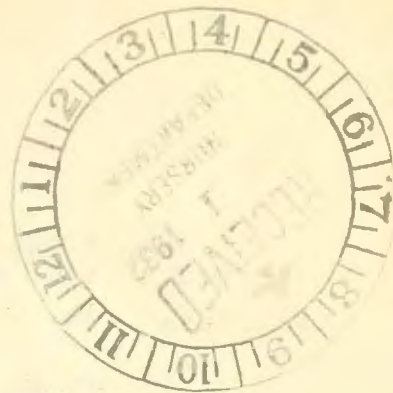


NEWS LETTER

BUREAU OF PLANT QUARANTINE

UNITED STATES DEPARTMENT OF AGRICULTURE

LIBRARY STATE PLANT BOARD



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(NOT FOR PUBLICATION)

October 1, 1932.

TECHNOLOGICAL

Construction has just been completed of a bulb-drying room in the Inspection House in Washington, D. C. The chamber, through which air conditioned as to temperature and humidity is circulated in large volume, is capable of handling a maximum of approximately 80 bushels of bulbs. Due to the construction of the floor and the method of circulating the air through the room, uniform temperature conditions are obtained in all parts of the chamber, permitting any quantity of bulbs up to the maximum to be dried with the same efficiency. A special design of trays in which the bulbs are placed in the room facilitates passage of the conditioned air over and around each individual bulb. Control of temperature is maintained automatically by means of a thermostatically controlled valve in a steam line supplying the heat to the air conditioner. Once adjusted during the drying operation, no further attention is needed in controlling conditions within the room. It is thought that use of this chamber, in connection with treatments accorded material at the Inspection House, will greatly facilitate the handling of large shipments of bulbs. It is also possible that treatments of material other than bulbs might be accomplished in the room.

FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

Fruit fly in cherries.--Living specimens of Rhagoletis cerasi L. (Trypetidae) were intercepted at New York in cherries in stores from Italy.

Aphid on primrose.--Myzus polyanthi Theob. (aphid) was intercepted at Boston on the leaves and root of primrose in the mail from England. This aphid is not known to occur in the continental United States.

Chrysomelid on orchid.--A larva of Prosopodonta corallina Weise (Chrysomelidae) was intercepted at Washington, D. C., on an orchid (Miltonia endresii) leaf in the mail from Costa Rica.

Weevil in turnip.--Larvae of Baris laticollis Marsh (Curculionidae) were intercepted at Philadelphia in turnips in stores from England.

Banana root borer in Puerto Rico.--Three adults of the banana root borer (Cosmopolites sordidus Germ.) were collected on the root and trunk of banana in the field at Ponce, P. R. This weevil is widely distributed in the tropics.

Scolytid from Barbados.--Stephanoderes buscki Hopk. (Scolytidae) was intercepted at Boston in the pod and seed of tamarind in the mail from Barbados.

Gracilariid in bell pepper.--A larva of Marmara sp. (Gracilariidae) was intercepted at Nogales, Ariz., in bell pepper in cargo from Bamoa, Sinaloa, Mexico.

Scolytid in Puerto Rico.--Stephanoderes braziliensis Hopk. (Scolytidae) was collected in a decayed flower stalk of banana in the field at Bayamon, P. R.

Bruchid from Italy.--Bruchidius gilvus (Gyllenhal) (Bruchidae) was intercepted at Philadelphia in sulla (Hedysarum coronarium) seed in the mail from Italy. J. C. Bridwell, of Washington, D. C., states that this bruchid was not previously represented in the collection of the United States National Museum.

Coccid from Honduras and Trinidad.--Aspidiotus palmae Morg. & Ckll. (Coccidae) was intercepted at New Orleans on a banana leaf in cargo from Honduras, and at Washington, D. C., on Ficus benjamina var. comosa in cargo from Trinidad.

Cerambycid in cactus.--Moneilema variolare Thoms. (Cerambycidae) was intercepted at Washington, D. C., in a cactus plant (Astrophytum sp.) in the mail from Saltillo, Mexico.

Weevil in string bean pods.--Larvae of Apion sp. (Curculionidae) were intercepted at Philadelphia in string bean pods in stores from Colombia.

Scolytid in yam.--Adults, pupae, and larvae of Stephanoderes minutus Hopk. (Scolytidae) were intercepted at Philadelphia in yam in baggage from Jamaica.

Red-banded thrips on cashew.--Selenothrips rubrocinctus (Giard) (red-banded thrips) was taken on the leaf of cashew (Anacardium occidentale) in the field at Santurce, P. R. J. R. Watson, of Gainesville, Fla., states that this is a very common thrips in the West Indies and that it also occurs in southern Florida.

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

Aphelenchus subtenuis a synonym.--According to Dr. Steiner, recent work has demonstrated rather conclusively that Aphelenchus subtenuis, which was recently transferred to the genus Aphelenchoides, is in reality only a form of Aphelenchoides fragariae. The News Letter note on page 5 of the November, 1931, issue should be changed accordingly as well as any determination slips or indexes in which this species is given.

Fusarium sp. interceptions.--Interceptions of Fusarium sp. have been more varied than usual for the past month. It is well to keep in mind the fact that Fusarium is a "form genus," so called because it is made up of the conidial stages of a number of different genera in which this stage is similar in form. There are hundreds of species in this form genus, many of them causing serious plant diseases. Months of careful work may be required to determine a specimen and relatively few specialists can determine miscellaneous species at all. Hence very little of our Fusarium material is determined to species.

Aside from the customary numerous interceptions on potato the following interceptions of Fusarium sp. were received during the month: From Argentina on corn cobs, Azores on passiflora fruit, Belgium on orchids, Brazil and Dutch Guiana on string bean pods, England on carrot, France on lily bulbs, Guatemala on bromeliad cones and on string bean pods, Holland on bulbs of crocus, hyacinth, and tulip and on string bean pods, Italy on wheat (this was accompanied by the perfect stage, Gibberella saubinetii) and on garlic bulbs, Jamaica on peppers and red peppers, and Japan on lily bulbs, leek tops, and string beans.

Diseased sugarcane in exhibit.--Pieces of sugarcane in a Puerto Rican exhibit sent to Atlantic City, N. J., were found by inspectors from the Philadelphia office to be badly infected with Melanconium sacchari and were destroyed.

Dwarf mistletoe in New Jersey.--A good specimen of dwarf mistletoe, Arceuthobium (Razoumofsky) pusillum, was collected by one of the special permit field inspectors on Picea mariana transplanted from a bog at Sussex, N. J., to a nursery at Sterlington, N. Y. The nurseryman wanted the inspector to inform him of control measures. Dr. Perley Spaulding, of the Bureau of Plant Industry, who verified the determination, could give no method of control except pruning out affected parts. He was very much interested in material of this pest occurring so far south.

Spider disease.--Included in the material turned over to the Bureau of Plant Industry and added to their collections during the past month were two good specimens of the fungus Gibellula arachnophila, collected in the field by inspectors in Puerto Rico. This fungus attacks spiders of the family Attidae. Specimens occur singly so it is difficult to get an adequate supply of material for specimen purposes.

