as the anticipated beetle emergence dates in the different latitudes warrant trap placement. The majority of the traps will be used twice during the season and some of them will possibly see service in three localities. It is the object to trap as many cities and towns as possible with the available trap supply, scattering the traps approximately 300 feet apart throughout the communities in order to cover as much territory as possible. In the larger cities a higher concentration of traps will be located in the vicinity of freight yards, steamship piers, parks, and other sections which experience has shown to be the most likely places for infestation establishment. Present at the conference from

the South Norwalk headquarters were Messrs. L. H. Worthley, E. G. Brewer, H. N. Bartley, O. K. Courtney, J. P. Johnson, C. W. Stockwell, R. W. Sherman, and H. B. Ward. State supervisors and section leaders called in for the conference included W. C. Armstrong, T. M. Cannon, R. S. Clifton, W. E. Cranston, J. K. Gould, G. K. Handle, W. F. Walsh, and C. H. Zimmer.

Initial outdoor finds of adult beetles were made on May 6. On that date 2 specimens were picked up in a vacant lot in Norwood, Pa. Later the same day, 4 beetles were found on roses in the center of a lawn near a greenhouse establishment in Holmes, Pa. Leaf skeletonization indicated that the beetles had been present for a number of days previous to their discovery. On May 7, 4 beetles were found on rose bushes along a trolley road at Holmes. The rose leaves on which these specimens were found also showed evidences of beetle feeding. The latter location is about 400 feet distant from the above greenhouse, in the vicinity of which last year's infestation was extremely heavy. On the same date, 2 adult beetles were collected from ivy growing on the side of the building of the University of Pennsylvania Botanical Gardens, Philadelphia. This was also a badly infested spot last summer. On May 16, Dr. Henry Fox and four employees from the Japanese beetle research laboratory, Moorestown, N. J., accompanied one of the inspectors from the Oakmont quarantine office to the sites at which beetles had been found on May 6 and 7. At the Holmes location along the trolley road, 6 specimens were collected, and 49 additional adults were taken from roses and spirea growing alongside the greenhouse in that locality. Five beetles were also taken on the same day on huckleberry and aronia growing in the Norwood vacant lot where specimens were first found on May 6. While these adults evidently emerged from open ground, they had apparently overwintered in protected spots, which accounts for their unusually early appearance. The first adults found in the open last year were collected on May 23.

Chemical manufacturers in the regulated area, in a number of instances, have arranged to substitute cinders for the sand ordinarily used in the bottoms of crated acid carboys. The sand used acts as a buffer base and is also valuable as absorption material in the event of breakage. The firms still using sand for this purpose obtain the same under conditions which permit its subsequent certification when accompanying shipments destined to unquarantined territory. Fine cinders appear to be as useful as sand for protecting the carboy shipments. A number of firms have substituted this material rather than obtain and keep their sand supply under certified conditions. Cinders are not subject to Japanese beetle infestation, so are not covered in the quarantine regulations. In addition to sand used by acid shippers, it is the regular practice of the railroad companies to place a layer of sand on the freight car floor for a few inches, surrounding each crate of acid. This is also done with many other commodities, such as barrels of iced fish, likely to seep through and cause damage to near-by shipments in the car. In the heavily infested area much of the sanding of cars is performed when the consignments are reloaded at Philadelphia freight transfer points. Philadelphia freight officials conform to quarantine requirements in purchasing and handling sand for use in this manner, so are accorded certification much after the fashion of a certified nurseryman.

STATE PLANT BOARD

T. M. Cannon, representing the Plant Quarantine and Control Administration, addressed a joint meeting of the Hartford Florist Club and Hartford County Funeral Directors at the Hotel Bond, Hartford, on May 10. Both the European corn borer and the Japanese beetle quarantines were explained in detail.

On May 3, three roving Japanese beetle inspectors started checking movement of products under regulation from Hampden County, Mass., and during the following week this was augmented by the addition of nine permanent stations being operated along the Connecticut-Massachusetts border. Stations were also opened during the week of May 1 on the New York-Vermont and New York-Massachusetts State lines. Although many interceptions of quarantined material were made, no Japanese beetles were found.

In the New York area, additional equipment and personnel were added and all stations started operating on a 24-hour basis on May 13. Five Japanese beetle grubs were found in soil at these New York lines during the month, the shipments originating in Pennsylvania and New Jersey and destined to points in New York State.

The reduction in the number of products under regulation as set forth in the Japanese beetle and European corn borer quarantines now effective has reduced inspection work greatly. This fact, together with the poor market conditions, has made possible the carrying on of inspection work with fewer inspectors. The nursery business as a whole fell off considerably and shipments during the month have been largely local.

Necessary inspection and certification of young plants of chrysanthemum, aster, dahlia, and gladiolus on May 1, because of the European corn borer quarantine, increased the field inspection work at some points, particularly on Long Island.

Trapping activities in May included the distribution of 400 traps each in Jacksonville, Fla., Savannah, Augusta, and Atlanta, Ga., Charleston and Columbia, S. C., and Fayetteville, Raleigh, and Wilmington, N. C. Eight hundred traps were placed in Charleston, S. C., and 400 traps were scattered throughout Florence and Sumter, S. C. These traps were placed on various dates from May 2 to 31. Placement of 2,000 additional traps in Washington, D. C., was also begun on May 23. T. C. F. Cronin, formerly of the Boston office, has been detailed to Washington to supervise trap operations in that city. Five trap inspectors will be engaged in tending the Washington traps. Messrs. M. J. Kelly and H. B. Ward, of the South Norwalk headquarters, and J. K. Daley, formerly connected with corn borer activities in New York City, are in the field organizing the trap work in the southern cities. Mr. Kelly started operations in Florida in April and gradually worked north. Supervision of the traps in Florida, Georgia, and South Carolina has been assigned to W. R. Walton, Jr., who has been detailed to that work from the South Norwalk headquarters. When trap operations progressed as far north as South Carolina, Messrs. Ward and Daley were placed in the field to assist in the expanding activities.