Black specks on mangosteen leaves.--Mangosteen leaves collected in the field near San Juan, P. R., bore numerous scattered black dots which proved to be the ascoma of a fungus belonging to the family Micropeltaceae (or Hemisphaeriaceae), possibly Phragmothyriella sp. This interesting material was added to the Bureau of Plant Industry collections.

Sphaeronema in Galanthus.--Pycnidia of Sphaeronema sp. were found buried in the roughened, puffy outer scales of Galanthus bulbs from England intercepted at the Inspection House in Washington.

AIRPLANE MISSING INSPECTION GETS INTO TROUBLE

An airplane making a regular trip from Mexico failed to stop for plant quarantine inspection at San Diego, Calif., on July 26, 1932. An investigation of this irregularity was made through the Bureau of Customs, and it developed that the pilot, judging it would be unsafe to land at San Diego on account of fog, had proceeded to Inglewood, from which point he had telephoned the San Diego field. He was advised to return to San Diego for inspection, which he did the same day. The evidence indicated no wilful intent on the part of the pilot to violate entry regulations and no penalty was imposed.

SHIPPING-POINT INSPECTION FOR FRENCH EXPORT FRUIT

In a recent News Letter (June 1, 1932) attention was called to the increased amount of inspection work entailed in certifying apples and pears to meet the requirements of a recent French decree. As a result of these requirements many cars of apples reached the ports last spring and summer which could not be certified to France because of the occurrence of San Jose scale to an extent which, under ordinary conditions, would be considered negligible. In this connection, it will be recalled that under the provisions of the French decree, no fruit is to be certified for that country if San Jose scale is found to any degree whatsoever. In order to enable shippers to get cars of apples and pears for French export to the seaboard with more assurance that they will be eligible for certification and to also avoid the holding up of shipments at the ports because of the lack of personnel to give the necessary thorough inspection with dispatch, an arrangement has been entered into between the Bureau of Agricultural Economics and the Bureau of Plant Quarantine whereby this inspection may be done at shipping point and a memorandum issued which will be accepted at the ports as a basis for issuing the required French sanitary certificate without an additional inspection.

This service was inaugurated in the States of California, Oregon, and Washington during the months of July and August under the supervision of Mr. Becker, who saw the arrangement carried through from shipping point to port. The inspection given is in every respect comparable to that given by plant quarantine inspectors at the ports of departure, and has the additional advantage of making it possible to secure a more representative inspection as the various lots of fruit are loaded as well as to discourage the offering of fruit from localities

or premises which the local inspectors know are likely to be infested with the San Jose scale. If the fruit passes the inspection, the shipping-point inspectors issue the regular Bureau of Agricultural Economics export certificate, and also a special type of memorandum following the general wording of the French export certificate. Whenever inspectors at the ports are offered shipments of fruit covered by the Bureau of Agricultural Economics export certificate to which is attached this memorandum, they are authorized to certify the car in question without an additional inspection for movement to France.

Under the present arrangement there have already been certified approximately 150 cars of apples and pears moving through the ports of Portland and San Francisco. As this News Letter is being prepared the large apple movement from the Pacific Northwest is about to begin and considerable fruit is expected to be certified under this arrangement from this section. Arrangements will also be made to handle eastern apples, particularly those from the Shenandoah Valley, in the same manner. Most of the fruit certified on the basis of shipping-point inspections will move out through the ports of Seattle, Portland, San Francisco, New York, and Baltimore.

WAX COATING ON CUTTINGS HINDERS INSPECTION

According to Peter Bisset, of the Washington Inspection House, there has been in recent years a steady increase in the practice of dipping plant cuttings or even whole plants in melted paraffin wax before shipping. Though the thin coat of wax thus laid over the surface is a distinct aid in conserving moisture during transit, it frequently renders inspection difficult. It might be supposed that the wax coating would effectually lock up all scales or other insects and thus obviate the need for inspection, but much observation of these wax-treated cuttings indicates that the treatment is utterly unreliable in this respect. It constantly happens that the air held around buds or caught in masses of hairs prevents complete penetration of the wax, which in such cases merely hardens over an air-filled cavity. Underneath this dome of wax insects or their eggs may survive successfully, escaping later when bud growth breaks the wax coat. The fact that there is frequently a concentration of insects or their eggs around the buds makes any protective effect of the wax still more doubtful. It is very difficult to detect insects through the waxy covering and the inspector must often resort to warm water to remove enough of the wax to permit inspection to be made.

INSPECTOR PUZZLES OVER PREHISTORIC INCA CORN

Is an ear of corn which has reposed peacefully with a buried Inca for 2,700 years to be considered as corn any longer, or would one regard it as a mere archaeological curiosity, long since having lost its attraction to insects or fungi, and thus being utterly without interest from the plant quarantine viewpoint? And how about a mummified piece of yucca root from the same source? These problems faced a plant quarantine inspector recently at San Pedro, Calif., when an archaeological explorer presented for entry these trophies dug from the

dim past of South America. Apparently the inspector, dazed in the presence of so much antiquity, judged the archaeological aspect of the case to be preponderant, and the relics went on their way. Later he began to have doubts; if "pigs is pigs" then corn must still be corn even though the centuries roll over it. The matter was finally adjusted by the issuance of a formal entry permit for these hoary survivors from the forgotten ages.

FLOODS ON THE MEXICAN BORDER

Flood waters of the Rio Grande during the recent overflow destroyed portions of the foot-bridges at Presidio and Del Rio, and part of the railroad bridge at Laredo. No damage to Bureau property or to the personal belongings of inspectors stationed within the flood area has been reported. It is expected that immediate steps will be taken to repair the damage, and in the meantime traffic between the two countries will be taken care of by boat.

THE MEDITERRANEAN FRUIT FLY DANGER

Among the insects and diseases which foreign quarantines aim to keep out of this country, the Mediterranean fruit fly (Ceratitis capitata) ranks high as an undesirable. It is now spread widely in the world and would undoubtedly be a frequent immigrant here were it not for our enforcement of quarantine measures against its numerous hosts.

As far as mere figures can express it, the following data taken from the inspection record present a truthful picture of the constant danger of introducing this insect, a danger against which quarantine and inspection are the only defense.

During the year ending July 1, 1932, plant quarantine inspectors in 30 ports of entry intercepted 1,866 lots of fruits and vegetables known to be hosts of the Mediterranean fruit fly, all coming from countries where this insect is known to exist. Of these 1,866 intercepted lots, 695 were taken from baggage, 248 were found in cargo, 306 were being sent in mail, 283 were discovered in ships' quarters, and 334 occurred in ships' stores. A total of 27,509 host fruits and vegetables, every one potentially dangerous, were thus intercepted, and to these must be added several miscellaneous bulk lots totaling over 1,000 pounds.

It is interesting to note that while the host fruits and vegetables found in ships' stores and quarters might not have been landed, the 1,249 lots in the other three categories were definitely headed for entry when they were discovered and turned back at the door. These figures ought also to impress anyone who is inclined to think lightly of baggage inspection; 37 per cent of all the year's interceptions were taken from baggage.