Results of analyses of lead arsenate treated nursery plots in classified establishments were made available to the project by the toxological division during the month. In turn this information was furnished to the establishments from which samples had been analyzed, in order that the required amount of lead arsenate might be added to the surface areas to raise their insecticide content to the prescribed dosage of 1,500 pounds per acre in the upper 3 inches of soil throughout the plot. According to treating instructions, the additional lead must be incorporated with the soil before July 1. Plants growing in plots so treated for two successive years may be dug and shipped under certification on or after September 20. Stock from plots treated for the first time by July 1 are not eligible for certification until October 1. Lead arsenate applications and mixture of the material with the upper 3 inches of soil are performed under the supervision of an inspector, who prepares detailed maps of the treated section and properly marks the same with appropriate stakes.

At the invitation of M. S. Yeomans, Georgia State Entomologist, Mr. Worthley, on May 23, gave a talk on the Japanese beetle and European corn borer activities to Georgia extension workers and a number of interested officials and individuals. The meeting was held in the Henry Grady Hotel at Atlanta. All county agents of the State were called in for the occasion. In addition to discussing control measures for both insects and replying to numerous questions asked by the extension men, the two corn borer films, "Uncle Jake Wakes Up" and "The Corn and The Borer," together with the reel entitled "Stopping the Japanese Beetle," were also shown. En route to Atlanta, Mr. Worthley conferred with the Maryland State officials at College Park. In conjunction with the Georgia trip, visits were made to the trapped areas in Jacksonville, Fla., Savannah and Atlanta, Ga., and Charleston, N. C.

Determination of larvae removed from plant material surrendered during May at Japanese beetle road posts disclosed 47 Japanese beetle grubs intercepted while en route to uninfested territory. Twenty lots of plant material among those left at road posts were found to be infested. A lot of 28 shrubs en route from Union City, N. J., to central Pennsylvania, yielded 9 grubs. Five grubs were removed from a number of plants intercepted while being transported from Fayetteville, Pa., to Pittsburgh. A single azalea plant surrendered by a motorist driving from Philadelphia to Johnstown, Pa., was found to contain 5 grubs. Soil accompanying 8 plants in possession of a motorist from eastern Pennsylvania destined to LeRoy Lake, Ind., harbored 4 grubs. A Philadelphia-to-Pittsburgh-bound motorist also surrendered a number of plants later found to contain 4 larvae. Infested plants destined to four Ohio cities were among the interceptions.

Wooden inspection tables on which farm products may be inspected have been constructed at the South Norwalk headquarters and delivered to points at which inspection centers will be established upon the opening of the quarantine on certain farm products effective June 15.

While it has been possible on account of the reduction in the types of

farm products under quarantine to curtail the personnel assigned to this phase of the summer's activities at the older established farm products inspection points, any such reduction in force is offset by the fact that the movement of quarantined farm products is restricted from the entire regulated area, whereas last year's regulations restricted the movement of these articles only from the generally infested area, permitting their free movement from the lightly infested area which comprised a considerable portion of the now single, continuous regulated area.

Curricula have been prepared and instructors secured for the annual school for inspectors to be held in two duplicated sections from June 1 to 3 and 6 to 8, at the New Jersey district headquarters at White Horse. The toxological division's chemical laboratory will be used as a class room. Lecturers are largely drawn from the Moorestown, N. J., Japanese beetle research laboratory and from the permanent Japanese beetle quarantine force. Those in attendance this year will not be confined to the New Jersey personnel but will include such of the permanent force from adjoining States as can be spared for the time necessary to attend the classes. As in previous years, the opening session of both sections will be addressed by New Jersey Secretary of Agriculture William B. Duryee.

A number of roadside stands located near the District of Columbia-Maryland line are selling uncertified evergreens and perennials, some of which appear to have originated in the densely infested Japanese beetle area. Since a considerable quantity of this possibly-infested stock might logically be removed to suburban Maryland points by purchasers transporting their plants in ignorance of the Japanese beetle quarantine regulations, a number of road inspectors have been stationed on the principal highways leading from the District into Maryland. These men have been successful in turning back for certification quantities of uncertified stock and in warning truckers and others against transporting uncertified quarantined articles into uninfested territory in Maryland. These inspectors were first stationed at the District line on May 20.

A good stand of smartweed is in evidence on the acre plot seeded to this attractive beetle food plant on the grounds of the White Horse, N. J., headquarters. Only two of the six Philadelphia vacant lots cleared and broadcasted with this seed show fair germination and are making good growth. The other lots, due to their having been used as dumping or baseball grounds, have had most of their surfaces so badly packed or have been in such constant use as playgrounds that no opportunity has been afforded for smartweed growth. Late in the month all rubbish and stones were removed from the Philadelphia lots so that several thousand potted smartweed seedlings grown in coldframes at White Horse may be set out to furnish the beetle's food supply in the summer's smartweed-arsenate of lead-trapping demonstration.

Unusual interest in Japanese beetle trapping activities was recently evidenced by a crew on a booster engine in the Seaboard Air Line freight yards at Jacksonville, Fla. The booster train was stopped for a few minutes to permit a trainman to run across the yards and inform a trap inspector that a trap

Results of analyses of lead arsenate treated nursery plots in classified establishments were made available to the project by the toxological division during the month. In turn this information was furnished to the establishments from which samples had been analyzed, in order that the required amount of lead arsenate might be added to the surface areas to raise their insecticide content to the prescribed dosage of 1,500 pounds per acre in the upper 3 inches of soil throughout the plot. According to treating instructions, the additional lead must be incorporated with the soil before July 1. Plants growing in plots so treated for two successive years may be dug and shipped under certification on or after September 20. Stock from plots treated for the first time by July 1 are not eligible for certification until October 1. Lead arsenate applications and mixture of the material with the upper 3 inches of soil are performed under the supervision of an inspector, who prepares detailed maps of the treated section and properly marks the same with appropriate stakes.