DOMESTIC PLANT QUARANTINES

PHONY PEACH DISEASE

Findings of the phony peach disease in one county each of Missouri and Oklahoma are reported by the Bureau of Plant Industry. A number of additional counties outside the previously regulated areas have also been discovered in Arkansas and Texas and one additional county (Pulaski) in Illinois.

TRANSIT INSPECTION

The checking of pine shipments through Spokane, Seattle, Portland, and St. Paul was resumed for the season during the last week of September, and the station at Omaha will be opened early in October.

WHITE PINE BLISTER RUST

The Federal quarantine relating to the prevention of spread of the white pine blister rust within the United States has been revised effective January 1, 1933, to add Iowa, Maryland, Ohio, Virginia, West Virginia, and the District of Columbia to the list of infected States. The embargoes which previously prohibited the shipment of five-leafed pine from the eastern United States to the West and from infected to noninfected States were removed, and the shipment throughout the United States of pines which had been protected against blister rust by means of Ribes eradication was authorized under Federal permit. Under the new regulations, currant and gooseberry plants will hereafter not be required to be disinfected in lime-sulphur solution unless shipped with leaves or active buds.

DATE SCALE

August is probably the most disagreeable month in the desert regions from a climatic standpoint, and a large part of total leave taken on this project is taken during this month. Therefore, inspection is at low ebb. However, considerable territory was covered during the month. In the Coachella Valley 12,751 palms were inspected, 4,899 of them in infested plantings. In the Imperial Valley 5,377 palm inspections were made, and in the Salt River Valley 43 sections were scouted for palms and 5,056 palm inspections made. No scale was found during the month.

No scale has been found in the Coachella Valley, the principal date-growing area, since December, 1931. In the Imperial Valley 3 date palms, 4 fan palms, and 32 Canary Island palms have been found infested during the present calendar year.

EUROPEAN CORN BORER AND JAPANESE BEETLE

Exclusive or Combination Japanese Beetle Work

"Riding the rods" was the assignment of two of the New Jersey personnel late in July and for the first half of August. In cooperation with Dr. I. M. Hawley, in charge of the ecological division of the Japanese beetle research laboratory, and with the consent of the freight officials of the Pennsylvania Railroad Co., the two men made a number of trips in freight cars to determine temperature and humidity conditions in the cars during the period of adult beetle flight and to accumulate data concerning the percentage of adult beetle survival in long distance and short haul freight. Beginning July 26, one of the men made successive trips from Philadelphia, Pa., to Detroit, Mich.; Millville, N. J., to Philadelphia, and Philadelphia to Buffalo, N. Y. The trips from Philadelphia to Detroit and Buffalo were for the purpose of obtaining temperature and humidity records only, no beetles being carried in the cars. On each trip a thermograph was installed in the car. In addition hourly readings were taken with a sling psychrometer. Since Millville, N. J., and all intervening territory from that city to Philadelphia are heavily infested with the beetle, an opportunity was afforded to use live beetles in the car in which the trip was made between these points. Accordingly, 200 live beetles were liberated in an empty box car leaving Millville. Each time the train stopped, the freight car door was opened the equivalent time it would normally be opened for loading and unloading freight. Upon arrival of the train in Philadelphia, the interior of the car was carefully examined for beetles still remaining and the mortality of the beetles found determined. Trips were made by the second employee from Philadelphia to Indianapolis, Ind., and from Philadelphia to Cape Charles, Va. As in the instance of all travel to points outside the Japanese beetle infested area, the trip to Indianapolis was for the purpose of gathering temperature and humidity data. On the first trip from Philadelphia to Cape Charles, both points within the infested area, 200 caged beetles were taken along on the trip. Upon arrival in Cape Charles only 7 of the beetles were able to move about the cage while 6 others showed slight signs of life, the remainder being dead. On a second trip with similar equipment all of the 200 beetles placed in the car at Philadelphia were dead when the car was opened at Cape Charles 38 hours after its dispatch from Philadelphia. Data gathered on the trips were turned over to Dr. Hawley for interpretation and reporting.

Farm products and cut flowers inspected in the Philadelphia zone from June 15 to August 31 yielded a total of 1,347 adult Japanese beetles. Inspections in the Philadelphia area were made at six inspection centers, comprising the main inspection platform erected near the market districts, the Philadelphia Navy Yard, two wholesale cut flower establishments, an inspection point in near-by Chester, and the inspection service rendered at the Oakmont district office. Included among the farm products inspected and certified were 341 consignments of ship supplies taken aboard vessels sailing from Philadelphia to ports in the United States outside the Japanese beetle regulated zone. Through a cooperative arrangement with Philadelphia ship chandlers, all quarantined produce intended for ship provisioning is inspected before it is placed in beetle-proof ware-

houses. From these protected warehouses are drawn the supplies as required. En route from warehouse to vessel, trucks loaded with provisions are protected from infestation by tarpaulins. Watchmen at the piers have been educated to admit only such ship supplies as are accompanied by the required certificates. Transfer of the food supplies from truck to ship is in turn witnessed by an inspector to assure measures to prevent reinfestation of the articles. During the heavy flight of the beetle on the Philadelphia waterfront, the maritime inspector supervised the loading of certified products in this manner on 75 vessels. This same inspector, during the effective period of the farm products quarantine, boards all vessels docked at Philadelphia, checks the origin of quarantined produce, and advises the steward or other proper ship's officer of the quarantine requirements. Activities of the maritime inspector have resulted thus far this summer in the prevention of 24 violations involving uncertified fruits and vegetables which without the inspector's intervention would have been transported to uninfested ports. Numerous other irregularities in quarantine procedure were observed and corrected by the inspector operating on the Philadelphia waterfront.

Destructiveness of the Japanese beetle for the past two years has constituted a menace to extensive plantings of evening primrose plants cultivated at Princeton University by Dr. George Harrison Shull, Professor of Botany and Genetics. Nearly half a million evening primrose plants now growing near the campus are the result of 27 years of genetical research. Numerous genetical discoveries are accredited to the extensive interbreeding and classification of these plants. According to report, the primrose experiment represents the most expensive single scientific project of the University. The Japanese beetle is particularly fond of soft-petaled blooms of most every variety. Rapid population increase of the insect in the Princeton section, therefore, has in recent years endangered these important studies of plant heredity. Recent aid proffered by the National Research Council it is believed will make possible spraying and possibly other control measures to prevent beetle damage to the evening primrose plantings. Advices from a private investigator at Hopewell, N. J., not far from Princeton, report interference with vineyard experiments due to Japanese beetle invasion. This planter has in full bearing most of the grape varieties originated by Dr. U. P. Hedrick, of the New York State Agricultural Experiment Station at Geneva. This year's riddling of the grape foliage by the beetle, it is claimed, has negated much of the work done in developing the varieties. Destruction of the leaf area stops photosynthesis, leaving no means for the formation of starch and consequently reducing the sugar content in the grapes. The Department has been requested to recommend effective means of controlling the beetle in the experimental vineyard.