At the invitation of M. S. Yeomans, Georgia State Entomologist, Mr. Worthley, on May 23, gave a talk on the Japanese beetle and European corn borer activities to Georgia extension workers and a number of interested officials and individuals. The meeting was held in the Henry Grady Hotel at Atlanta. All county agents of the State were called in for the occasion. In addition to discussing control measures for both insects and replying to numerous questions asked by the extension men, the two corn borer films, "Uncle Jake Wakes Up" and "The Corn and The Borer," together with the reel entitled "Stopping the Japanese Beetle," were also shown. En route to Atlanta, Mr. Worthley conferred with the Maryland State officials at College Park. In conjunction with the Georgia trip, visits were made to the trapped areas in Jacksonville, Fla., Savannah and Atlanta, Ga., and Charleston, N. C.

Determination of larvae removed from plant material surrendered during May at Japanese beetle road posts disclosed 47 Japanese beetle grubs intercepted while en route to uninfested territory. Twenty lots of plant material among those left at road posts were found to be infested. A lot of 28 shrubs en route from Union City, N. J., to central Pennsylvania, yielded 9 grubs. Five grubs were removed from a number of plants intercepted while being transported from Fayetteville, Pa., to Pittsburgh. A single azalea plant surrendered by a motorist driving from Philadelphia to Johnstown, Pa., was found to contain 5 grubs. Soil accompanying 8 plants in possession of a motorist from eastern Pennsylvania destined to LeRoy Lake, Ind., harbored 4 grubs. A Philadelphia-to-Pittsburgh-bound motorist also surrendered a number of plants later found to contain 4 larvae. Infested plants destined to four Ohio cities were among the interceptions.

Wooden inspection tables on which farm products may be inspected have been constructed at the South Norwalk headquarters and delivered to points at which inspection centers will be established upon the opening of the quarantine on certain farm products effective June 15.

While it has been possible on account of the reduction in the types of

farm products under quarantine to curtail the personnel assigned to this phase of the summer's activities at the older established farm products inspection points, any such reduction in force is offset by the fact that the movement of quarantined farm products is restricted from the entire regulated area, whereas last year's regulations restricted the movement of these articles only from the generally infested area, permitting their free movement from the lightly infested area which comprised a considerable portion of the now single, continuous regulated area.

Curricula have been prepared and instructors secured for the annual school for inspectors to be held in two duplicated sections from June 1 to 3 and 6 to 8, at the New Jersey district headquarters at White Horse. The toxological division's chemical laboratory will be used as a class room. Lecturers are largely drawn from the Moorestown, N. J., Japanese beetle research laboratory and from the permanent Japanese beetle quarantine force. Those in attendance this year will not be confined to the New Jersey personnel but will include such of the permanent force from adjoining States as can be spared for the time necessary to attend the classes. As in previous years, the opening session of both sections will be addressed by New Jersey Secretary of Agriculture William B. Duryee.

A number of roadside stands located near the District of Columbia-Maryland line are selling uncertified evergreens and perennials, some of which appear to have originated in the densely infested Japanese beetle area. Since a considerable quantity of this possibly-infested stock might logically be removed to suburban Maryland points by purchasers transporting their plants in ignorance of the Japanese beetle quarantine regulations, a number of road inspectors have been stationed on the principal highways leading from the District into Maryland. These men have been successful in turning back for certification quantities of uncertified stock and in warning truckers and others against transporting uncertified quarantined articles into uninfested territory in Maryland. These inspectors were first stationed at the District line on May 20.

A good stand of smartweed is in evidence on the acre plot seeded to this attractive beetle food plant on the grounds of the White Horse, N. J., headquarters. Only two of the six Philadelphia vacant lots cleared and broadcasted with this seed show fair germination and are making good growth. The other lots, due to their having been used as dumping or baseball grounds, have had most of their surfaces so badly packed or have been in such constant use as playgrounds that no opportunity has been afforded for smartweed growth. Late in the month all rubbish and stones were removed from the Philadelphia lots so that several thousand potted smartweed seedlings grown in coldframes at White Horse may be set out to furnish the beetle's food supply in the summer's smartweed-arsenate of lead-trapping demonstration.

Unusual interest in Japanese beetle trapping activities was recently evidenced by a crew on a booster engine in the Seaboard Air Line freight yards at Jacksonville, Fla. The booster train was stopped for a few minutes to permit a trainman to run across the yards and inform a trap inspector that a trap

which had been set up two days previously was full of beetles. Examination of the trap disclosed a small quantity of miscellaneous beetles, but no Popillia japonica.

Economy is being practiced in the use of Japanese beetle certificates so that the present supply will last until July 1. Certificates being printed for use during the next fiscal year include a number of changes which will require the abandonment of the present type. A supply of the now used certificates sufficient only for the needs during June is on hand.

Numerous requests are being received at the Oakmont, Pa., office for information on the treatment of sod for the destruction of Japanese beetle grubs.

Baltimore's new Post Office and Court House Building at the corner of Calvert and Fayette Streets will be officially opened on June 3. Office space has been assigned in this new Federal building for the Baltimore Japanese beetle quarantine office, which now occupies leased quarters at 301 East North Avenue. Officials in charge of the formal opening of the new building ask to have a representative of the quarantine office in attendance at the new quarters with a Japanese beetle exhibit so that the activities of the project may be explained to those present at the opening festivities. Removal of the present Baltimore office to the new quarters will be effected before the beginning of the next fiscal year.

MEXICAN FRUIT WORM

The operation of some 5,600 fly traps resulted in the taking of 5 adult Mexican fruit flies on the American side of the Rio Grande during May. These flies were taken in four groves, three of which had previously been reported as infested. No infestation had been previously reported from the other grove, which is located about $6\frac{1}{2}$ miles from the nearest previously reported infestation. Fermenting malt was used principally as the bait in the traps; however, several other attractants, including fermenting corn meal, blackstrap molasses, synthetic orange extract, and fresh fruit juices, were tried out.

In addition to the Anastrepha ludens taken in the traps, 181 adult A. pallens were also taken. The population of pallens seems to have decreased considerably since, with a considerably larger number of traps in operation, the take of pallens showed a decrease of 536 adults from the number taken in April. This fly seems to occur wherever the La Coma plant grows. Larvae were taken during the month as far west as Zapata and as far north as Raymondville.

Mangoes reaching the Matamoros market are found to be heavily infested with larvae of the Mexican fruit fly. All fruit reaching Matamoros is examined by the Mexican inspector before being released from the express office. Any

fruit which shows evidence of being infested is confiscated and after being inspected is destroyed. From 362 mangoes confiscated on arrival, 1,447 larvae of ludens were taken. This procedure seems to be fairly safe since only 19 larvae of the fruit fly were recovered from fruit which was released to the merchants after examination. Sixteen larvae were taken from oranges reaching Matamoros during the month.

The operation of traps in Matamoros resulted in taking two adult Mexican fruit flies during May. One of these was taken in a trap baited with stale beer, and the other in a trap baited with orange extract. Upon finding these specimens, the application of poison bait spray was immediately inaugurated in the four blocks surrounding each infested premise.

The inspection of locally-produced fruit in Matamoros continued to give negative results. The number of ripe sour oranges on the trees is decreasing rapidly. The fruit on the two trees of white sapotes are fully ripe, peaches are beginning to ripen, and the guavas are about one-half ripe. No infestation was found in any of these fruits.

A total of 2,033 specimens were identified during the month. These were taken in 202 collections. Of these, 1,743 were specimens of *Anastrepha*. Only those specimens that might be mistaken for *Anastrepha*, or that are of rare occurrence, are submitted for identification. Considerable difficulty has been experienced in keeping ants out of the traps. Ants and spiders are particularly bad in destroying flies caught in the traps.

The shipment of sterilized fruit held in the Valley was completed during the month. During the shipping season just ended approximately 8,000 cars of fruit were permitted out of the quarantined area. Of this amount approximately 23 per cent was transported by truck. While the majority of fruit hauled by truck went to points in Texas, Oklahoma, and Louisiana, a number of truckers made regular trips to Kansas, Missouri, Illinois, and other States. A larger percentage of the fruit would have been hauled by truck had it not been for the closing of the Southern and Western States to all but sterilized fruit during the latter part of March.

A considerable amount of unsterilized fruit is still held in storage in the Valley. This necessitated the maintenance of the road traffic inspection stations during the month. The Rio Grande City station was carried on as a mobile patrol, part of the time being spent on the ranch roads and part on the main highway. No deliberate attempts to evade the quarantine were encountered during the month.

PINK BOLLWORM

The work of removing stub or volunteer cotton from the two infested areas in the Salt River Valley of Arizona is now well under way. At a conference held at the Governor's office on May 12, final arrangements were completed

and on the following day the Governor issued an emergency proclamation appropriating \$9,500 for this work. This fund will serve a twofold purpose--the removal of stub cotton and alleviation to a small degree of the condition of unemployment in the Salt River Valley. The Governor has insisted that only bona fide citizens of Arizona of at least one year's continuous residence shall be employed, with preference being given to men who have dependents, and in so far as possible residents of the districts affected. At first it was planned to give each man one week's work, but due to the large number of persons registering for employment, it has been necessary to reduce the time to three days.

On May 16 the clean-up was begun in the Laveen area, and completed at the end of that week. Approximately 500 acres were cleaned. The following week work was begun in the area southeast of Chandler. At the close of the month over 600 acres had been cleaned in this area.

Inspectors went over many of the fields before they were cleaned and removed all squares and blooms from the volunteer plants. So far some 2,000 squares have thus been collected and examined without any traces of the pink bollworm having been found. Squares on the volunteer plants are now becoming more numerous, and when the clean-up is completed a rather thorough inspection of the area will have been made.

Certain fields have been selected in various localities of the Salt River Valley in which to watch the developments of planted cotton. The first squares were noticed in two fields about the third week of May which had been planted in late February and early March. It is thought now that the cotton will be far enough advanced for field inspections to begin about the middle of June.

The first pink bollworms of the season were found in the Big Bend of Texas on May 25. A number of stalks of volunteer cotton were found in an alfalfa field which had been planted to cotton last season. A few of the stalks were beginning to fruit. About 50 squares were inspected and 2 small larvae were found. Further inspections are planned, but in all probability the alfalfa will be cut before the majority of the plants reach the fruiting stage.

During the month, 154,825 green bolls were inspected at the San Antonio laboratory with negative results. These bolls had previously been collected in 8 counties in Alabama and 18 in Georgia.

At the El Paso laboratory 582 1-pound samples of unsterilized seed were inspected. Specimens of the pink bollworm were found in five samples from Dona Ana County, N. Mex., and seven from El Paso County, Tex. The latter part of the month the inspection of samples originating outside of the regulated area was begun. A total of 330 samples from Arkansas, Louisiana, Oklahoma, and Texas were inspected, with negative results. These samples were collected during the past winter and shipped to El Paso.