Voluntary experiments performed by a New Jersey grower of orchids and gardenias have shown that Japanese beetles are destructive to the blooms of both of these plants. Beetles have not yet multiplied sufficiently in the vicinity of this grower's establishment to seriously infest his greenhouses. However, he desired advance information as to the possibilities of the insects affecting the salability of his expensive blooms. Caged beetles for the tests were furnished by the White Horse office. Results of the experiments were

reported by the grower as follows: "The beetle will eat orchid blooms in the presence of smartweed. In no instance would they eat any part of the orchid plant itself. The bloom seemed to be as attractive as the smartweed. In the case of the plant caged with beetles, no evidences of feeding were found, the beetles having died the third or fourth day possibly through lack of nutrition. Young seedlings in the tenderest form were caged with beetles and absolutely no damage was done even when the beetles were placed directly on the foliage. As to the gardenia foliage placed in a cage along with smartweed, there were no signs of injury at all. Foliage caged alone with beetles showed a very slight damage, this being in the form of minute spots. I would take from this the gardenia foliage had practically no attraction. The beetle, however, would eat the white gardenia bloom, even in the presence of smartweed."

Typical of the home gardener's experience with the Japanese beetle is the following comment by the editor of the Mount Holly, N. J., Mirror, published just prior to the beetle's heavy flight of this year, "*** most of us are just plain dooryard gardeners with whom that Belle of Georgia peach tree, just now laden with still green fruit, and that row of gaunt poles up which green bean vines are winding in ambitious reach for the top, constitute the apple of our eye. Maybe the Jap beetle has amended his original plan of campaigning and now has taken to 'sniping' at us little fellows, we of the home garden. We are not slow to confess that we tremble at thought of the approach of that invading bronze green army. We have mobilized our beetle traps, sprayed where it was safe to do so, used lime on our grape vines and raspberry bushes and yet unblushingly we confess that we dread the coming of the beetle army. We who have been through other infestations, know." An earlier comment by the same editor was to the effect that, "Activities of the Japanese beetle are now said to cover 53,000 square miles, but we still adhere to the notion that the center of infestation is in our own garden." Mount Holly is within 11 miles of the site of the original Japanese beetle infestation near Riverton, N. J., and has been infested since 1921.

Composite samples were taken during the month of surface areas in Erie, Pa., treated with arsenate of lead at the rate of 500 pounds per acre during the fall of 1931. V. A. Johnson, of the treating division, and G. A. Russell, of the toxological division, made the borings. Two composite samples were taken in each of four treated blocks. Eighty borings were taken from each block, making one sample of the surface inch of soil, and a second sample from a 2-inch depth. These borings were made in lawns. A composite 3-inch sample was taken from gardens in the most heavily infested block. A few additional borings were made in four yards which seem to be centers of infestation. Analyses of the samples will be made at the toxological division's chemical laboratory at White Horse, N. J. While in the vicinity, Mr. Johnson proceeded to Painesville, Ohio, where he checked the Department-owned thermograph in charge of State Inspector John W. Baringer. Since installation of the thermograph last October, Inspector Baringer has serviced the instrument and forwarded its weekly records to the treating division at White Horse.

At a meeting of the Eastern Nurserymen's Association held at LaBars Rhododendron Nursery, Stroudsburg, Pa., on August 30, Mr. Worthley spoke on the results

of this season's trap-scouting for the beetle.

At the approach of each beetle season, scouts make periodic visits to sand pits in the heavily infested zone to determine the date of first appearance of the insect. Sand pits in the New Jersey infested territory are concentrated near New Brunswick, Mount Holly, and South Jersey. Infestations were found in practically all sand pits scouted during 1931. During the adult beetle flight fumigation is required of all sand shipped to nonregulated territory for use in other than construction work. Toward the end of the beetle season additional examinations are made to determine the disappearance of the beetle in the vicinity of each establishment. This year it is proposed to use sealed traps to determine the beetle's disappearance. Use of the traps in this manner would dispense with the services of three scout crews. Traps in use in Sussex County, N. J., will be lifted the first week of September and a quantity of them placed in the vicinity of each sand pit. When beetles can no longer be caught in the sections surrounding the pits, the fumigation requirements will be lifted and the sand made eligible for certification if 12 inches of the surface soil are removed before the sand is dug.

Lifting of the 500 traps used in the beetle depopulating demonstration in Philadelphia will begin on September 1. The season's total catch was 13,530,432, or 2,819 pounds of beetles. Following the customary end-to-end visualization of large quantities, this number of beetles would form a single line 93 miles long, or would cover an area of 11,560 square feet. Letters of thanks have been addressed to the owners of the six vacant lots used in the demonstration, advising them of the lifting of the traps. The informal agreements with the owners for the use of the lots expire at the end of this year, but permission has been secured for grub diggings to be made on the plots through next spring. The popular manner in which these demonstrations are regarded is evidenced by an unsolicited request on the part of the Commanding Officer of the Frankfort Arsenal of the United States Army in Philadelphia for the staging of a similar demonstration on the Arsenal grounds. The Commanding Officer states that the Arsenal has sought protection against Japanese beetles since their first appearance, with spraying and the use of traps, but even with these efforts considerable damage is done each year.

Coincident with a reduction in the quantities of infested articles intercepted at road posts, it became possible on August 16 to curtail the number of men stationed at the vehicular inspection stations in Pennsylvania, Maryland, and Virginia. In Pennsylvania, the revised schedule calls for the assignment of two inspectors each to six posts and of single inspectors to each of three other posts on roads whose traffic can be handled by one man during the daily periods of greatest travel. Three border posts on the roads leading from the quarantined zone in western Maryland are now manned by five inspectors, while seven inspectors cover the traffic leaving the Virginia regulated areas. A further reduction in the road patrol in Pennsylvania is contemplated on September 1 due to the necessity of economizing on State funds.

An additional soil temperature recording station has been established at Charleston, S. C. After securing the necessary authority for the arrangement,

a soil thermograph, box, post, charts, and ink were shipped to Assistant Plant Quarantine Inspector Geraldus Gay, of the port inspection service at Charleston. Mr. Gay mounted the thermograph in a position on the Custom House grounds near the local Weather Bureau station. Some assistance in installing and starting the instrument was given by the Weather Bureau Meteorologist. Soil temperatures at a 6-inch depth are recorded from Monday to Sunday, inclusive, the filled charts being mailed to the treating division in New Jersey on Monday of each week. The instrument was first placed in operation on August 1.

Nursery and greenhouse scouting to determine absence or presence of adult beetles on or within 500 feet of classified premises was largely discontinued by the end of August, although crews in Connecticut, Massachusetts, New Jersey, New York, and Pennsylvania were continued until September 3 in order to complete a full week's scouting. Crews in Hagerstown, Md., and Clarendon and Norfolk, Va., were disbanded on August 13. A farm scouting crew employed on Maryland funds and working out of the Baltimore office was disbanded on August 20. On the same date a single nursery and greenhouse crew assigned to the Baltimore territory was discontinued. Crews operating in Delaware and the Delmarva Peninsula were also laid off on the latter date.