The inspection of unsterilized seed samples was begun at the Alpine laboratory during the month. The first samples inspected were from the heavily infested Big Bend area. From 52½ pounds of seed inspected, 1,111 pink bollworms were taken, 296 of which were alive and 815 dead. One especially interesting fact was noted in connection with the above inspections. About 42 per cent of the specimens taken from the Ochoa seed were alive, while only 9 per cent were alive in the Presidio samples, the same amount of seed being inspected from each locality. In seeking an explanation of this it was found that the Ochoa seed was collected on December 11, while the Presidio samples were not collected until December 31. If there was a corresponding difference in the dates the cotton was picked, the Presidio specimens would thus have been exposed to weather conditions almost three weeks longer than the others. Samples from the lightly infested districts were also inspected. The results were negative for the Midland, Tex., district, but two specimens were found in samples from the Pecos Valley--one from New Mexico and one from Texas. Some of the samples collected outside of the regulated area were shipped to Alpine. After completing the inspection of samples from the regulated area, the samples from outside the area were begun. The results were negative, 62 pounds of seed originating in the States of Arkansas and Tennessee having been inspected.

In a previous News Letter it was reported that all of the oil mills had closed for the season. During the month it was discovered that some of the stored seed at the Las Cruces, N. Mex., mill was beginning to heat. As a result this mill was forced to run about two weeks in order to take care of the heated seed. The heating began in the center of the building, and was not discovered until a large volume of the seed had become affected. It is thought that a load of wet seed was dumped into the building, its condition not being noticed at the time of unloading.

The progress of the *Thurberia* plant and weevil survey in southeastern Arizona has been very satisfactory. Two plant colonies in the Black Hills, in Pinal County, were found to be infested with weevils during the month. These plants were first reported a number of years ago and they have since been inspected on several occasions, but no infestations were found until the present ones. The infestations are in two different canyons on the western slope of Black Mountain, which is a part of the Black Hills Range. Observations indicate that there will undoubtedly be a very large carryover of live weevils in the plant colonies thus far found to be infested. Conditions are favorable for an early emergence, as most of the plants are now making rapid growth, with buds already beginning to appear. In this connection it is interesting to note that no cotton will be planted at Eloy this season; also that no volunteer growth has been noticed in any of last year's cotton fields. It will be recalled that weevils were found in cotton in this locality last season for the first time.

PREVENTING SPREAD OF MOTHS

With the exception of a crew scouting in Sheffield, Mass., and another working in Canaan, Conn., scouting work in the southwestern portion of Massachusetts and the northwestern part of Connecticut, in the barrier zone, was concluded by May 31. Scouting by the 40-foot strip method was continued during the month in Vermont. It is expected that this work will be continued until the close of the current fiscal year. Thirty-four agents, who were engaged in intensive scouting work in Massachusetts and Connecticut, were transferred to Vermont. By the first of June, there were 7 crews scouting in Vermont distributed in the following towns: Danby, Orwell, Shoreham, and Wells.

Up to and including May 28, there has been found by the Federal force in the barrier-zone area of southwestern Massachusetts and northwestern Connecticut, a total of 67 infested sites aggregating 885 new gipsy moth egg clusters. The towns infested in this portion of Massachusetts are New Marlboro, Otis, Sandisfield, Sheffield, and Tyringham. In Connecticut, the barrier-zone towns infested are Canaan, Norfolk, North Canaan, Salisbury, and Warren. The farthest infested point in the barrier-zone area this year, in relation to the New York State line, is approximately 15 miles east of it. Salisbury, Conn., borders on the New York State line.

All of the egg clusters found this year have been treated with creosote. In addition to this, chopping of undesirable trees and brush and clean-up work have supplemented this treatment at some of the infested sites when the conditions surrounding the infested area warranted it.

The first gipsy moth egg clusters were observed hatching this year on May 2. Hatching became general about May 9 and the maximum hatch occurred about May 13. These observations were made in several places east of the barrier zone.

The month of May has been a very busy one on this project. Additional help was engaged for temporary work to assist in the spraying program planned for this season. Ten crews of these men were engaged in erecting temporary barbed wire fences to inclose areas that are to be sprayed. These fences give the fullest protection possible to the property owners, who signed spraying permits, by preventing live stock from grazing on the poisoned foliage. Unused cart roads or trails were looked over to insure that they were in condition to support the weight of the sprayer trucks that travel over them to reach the most advantageous locations in relation to the area that is to be sprayed. Six trucks, equipped with commercial bodies, have been transferring hose, arsenate of lead, fish oil, and other spraying supplies from Greenfield to temporary storage points in the infested barrier-zone area in Massachusetts and Connecticut. All the sprayer trucks, completely equipped with repair tools and spraying appliances, have been driven to the operating locations in the field. These locations are in the infested areas of northwestern Connecticut and southwestern Massachusetts. Nearly 132,000 feet of high pressure 1-inch spray hose was delivered to various points in the field. This hose has been laid out at the

various infestations found this year. On several occasions over a mile of hose has been laid in order to spray the infestations. The laying of the hose to spray the infestations found on Canaan Mountain in Connecticut was an arduous task. Ordinarily a length of spray hose, which is 50 feet long, and weighs approximately 55 pounds with the couplings attached, can be readily carried by a man. In places on this mountain it was a slow and persevering job for a man to carry a length of hose up the mountainside on account of the steep elevation. On several occasions the men had to crawl on their hands and knees. Although the mountains in this vicinity range from approximately 1,000 to 1,500 feet or more above sea level, the climb to the summits is very steep. The peaks loom up abruptly from the roadside. Rattlesnakes infest these mountains and seven of these venomous reptiles were killed by one crew. The largest specimen killed measured approximately 5 feet in length.