On the basis of soil analyses made by the toxological division in the chemical laboratory at White Horse, 1,532,969 square feet, or 35.2 acres of nursery plots containing 237,569 plants were determined as of the required lead arsenate content and the plants thereon eligible for certification without further treatment. Heeling-in area to the extent of 335,821 square feet, or 7.7 acres, was similarly determined as containing 1,500 pounds of lead arsenate per acre and therefore conforms to the disinfection requirements for treated soil in which potted plants eligible for certification might be plunged between October 16 and June 14, the season of adult beetle inactivity.

Extermination of the isolated infestation last year discovered in Charleston, S. C., is indicated by the negative results of this season's trapping operations in that city. Six hundred traps operated in Charleston from May 4 to August 31, 1931, resulted in the collection of three beetles early in June, with an additional trap catch of one beetle late in July. The following November 6 tons of powdered lead arsenate were applied to 24 acres of ground surrounding the premises on which the beetles were taken. This season 800 traps were placed in Charleston on May 18 and were operated through August 6. Results of the trapping just concluded were entirely negative.

Abatement of the adult beetle flight in the Philadelphia waterfront and market sections was apparent during the second week in August. Practical disappearance of the insect in flight proportions by August 12 rendered it safe to restore 24-hour inspection service at the Philadelphia inspection center, beginning at midnight on that date. Interested merchants and commission men were notified of the reestablished full-time inspection service through widespread distribution of advance prepared letters and through news articles prominently featured in the Philadelphia daily papers.

With the virtual disappearance by August 12 of the beetle in appreciable numbers in the vicinity of Philadelphia banana piers, fumigation requirements as a requisite for certification of bananas in carload lots were revoked. Screening of cars shipped with open bunkers was continued as one of the required safeguards.

Dry weather during August interfered somewhat with the usual routine nursery procedure in New Jersey. In one instance lack of moisture occasioned a halt in hydrangea potting activities.

Trapping activities outside the regulated areas were concluded during August in North Carolina, South Carolina, Virginia, Maryland, and a number of points in Pennsylvania.

Specialized Corn Borer Activities

Scouting for the European corn borer began on August 1; 30 crews worked out of the South Norwalk Office, in the States of New Jersey, Pennsylvania, Delaware, Maryland, and Virginia.

Ten first-record infestations were picked up during the month, as follows:

August 1	Temperanceville (Atlantic District), Accomac County, Va.
August 4	Locustville (Lee District), Accomac County, Va.
August 6	Kintnersville (Nockamixon Township), Bucks County, Pa.
August 6	Mappsville (Metompkin District), Accomac County, Va.
August 9	Upper Black Eddy (Bridgeton Township), Bucks County, Pa.
August 13	Franklin (Tinicum Township), Bucks County, Pa.
August 16	Newark (Newark District), Worcester County, Md.
August 17	Snow Hill (Snow Hill District), Worcester County, Md.
August 18	Snow Hill (Colbourne District), Worcester County, Md.
August 26	Girdletree (Stockton District), Worcester County, Md.

Stockton District, Md., was found to be infested on a rescout.

A representative of the Outpost Farm and Nursery Corporation of Ridgefield, Conn., called at the Norwalk Office recently to confer with Mr. Worthley and Mr. Johnson on the possibility of trapping and treating an area near their nursery where Japanese beetles have been found. They wish to do this to prevent the spread of the infestation to their property. Although it was decided not to do anything this season, because of the short time before cold weather sets in, the owners do intend to do some control work in 1933.

On August 5, while scouting a classified establishment in East Norwalk, Conn., a member of the scout crew found a Japanese beetle on the inside of a screen of the house on adjoining property. It is believed that the beetle came in produce purchased from a local market since no more beetles could be found in the vicinity after thorough scouting.

Fruit growers in the towns of Glastonbury, East Hartford, Coventry, Manchester, Portland, and South Bolton, Conn., have formed an organization of 90 members with the object of auctioning and pooling their fruit. Fruit not sold at auction is pooled and trucked to markets. Most of these markets are outside the regulated area, and an inspector has been assigned to the markets to make daily inspections and to certify the material leaving the area.

Scouting was directed from the Springfield, Ohio, office in West Virginia, Kentucky, Indiana, Illinois, and Wisconsin. The territory was divided into three districts; each district was divided into sections. A supervisor was placed in charge of each district with an assistant for each section, as follows:

Section No. 1
Kentucky
West Virginia
Ohio River bottom

Section No. 2
Indiana

Section No. 3
Illinois
Wisconsin

A total of 228 men were originally sent to the field. The State of Illinois is furnishing and paying 16 scouts who were trained in the Bureau of Plant Quarantine scout school and were sent to the field in five 3-man crews directly supervised by a State man under the supervision and direction of the Bureau of Plant Quarantine. The State of Wisconsin is furnishing and paying 6 men who were placed in the Bureau of Plant Quarantine crews for supervision.

The prolonged drought and extreme heat during the month has ripened the corn very rapidly and much of the corn in West Virginia, Kentucky, and Wisconsin has been placed in the shock and in silos. Comparatively few infestations have been found beyond the area known to be infested last year, which is attributed to the unfavorable atmospheric conditions during the flight of the corn borer moth.

An infestation survey was started on August 15 in cooperation with the Bureau of Entomology and the Department of Agriculture of the State of Indiana, for corn borer population in standing corn. Fifteen 1-man crews and two supervisors were furnished by the Bureau of Plant Quarantine. The survey extends into 25 counties in Michigan, 23 in Indiana, 48 in Ohio, 1 in Pennsylvania, and 23 in New York. Reports indicate an increase of infestation over last year in some counties previously heavily infested and certain sections of counties not previously in survey show heavy infestations. Indications are to date that there will be an increase in borer population in a number of Ohio and Michigan counties. The most notable increases at the present writing are in Washtenaw and Lapeer Counties, Mich., and Champaign County, Ohio. The last-named county was previously considered a border county as far as infestation was concerned.

On August 29, the Bureau of Entomology, in cooperation with the State of Connecticut and the Bureau of Plant Quarantine, began survey work in Connecticut. The work will cover the entire State and will continue approximately four weeks. The Bureau is also doing survey work in the Lima bean area on Long Island.

MEXICAN FRUIT FLY

The first application of nicotine-molasses bait spray was completed during the first week of August. A total of 3,645,426 trees located in 6,927 groves and 4,456 town yards were sprayed. The baiting of these trees required the issuance of 18,779 gallons of molasses and 940 gallons of nicotine. The bait was applied by means of 350 knapsack sprayers. All trees having fruit this season or which had fruit last year were sprayed. Approximately one month was required to apply the bait.

The second application of the bait was started August 15. With the experience gained in the first application, it was thought that the second application could be completed by the 1st of September, and but for the advent of the fall rains during the last two weeks of August, this would have been accomplished. As it was, the great majority of the groves were sprayed by the end of the month.

During the interval between sprays, the requisitions for the material for the second application were written up. To save time and expense and to allow for better organization of the work, supplies of molasses and nicotine were carried in the trucks and the requisitions and materials delivered to the majority of the growers at the farms. This scheme allowed the work to be organized to a large extent to restricted areas or roads in the districts and resulted in a minimum of back calls in contacting the growers. By having the requisitions already written up it was unnecessary to keep the district offices open, which released all inspectors for field duty.