All preparations were completed in May so that spraying work in the infested portion of the New England barrier zone will start on June 1, weather permitting. By June 6 it is expected that all of the spraying equipment, which includes 2 model AA Ford sprayer trucks, and 26 heavier sprayer trucks, will be in operation.

In addition to these sprayer trucks, there were four machines loaned to the New York Conservation Department for spraying work on Long Island. En route to the latter place, one truck sprayed the infestation found this year at Rye, Westchester County, N. Y., which consisted of six new egg clusters. Another truck sprayer en route to Roslyn, L. I., treated the infestation of a single new egg cluster discovered near Creedmoor, Queens County, L. I. At the end of May, the New York Conservation Department was spraying in North Hempstead and Oyster Bay, Nassau County, L. I. This Department also carried on scouting work in Washington and Rensselaer Counties in the north central portion of the New York State barrier-zone area.

A supply truck transferred to Greenfield practically all of the supplies and equipment owned by this project that were left at the storehouse in Bound Brook, N. J. This substation will be closed on July 1.

The weather has been very favorable for field activities during May because there was very little rain. The lack of rain, however, is responsible for a dangerous forest fire hazard which exists now in New England and New York. The States of Maine, New Hampshire, and New York have closed the woods to the public until conditions are improved. This fire hazard has become so menacing that the gipsy moth employees were instructed to refrain from smoking and to omit carrying smoking materials and matches with them while engaged in work in the open until further orders.

To supplement the scouting work which was concluded during April in New Jersey, it is planned to put out approximately 3,000 assembling cages before July 1 in about 70 townships. Most of these townships are located beyond the area that has previously been scouted for the gipsy moth. The assembling cage is a raw edge tin can without a cover or bead and measures 2-5/16 inches in

PREVENTING SPREAD OF MOTHS

With the exception of a crew scouting in Sheffield, Mass., and another working in Canaan, Conn., scouting work in the southwestern portion of Massachusetts and the northwestern part of Connecticut, in the barrier zone, was concluded by May 31. Scouting by the 40-foot strip method was continued during the month in Vermont. It is expected that this work will be continued until the close of the current fiscal year. Thirty-four agents, who were engaged in intensive scouting work in Massachusetts and Connecticut, were transferred to Vermont. By the first of June, there were 7 crews scouting in Vermont distributed in the following towns: Danby, Orwell, Shoreham, and Wells.

Up to and including May 28, there has been found by the Federal force in the barrier-zone area of southwestern Massachusetts and northwestern Connecticut, a total of 67 infested sites aggregating 885 new gipsy moth egg clusters. The towns infested in this portion of Massachusetts are New Marlboro, Otis, Sandisfield, Sheffield, and Tyringham. In Connecticut, the barrier-zone towns infested are Canaan, Norfolk, North Canaan, Salisbury, and Warren. The farthest infested point in the barrier-zone area this year, in relation to the New York State line, is approximately 15 miles east of it. Salisbury, Conn., borders on the New York State line.

All of the egg clusters found this year have been treated with creosote. In addition to this, chopping of undesirable trees and brush and clean-up work have supplemented this treatment at some of the infested sites when the conditions surrounding the infested area warranted it.

The first gipsy moth egg clusters were observed hatching this year on May 2. Hatching became general about May 9 and the maximum hatch occurred about May 13. These observations were made in several places east of the barrier zone.

The month of May has been a very busy one on this project. Additional help was engaged for temporary work to assist in the spraying program planned for this season. Ten crews of these men were engaged in erecting temporary barbed wire fences to inclose areas that are to be sprayed. These fences give the fullest protection possible to the property owners, who signed spraying permits, by preventing live stock from grazing on the poisoned foliage. Unused cart roads or trails were looked over to insure that they were in condition to support the weight of the sprayer trucks that travel over them to reach the most advantageous locations in relation to the area that is to be sprayed. Six trucks, equipped with commercial bodies, have been transferring hose, arsenate of lead, fish oil, and other spraying supplies from Greenfield to temporary storage points in the infested barrier-zone area in Massachusetts and Connecticut. All the sprayer trucks, completely equipped with repair tools and spraying appliances, have been driven to the operating locations in the field. These locations are in the infested areas of northwestern Connecticut and southwestern Massachusetts. Nearly 132,000 feet of high pressure 1-inch spray hose was delivered to various points in the field. This hose has been laid out at the

various infestations found this year. On several occasions over a mile of hose has been laid in order to spray the infestations. The laying of the hose to spray the infestations found on Canaan Mountain in Connecticut was an arduous task. Ordinarily a length of spray hose, which is 50 feet long, and weighs approximately 55 pounds with the couplings attached, can be readily carried by a man. In places on this mountain it was a slow and persevering job for a man to carry a length of hose up the mountainside on account of the steep elevation. On several occasions the men had to crawl on their hands and knees. Although the mountains in this vicinity range from approximately 1,000 to 1,500 feet or more above sea level, the climb to the summits is very steep. The peaks loom up abruptly from the roadside. Rattlesnakes infest these mountains and seven of these venomous reptiles were killed by one crew. The largest specimen killed measured approximately 5 feet in length.

All preparations were completed in May so that spraying work in the infested portion of the New England barrier zone will start on June 1, weather permitting. By June 6 it is expected that all of the spraying equipment, which includes 2 model AA Ford sprayer trucks, and 26 heavier sprayer trucks, will be in operation.

In addition to these sprayer trucks, there were four machines loaned to the New York Conservation Department for spraying work on Long Island. En route to the latter place, one truck sprayed the infestation found this year at Rye, Westchester County, N. Y., which consisted of six new egg clusters. Another truck sprayer en route to Roslyn, L. I., treated the infestation of a single new egg cluster discovered near Creedmoor, Queens County, L. I. At the end of May, the New York Conservation Department was spraying in North Hempstead and Oyster Bay, Nassau County, L. I. This Department also carried on scouting work in Washington and Rensselaer Counties in the north central portion of the New York State barrier-zone area.