While the growers had been fairly well educated during the first application of the bait, it was necessary to impress on some of them the importance of putting the bait spray program ahead of the regular routine grove jobs. As in the first round, the inspectors observed long hours during the second application of the bait. Growers were contacted and requisitions and materials delivered during the day. Spray guns were visited daily and any repairs necessary were made. Usually these "guns" were picked up after dark from the groves in which the baiting had been completed and delivered to growers on the waiting lists. The ideas of many of the growers concerning the ease of Government jobs were considerably changed when they were gotten out of bed to receive spray guns in order that they might get an early start the following morning. Considerable rivalry was engendered between the inspectors in Cameron and Willacy Counties and in Hidalgo County by the wager of a barbecue dinner. The inspectors of the county in which the spray program was first completed were to be the guests of the other inspectors at the barbecue.

Only one refusal to apply the spray was encountered in the first application and this grower applied the spray during the second application. Another owner applied the first application, but refused to apply the second. There is still a possibility of this grove being sprayed the second time.

A most gratifying spirit of helpfulness and assistance to the work was

shown by the various agencies and individuals of the Valley. Innumerable cases occurred of growers spraying neighboring absentee-owned or abandoned properties. City governments, chambers of commerce, and luncheon clubs donated funds to pay for the application of the bait to back-yard plantings. Storage space for the materials was furnished without cost by packing plants and individuals. In the neighborhood of 400 steel drums were loaned by the various oil companies for storing the molasses. Without this assistance the 100 per cent coverage of bearing trees in the Valley would have been well-nigh impossible.

The work in Matamoros was carried on along the same lines as in previous months. All fruit arriving in Matamoros was examined by both the Mexican and American inspectors before being released to the consignees. The examination of this fruit during the month showed a remarkably light infestation. Only 3 fruit were found to be infested and only 8 larvae were recovered. The operation of 196 traps in Matamoros resulted in taking 1 adult fruit fly. Poison bait spray was immediately applied to the trees in the four blocks surrounding this premise.

PINK BOLLWORM

The eradication of wild cotton in southern Florida has progressed very satisfactorily. The principal areas covered during the month were four counties on the west coast, and Key Largo, south of the mainland. On the west coast some 36 colonies, which covered an estimated area of $77\frac{1}{4}$ acres, were destroyed, consisting of some 26,761 plants, of shrub size and larger, and 3,906 seedlings. On Key Largo it was impossible to estimate the number of plants removed and acreage covered, due to the fact that a considerable number of men were employed. However, the colonies were especially large, several covering from 5 to 15 acres of swamp land, and extending along the hammock for over a mile in one or two instances. The clean-up of wild cotton in the vicinity of the town of Everglades, in Collier County, was begun on August 29, but because of high water from the tropical storm it was possible to work only one day. During this time 39 individual wild cotton plants were removed from vacant lots in the city limits. It will be recalled that quite a bit of infested wild cotton was found in this area during the survey in June, but the almost impassable roads, caused by the rainy season, have made it impracticable to begin a clean-up before this time. The clean-up will be resumed as soon as possible.

In addition to the above clean-up, dooryard plantings were removed in five southern counties. In 26 locations these dooryard plantings consisted of domestic cotton, 539 plants being removed, while 61 wild cotton plants were removed from 4 locations. In one instance permission had previously been refused for the removal of a dooryard plant, but at this time permission was granted.

During the month a party of two inspectors has been performing field inspection in counties in south-central Florida. They have covered 43-3/4 acres of commercial cotton, 3 acres of volunteer cotton, and volunteer cotton scattered over a 30-acre citrus grove. The commercial cotton acreage includes 29-3/4 acres of cooperative Sea-island plantings. This cotton will be inspected periodically during the season. Practically all available material on the volunteer cotton was examined. No indications of the pink bollworm were found. In addition to the field inspection a gin-trash machine began operating in northern Florida the latter part of the month. Only a small amount of trash was available, and the results were all negative.

Field inspection has been continued in the Salt River Valley of Arizona. At the end of the month practically all of the acreage had been covered. All results in this area have also been negative. The ginning season is now getting under way, and gin-trash inspection will be substituted for green-boll inspection.

The first part of August two gin-trash machines began operating in the lower Rio Grande Valley of Texas. Later in the month five additional machines began operating in the area south of San Antonio between Laredo and Corpus Christi. No specimens of the pink bollworm were taken during the month. The machines have now been removed to counties in southeastern Texas.

In the Big Bend area of Texas the first cotton was ginned on August 27, and trash from the first three bales was inspected with a machine. The first bale contained 241 live pink bollworms, 24 dead, and 62 pupae; the second, 1,644 living, 200 dead, and 150 pupae, and the third, 710 living, 124 dead, and 88 pupae. These results indicate that the infestation at this time is the heaviest in the history of the Big Bend.

Plans have been made for a thorough clean-up of the heavily infested Big Bend area as soon as the cotton crop has been gathered. The area involved consists of about 3,500 acres. The machinery for this clean-up, consisting of a tractor, side-delivery rake, sled cutter, and all necessary parts, has been sent to the area, having been transferred from the European Corn Borer Project. The side-delivery rake is a special machine developed by that project for raking cornstalks. It is of special interest to note that the machine has been given a preliminary test and found to be well adapted for our purposes without making any alterations. The farmers are very much interested in this clean-up campaign and have all promised full cooperation in the program. In connection with the clean-up, pickable and nonpickable boll counts will be made in some 20 different fields. In making these counts 200 stalks will be used, 40 in each corner and 40 in the center of the field. The plants have been staked off and will be left until the remainder of the crop has been picked, after which the counts will be made. Similar counts will be made again the following year, and a comparison of the two counts should give some indication of the value of the clean-up.

During the month the ginners have been busy overhauling their ginning and sterilizer equipment. Inspectors have been supervising this work, which is

practically finished. A few bales of cotton have already been ginned in most of the areas. The stationary gin-trash machines used within the regulated areas have also been overhauled, and will begin operations as soon as a sufficient supply of trash is available.

The discovery of the pink bollworm in Florida has made some changes necessary in the inspection work in the Southeastern States. In order to handle the large area involved more satisfactorily, a man has been placed in each State from Mississippi to South Carolina, who will be charged with full responsibility to determine whether or not the State is infested. To do this he will operate a gin-trash machine during the ginning season and collect boll material for inspection during the spring and early summer. The States concerned are cooperating in so far as they are able. The boll material is now being collected, and gin-trash inspection will get under way shortly. It is believed that this is a better plan than to send men into the States for brief periods of inspection.

PREVENTING SPREAD OF MOTHS

It is felt that the defoliation observations have been taken in a better manner this season than previously. Some time was spent during the early spring at the Greenfield office in artificially defoliating specimens of deciduous and coniferous trees to definite percentages of defoliation, and most of the field men who took the defoliation records in the field this summer had an opportunity to see some of the work and to estimate known defoliation. Photographs were made of individual trees that had been artificially defoliated to known degrees of defoliation, and the men who made the observations were supplied with prints of these photographs. This experiment showed that men are likely to underestimate the degree of defoliation. All of the field men who were used on the defoliation work have had considerable experience in mapping woodland areas and in determining acreages, and are well qualified to determine the extent of the area and degree of defoliation in different blocks of woodland.