A supply truck transferred to Greenfield practically all of the supplies and equipment owned by this project that were left at the storehouse in Bound Brook, N. J. This substation will be closed on July 1.

The weather has been very favorable for field activities during May because there was very little rain. The lack of rain, however, is responsible for a dangerous forest fire hazard which exists now in New England and New York. The States of Maine, New Hampshire, and New York have closed the woods to the public until conditions are improved. This fire hazard has become so menacing that the gipsy moth employees were instructed to refrain from smoking and to omit carrying smoking materials and matches with them while engaged in work in the open until further orders.

To supplement the scouting work which was concluded during April in New Jersey, it is planned to put out approximately 3,000 assembling cages before July 1 in about 70 townships. Most of these townships are located beyond the area that has previously been scouted for the gipsy moth. The assembling cage is a raw edge tin can without a cover or bead and measures 2-5/16 inches in

PREVENTING SPREAD OF MOTHS

With the exception of a crew scouting in Sheffield, Mass., and another working in Canaan, Conn., scouting work in the southwestern portion of Massachusetts and the northwestern part of Connecticut, in the barrier zone, was concluded by May 31. Scouting by the 40-foot strip method was continued during the month in Vermont. It is expected that this work will be continued until the close of the current fiscal year. Thirty-four agents, who were engaged in intensive scouting work in Massachusetts and Connecticut, were transferred to Vermont. By the first of June, there were 7 crews scouting in Vermont distributed in the following towns: Danby, Orwell, Shoreham, and Wells.

Up to and including May 28, there has been found by the Federal force in the barrier-zone area of southwestern Massachusetts and northwestern Connecticut, a total of 67 infested sites aggregating 885 new gipsy moth egg clusters. The towns infested in this portion of Massachusetts are New Marlboro, Otis, Sandisfield, Sheffield, and Tyringham. In Connecticut, the barrier-zone towns infested are Canaan, Norfolk, North Canaan, Salisbury, and Warren. The farthest infested point in the barrier-zone area this year, in relation to the New York State line, is approximately 15 miles east of it. Salisbury, Conn., borders on the New York State line.

All of the egg clusters found this year have been treated with creosote. In addition to this, chopping of undesirable trees and brush and clean-up work have supplemented this treatment at some of the infested sites when the conditions surrounding the infested area warranted it.

The first gipsy moth egg clusters were observed hatching this year on May 2. Hatching became general about May 9 and the maximum hatch occurred about May 13. These observations were made in several places east of the barrier zone.

The month of May has been a very busy one on this project. Additional help was engaged for temporary work to assist in the spraying program planned for this season. Ten crews of these men were engaged in erecting temporary barbed wire fences to inclose areas that are to be sprayed. These fences give the fullest protection possible to the property owners, who signed spraying permits, by preventing live stock from grazing on the poisoned foliage. Unused cart roads or trails were looked over to insure that they were in condition to support the weight of the sprayer trucks that travel over them to reach the most advantageous locations in relation to the area that is to be sprayed. Six trucks, equipped with commercial bodies, have been transferring hose, arsenate of lead, fish oil, and other spraying supplies from Greenfield to temporary storage points in the infested barrier-zone area in Massachusetts and Connecticut. All the sprayer trucks, completely equipped with repair tools and spraying appliances, have been driven to the operating locations in the field. These locations are in the infested areas of northwestern Connecticut and southwestern Massachusetts. Nearly 132,000 feet of high pressure 1-inch spray hose was delivered to various points in the field. This hose has been laid out at the

various infestations found this year. On several occasions over a mile of hose has been laid in order to spray the infestations. The laying of the hose to spray the infestations found on Canaan Mountain in Connecticut was an arduous task. Ordinarily a length of spray hose, which is 50 feet long, and weighs approximately 55 pounds with the couplings attached, can be readily carried by a man. In places on this mountain it was a slow and persevering job for a man to carry a length of hose up the mountainside on account of the steep elevation. On several occasions the men had to crawl on their hands and knees. Although the mountains in this vicinity range from approximately 1,000 to 1,500 feet or more above sea level, the climb to the summits is very steep. The peaks loom up abruptly from the roadside. Rattlesnakes infest these mountains and seven of these venomous reptiles were killed by one crew. The largest specimen killed measured approximately 5 feet in length.

All preparations were completed in May so that spraying work in the infested portion of the New England barrier zone will start on June 1, weather permitting. By June 6 it is expected that all of the spraying equipment, which includes 2 model AA Ford sprayer trucks, and 26 heavier sprayer trucks, will be in operation.

In addition to these sprayer trucks, there were four machines loaned to the New York Conservation Department for spraying work on Long Island. En route to the latter place, one truck sprayed the infestation found this year at Rye, Westchester County, N. Y., which consisted of six new egg clusters. Another truck sprayer en route to Roslyn, L. I., treated the infestation of a single new egg cluster discovered near Creedmoor, Queens County, L. I. At the end of May, the New York Conservation Department was spraying in North Hempstead and Oyster Bay, Nassau County, L. I. This Department also carried on scouting work in Washington and Rensselaer Counties in the north central portion of the New York State barrier-zone area.

A supply truck transferred to Greenfield practically all of the supplies and equipment owned by this project that were left at the storehouse in Bound Brook, N. J. This substation will be closed on July 1.

The weather has been very favorable for field activities during May because there was very little rain. The lack of rain, however, is responsible for a dangerous forest fire hazard which exists now in New England and New York. The States of Maine, New Hampshire, and New York have closed the woods to the public until conditions are improved. This fire hazard has become so menacing that the gipsy moth employees were instructed to refrain from smoking and to omit carrying smoking materials and matches with them while engaged in work in the open until further orders.

To supplement the scouting work which was concluded during April in New Jersey, it is planned to put out approximately 3,000 assembling cages before July 1 in about 70 townships. Most of these townships are located beyond the area that has previously been scouted for the gipsy moth. The assembling cage is a raw edge tin can without a cover or bead and measures 2-5/16 inches in

diameter and 1-1/2 inches high, outside measurement. All of the seams are soldered and the cans have a round hole one-sixteenth of an inch in diameter punched on the side opposite to the seam, 1 inch from the bottom.

In order to avoid the necessity for increasing the personnel in New Jersey, all of the preliminary work connected with this measure was begun soon after the middle of May so that these cages will be in working order prior to the time when the male moths are in flight. The assembling cage tins were nailed to the trees and the tanglefoot which surrounds them was smeared on. All necessary notes and maps showing the cage locations were prepared. This will simplify the process of finding the cages at later dates when baiting and inspections of them are made. When the area involved is caged in this manner, it will only be necessary to place the male gipsy moth attractant into the tin. This is accomplished by saturating a wad of absorbent cotton from a vial of benzol which contains approximately 30 posterior abdominal ends of unfertilized female gipsy moths. Before clipping the posterior abdominal ends of the female moths, they are held for about 24 hours after emerging from the pupae. This increases the attracting power of the material. After the cotton is saturated, it is placed inside of the tin, which is then inverted to prevent as far as possible the entrance of rain. Owing to the fact that the gipsy moth reaches the adult stage earlier in New Jersey than it does in New England and because there are no gipsy moths known to exist in New Jersey, it is necessary to use an attractant prepared from collections made in New England during the previous year and which is held over in cold storage at a temperature of about 32° F.

Much of the area covered in May in placing the assembling cages was situated in the New Jersey pine belt. This section is in the south central part of the State and south of the area scouted for the gipsy moth in previous years. It is very difficult to operate an automobile off the main traveled roads in this region because there are many unimproved roads here which are mostly sand. Innumerable sand roads do not show on the blueprint maps. This area is also unfamiliar to our employees as no work was ever carried on in these townships by this project and it is sparsely settled. In some sections of this pine belt area, where the sand roads are located, it is necessary to paint arrows on the trees at the junctions of the roads so that the cages can readily be found again.

In view of the fact that New Jersey is now considered free from gipsy moth infestation, the State gipsy moth quarantine, regulating the movement of materials likely to carry the insect, was lifted on May 4.

On Long Island, there were 385 lots offered for inspection. These consisted of 5,110 trees, 9,844 shrubs, 36 vines, 13 boxes and 1 bundle of nursery products, and 25 pieces of stone. This is an increase in the volume of inspection required in May over the previous month. All of this material was certified for shipment as none of it was infested with the gipsy moth.

The quarantine records of this project showing the actual number of gipsy

moth egg clusters creosoted and removed from material presented for inspection in New England do not indicate the full value of protection given to States outside of the quarantined area. This was illustrated by a recent lumber shipment from Saco, Me., to Long Island, N. Y. In this particular shipment 134,000 feet of lumber were inspected. The lumber was transported by truck from numerous lumber yards to the docks at Saco to be loaded on a boat. Only four truck loads of this lumber were infested, eight gipsy moth egg clusters being creosoted and removed. The remainder of the consignment was taken from yards that were free from gipsy moth infestations. The district quarantine inspector was familiar with conditions at the different yards where the lumber was located, and by cooperating with the shipper, was successful in having most of the 134,000 feet of lumber taken from yards that were free from gipsy moth infestation.

Acting upon the advice of the quarantine inspectors, dealers in stone and quarry products, lumber, and sawmill operators pile or store their products in the open as much as possible where there is the least possibility of the material becoming infested. Brush, which might be infested and is located near stone quarries and lumber yards, is cut by the owners. Crating material is selected or purchased from points outside of the quarantined area and stored in accordance with the above recommendations. Usually long-distance shipments are then selected from materials stored under conditions that are very unfavorable for gipsy moth infestation. Local shipments within the quarantined area are chiefly chosen from material that is stored without regard to the possibilities of its becoming infested from near-by growth. The gipsy moth quarantine does not regulate the movement of products likely to carry infestation that originates inside the quarantined area for shipment within the same zone.

It is only by close cooperation with the shippers, a full knowledge of the quarantined district, and the quarantine itself that these precautionary measures are brought about by the district inspectors.

The handling and selling of nursery stock by department stores causes no special difficulty from a gipsy moth quarantine standpoint unless the stores are located near a quarantine border line. The stock is sold and delivered generally for local plantings within a radius of a few miles. The cash-and-carry trade is mostly local. Occasionally, however, customers will order shrubs or evergreens to be sent to their summer homes by parcel post or express.

Hartford, Conn., is located on the border line of the generally infested gipsy moth quarantined area. There are a number of department stores here that sell nursery stock and make deliveries. This past season, during April and May, over 2,000 orders of nursery stock were inspected and certified at the department stores in Hartford for delivery to points west and south in the lightly infested quarantined area. A small number of express and parcel-post shipments were also inspected and certified. Each day the orders of stock to be delivered by the stores are assembled in the shipping departments and the inspectors examine them there.

The continued drought during May resulted in the closing of the woodlands so that the inspection and certification of collected native trees and shrubs in southern New Hampshire was brought to a close. Six carloads and a considerable number of cases and bales of collected stock were inspected and certified in southern New Hampshire during April and May. The material was collected and dug in the woodlands and pastures, then assembled at sheds owned by the collectors, so that inspection and certification could be made.

UNIVERSITY OF FLORIDA



3 1262 09245 0831