In order to make the figures obtained more useful in connection with determining the damage, the defoliation was reported this year under definite degrees rather than by classes as had previously been done. For instance, in 1930 and 1931, defoliation was reported in classes such as 1-10 per cent, 10-50 per cent, and 50-100 per cent, while this year the defoliation was reported as 25 per cent, 50 per cent, 75 per cent, and 100 per cent, and in a few cases some defoliation was reported as 90 per cent. About 6,000 acres were reported as less than 25 per cent. In general, no attempt was made to report defoliation this year that was less than 25 per cent, because the spring studies of defoliation showed that it was practically impossible to estimate defoliation that is less than 25 per cent. Of course the defoliation for 1932 less than 25 per cent was really very much greater than that shown in the accompanying tabulation, but

had estimates been made as in previous years of a class of defoliation from 1-10 per cent, the total figure of area affected would be very much greater.

In the State of Massachusetts the area is divided into districts, each in charge of a State Division man. There are six districts in the eastern half of the State, and a Federal man went over each district with the State Division man making their estimates together. In New Hampshire and Maine, State officials reported the defoliation in areas that were laid out for them. The rest of the area in these two States where defoliation was likely to occur was divided up and surveyed by Federal men.

The summary shows a total of 286,395 acres affected this season, with 42,398 acres entirely defoliated and 10,980 acres 90 per cent defoliated, which would cause practically as much injury as if the trees were completely defoliated. The summary also shows a large increase in the area affected in Rhode Island and in Connecticut. In New Hampshire the total area affected as reported is less than last year. This is due to the fact that areas where less than 25 per cent defoliation occurred were not reported this year. However, there was severe defoliation in New Hampshire, especially in the region occupied by the towns north of Lake Winnepesaukee at Ossipee, Freedom, Effingham, Conway, Madison, and Concord. Over a considerable part of New Hampshire small pockets of infestation are building up, and it is expected that next year there will be a considerable increase in defoliation in that State. This is also true in Maine and parts of Massachusetts. There was more defoliation in Rhode Island and Connecticut than usual this year and if certain areas in these States were surveyed as closely to obtain defoliation records as was done in Massachusetts, New Hampshire, and Maine, the acreages reported affected in the former States would be considerably greater.

Number of Acres Defoliated and the Degree of Defoliation

State	Less than 25%	25%	50%	75%	90%	100%	Total
Maine-----	6,149½	9,120½	8,430½	11,547	1,070	5,980	42,297½
New Hampshire-----	21,883	13,972	5,549	505	1,378		43,287
Vermont-----	1						1
Massachusetts----	310	43,370	51,412	60,857	9,405	35,033	200,387
Rhode Island-----	1	113	85	172		5	376
Connecticut-----	3	5½	20	16		2	46½
Total---	6,464½	74,492	73,919½	78,141	10,980	42,398	286,395

The work of placing the assembling cages, properly baited, throughout the barrier-zone area in New York and New England was concluded during August for the season. A total of 5,822 cages containing overwintered material were placed as follows: In New York, 201 set out by the Federal force, and 250 by the New York State force; in Vermont, 1,061; in Massachusetts, 1,103; in Connecticut, 1,275, and in New Jersey, 1,907. Of the total

5,822 there were 25 assembling cages given to the Entomological Branch of the Canadian Government to be placed in a number of points in the territory on the Canadian side nearest the infestation found on Metcalfe Island, Highgate, Vt., and near the site of the Henrysburg infestation of several years ago.

Male moths have been trapped in several Massachusetts and Connecticut barrier-zone towns not previously known to be infested. They have also been taken at cages in several towns where a gipsy moth infestation has not been discovered for several years. To date there have been no male gipsy moths trapped at the assembling cages in Vermont, New York, or New Jersey. It is expected that the assembling cages will be collected by the end of September at which time this work will be summarized.

This year in connection with the collection of the female gipsy moth pupae used in obtaining bait material for the assembling cages, approximately 50,000 Sturmia scutellata issued from the pupae. This is a Tachinid pupal parasite of the gipsy moth. These insects were turned over to the gipsy moth laboratory for experimental purposes and for colonization.

During August, a hygro-thermograph for recording temperature and humidity was set up adjacent to the building on which a combined wind direction and velocity recorder was installed. The latter instrument was put on the roof of one of the storage buildings used by this project in Greenfield, Mass. An 18-foot mast with roller bearing for a 6-foot wind vane at the top and with a cross arm for an anemometer was set up. This equipment has been wired to a meteorograph for recording the records within the building. The machines will be in daily operation throughout the year. It is expected that very useful data will be obtained which can be used in connection with the gipsy moth problem.

All agents in the scouting force not on special assignments are taking administrative furlough until September 15. No work, therefore, is at present being carried on by the Federal force in the barrier-zone area, excepting the assembling cage work.

The preliminary scouting work being carried on in northeastern Pennsylvania to determine the approximate area generally infested with the gipsy moth was continued during August. In this class of scouting work no attempt is made to thoroughly examine the territory covered, but as soon as an infestation is discovered the men discontinue scouting work in the region infested and take up work approximately 1 mile further on, and this procedure is continued until no infestation is found. Work was first started about 1 mile from Inkerman.

To date infestation is known to exist in 8 townships, namely: Pittston, Jenkins, Plains, Bear Creek, Wilkes-Barre, Kingston, and Exeter, in Luzerne County, and Lackawanna, in Lackawanna County.

All nurseries located within and those just outside of the area known to

be generally infested have been thoroughly scouted and no living gipsy moth infestation was found. An old gipsy moth egg cluster was discovered, however, on a spruce tree planted in the Wyoming Valley Nursery situated in the Borough of Wyoming, Kingston Township, and 91 new egg clusters were found on trees and fences within 100 yards of the nursery. Arrangements have been made with the owner of this nursery to have any stock that is to be shipped reinspected before it is dug.

On days unfit for scouting work but satisfactory for other out-of-door work, the scouting force have been instructed to creosote egg clusters found on walls, fences, trunks of trees, etc., particularly so where there is great danger that they may be disturbed or broken. Very little of this work has been done to date because the weather has been either favorable for scouting or too severe to carry on outside work.

Information received from a district quarantine inspector indicates that the evergreen shipping season this fall will commence somewhat earlier this year. Because of soil conditions with an abundance of moisture, the new growth on the evergreens seems to be well hardened, making it possible to dig and transport plants of this class.

That the Federal quarantine inspection service provides more protection to noninfested sections of the country than is indicated by the infestations removed on material that is shipped, continues to be evident. It has been reported that a quarry located in southern New Hampshire has quite a heavy gipsy moth infestation in the woodland immediately surrounding it, and some of the trees close to the stored quarry products are infested. This quarry is a small one which has not shipped outside of the quarantined area for many years, if ever. As no calls for inspection had been received from there, the clean-up recommendations which are customary had not been given. The first shipment inspected at the quarry was found infested with gipsy moths. The district inspector pointed out the severity of the existing gipsy moth infestation to the quarry foreman, who has promised to undertake control measures. These measures consist of cutting trees and brush close to the quarry, and possibly others in the woodlands immediately surrounding the quarry. The inspector will satisfy himself that all necessary work is done.

Because of the unusually dangerous gipsy moth infestation existing in southeastern Massachusetts, the district quarantine inspector at Middleboro has been instructed to spend as much time as possible visiting tourist camps located in this vicinity and to look over the equipment particularly when the stay at such camps has been of fairly long duration. At present most of the egg clusters have been deposited by the female moths and the equipment of tourists who arrive at the camps from now on will not become infested. In a few cases, it has been reported that parties have been staying at camps for long periods. In one such instance, egg clusters were found on the equipment belonging to a man who later intends to move further south. His equipment will be inspected carefully and all infestation will be removed before he leaves.

At South Yarmouth, Mass., the district inspector creosoted and removed 12 gipsy moth egg clusters from a camp trailer and equipment. The egg clusters were found on the trailer itself and on boxes and boards used in the equipment. The owner of the camp trailer and equipment is a traveling photographer who expects to start for Florida before September 1. Arrangements were made to have his trailer and equipment given a final inspection when he starts for the South.

Among the numerous types of camps inspected were several "gipsy camps" operated by the Stanleys, a well known tribe of nomads, who weave baskets and practice palmistry. At the Thomas S. Stanley gipsy camp at West Yarmouth, Mass., 730 new gipsy moth egg clusters were removed from 5 tents and 2 trailers. The district inspector was assisted in removing the egg clusters by the State District Moth Superintendent and one of his men. Although all but two of the tents were to be stored in Yarmouth, Mass., for the winter, it shows the danger of spread by camping equipment carrying infestations. Mr. Stanley intends to travel by auto during the winter, stopping at over-night camps. Arrangements have been made for a final inspection of autos, trailers, and tents before he breaks camp.

There are five infested camps found in the vicinity of Newfound Lake and Lake Winnepesaukee, N. H. Over 500 gipsy moth egg clusters were located on the trees in the camp grounds. Instructions were given to the camp owners by the quarantine inspector to creosote all egg clusters as soon as possible and to thoroughly spray the trees on the camp grounds next spring with arsenate of lead. No camp equipment was found to be infested.

Nearly every month it is recorded in the monthly reports of the quarantine activities that egg clusters and other stages of the gipsy moth are found on materials being inspected prior to shipment. Such infestation is always removed before certificates are issued. Each year the annual report shows that egg clusters or other stages are removed by the hundreds, and the necessity for inspection is therefore quite evident. Although the total infestations removed from inspected materials each year is sufficient to be quite impressive, it does not compare with the amounts found and removed years ago when inspection activities were newer and when the inspectors in the field did not obtain the cooperation from the shippers which is now very general. It can not be claimed that all of the decrease in infestation found on inspected materials is due to greater care on the part of the shippers, for there have been decreases in the general infestation in some localities. The added restrictions imposed upon nurseries in 1923 reduced to the vanishing point the infestations found on nursery stock. It is certain, however, that the major portion of the decrease is due to action taken by shippers following advice given by the district inspectors. Control measures around quarries and storage yards, the storage of materials away from trees and bushes, and the selection of noninfested articles for outside shipment has added much in keeping materials free from infestation and reducing the findings during inspection. Only a few years ago, the yearly totals of egg clusters and other stages of the gipsy moth and brown-tail moth were recorded in thousands rather than in hundreds. In the 20 years that the

gipsy moth and brown-tail moth quarantine has been in force, i. e., from November 25, 1912, to date, 101,016 gipsy moth egg clusters, together with 11,260 of the other stages of the same insect, have been removed from shipments. There have been removed also 1,027 winter webs of the brown-tail moth and 1,547 of the other stages of this insect. Shipments of one or more of all of the different types of quarantined products, which are evergreen, forest, nursery, and quarry, from which infestations have been removed, have gone to 44 of the States and the District of Columbia. Only Idaho, Montana, Nevada, and Oregon have received none. Such shipments have gone also to Alberta, New Brunswick, Nova Scotia, Ontario, and Quebec in the Canadian Provinces, and to England. For a few of the States, only occasional shipments from which infestations were removed, were recorded as being shipped, but for most of the States many such shipments have been recorded and on numerous occasions many gipsy moth egg clusters were removed from such shipments. It is quite evident that had no inspection restrictions been imposed, both of the insects would now have been established in almost all portions of the United States where food plants were favorable.

In addition to shipments consisting entirely of quarantined products, the district inspectors must be on the watch for shipments of different natures which may include articles regulated under the quarantine. Because Quarantine No. 45 has been in force for a long time and due to the educational work which has been performed by all those engaged in its enforcement, agents of common carriers and shippers are well acquainted with the regulations and will not knowingly accept for shipment regulated articles unless they have been inspected and properly certified. Where shipments from the quarantined area consist almost entirely of articles not regulated, the shipper or agent may overlook the fact that small amounts of regulated articles are included and that these inclusions necessitate inspection and place the whole shipment under the quarantine requirements. Occasionally the district inspectors locate shipments entirely foreign to the gipsy moth quarantine which have included with them materials regulated by the quarantine. Such a shipment was reported recently by the inspector stationed at Plymouth, N. H. He found poles and lumber in a cattle car which had been used for the construction of stalls. On inspection, these were found to be infested with six gipsy moth egg clusters. The egg clusters were creosoted and removed. This particular finding emphasizes the fact that continual watchfulness on the part of the inspectors is necessary and points conclusively to the fact that the insect may be spread by innumerable means.

During periods of business inactivity the duties of the quarantine inspectors may be lightened to some extent, but it often happens that following such inactivity the inspectors find that their work has increased. This is due in many cases to the fact that materials do not move rapidly during times when business is slow, and for this reason they are stored for long periods and are consequently exposed to infestation much beyond the usual time. During periods of business inactivity, the inspectors advise the owners of the best place to store the materials so that they will be away from possible sources of infestation. This is particularly true of certain types of stone and quarry



products such as paving blocks, or forest products where lumber may be cut and remain in piles for years before it is shipped for pulpwood, and where an overproduction of a number of other materials can not be absorbed by markets.

We have received indications that some materials produced some time ago, which have been stored awaiting markets, are beginning to move slowly, and because a long time has elapsed since their production, infestations have developed in the immediate vicinities and careful inspection will be necessary. In the Portland, Me., district, there is a large pile of scrap metal which is infested and which will require thorough inspection before shipment. Because of the low price which has prevailed for this kind of material for the past three or four years, several carloads of this metal have accumulated. In the past, the dealer has not accumulated such large amounts of this junk but has shipped it quite regularly. Then there was small chance of its becoming infested before shipment. Practically all of these shipments went to points outside of the quarantined area, and when he is able to find a market for his present stock, it is quite probable that most of it will be sent outside. Arrangements have been made for thorough inspection prior to shipment. At the present time, because of the nature of the material, inspection is impossible. It will be necessary, no doubt, to discard certain hollow pieces of metal, because if these are infested, it would be very difficult to remove the egg clusters found on the inside.
