

NEWS LETTER

BUREAU OF PLANT QUARANTINE

UNITED STATES DEPARTMENT OF AGRICULTURE

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ADMINISTRATIVE

The attention of all employees of the Bureau who may have occasion to make field trips into the State of Nebraska is called to the paragraphs quoted below from a recent letter from A. C. Thomas, Manager, Radio Station WJAG, Norfolk, Nebr., to Donald R. Murphy, c/o Wallace's Farmer, Des Moines, Iowa:

Every Sunday afternoon at 2 p.m. we present a farm forum program. This started January 1 and has been devoted to discussing the farmer's problems, and possibilities of relief. Recently we have used it to explain the farm relief act. The period has a great many farmer listeners all over the Third Congressional District.

Do you think it would be possible for the Department of Agriculture in sending men into the field, who are to spend any time in Nebraska, to write them so they could be in Norfolk Sunday afternoon so we might use them on this program?



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FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

Forty-one fruit fly larvae in a single mango.--Forty-one living larvae of Anastrepha ludens Loew (Mexican fruit fly) were intercepted at Laredo, Tex., in a mango in baggage from Mexico. A living larva of the same fruit fly was also taken at Laredo in an orange in baggage from Mexico.

Italian pear scale on apple.--Epidiaspis piricola (Del Guercio) was intercepted at Pensacola, Fla., on an apple in stores from Italy. This orchard-infesting species occurs both in the eastern and western parts of the United States. This coccid often produces pits in the young nursery stock. Among its hosts are plum, peach, and currant.

Beetle from Ecuador.--Hoplopyga liturata Ol. (Scarabaeidae) was intercepted at San Francisco on a banana leaf in cargo from Ecuador.

Weevil in packing material.--Strophosoma melanogrammum Forst. (Curculionidae) was found at Washington, D. C., in packing around currant cuttings in the express from Norway.

Scale insect from Japan.--Hemichionaspis theae (Mask.) (Coccidae) was intercepted at San Francisco on sago palm (Cycas revoluta) in ship's quarters from Japan. This represents the first record in our files of this coccid being intercepted.

Bark beetle in tomato.--An adult of Xyleborus confusus Eichh. (Scolytidae) was taken at Nogales, Ariz., in a tomato in cargo from Bamoa, Sinaloa, Mexico. This species is common in the south-eastern United States and in the neotropics.

Mealybug on Areca palm.--Pseudococcus filamentosus (Ckll.) (Coccidae) was intercepted at San Francisco on an Areca palm in ship's quarters from Hawaii.

Hemipteron from Germany.--Orthaea lurida Hahn. (Lygaeidae) was intercepted at Washington, D. C., on Salix alba casteariana in the mail from Germany.

Scale insect on coconut.--Lepidosaphes unicolor Banks (Coccidae) was intercepted at San Francisco on coconuts in cargo from the Philippines.

Hemipteron from Chile.--A nymph of Nabis punctipennis Blanch. (Nabidae) was intercepted at New York on a melon in cargo from Chile.

Scale insect on bamboo poles.--Chionaspis bambusae Ckll. (Coccidae) was intercepted at San Pedro, Calif., on bamboo poles in cargo from Japan.

Aphid from England.--Myzus veronicae Del G. was intercepted at Washington, D. C., on Veronica speciosa plants in the express from England. This aphid is not known to be established in the continental United States.

New record for Bermuda.--Trichothrips marginalis Hood and Williams was in-

tercepted at Boston on Antirrhinum majus in baggage from Bermuda. J. R. Watson, of Gainesville, Fla., states: "I think this is the first report of this insect from Bermuda." This thrips was described from specimens taken under the bark of a willow tree in New Orleans, La., in 1914.

New to National Museum.--Bruchidius lineatus Allard (Bruchidae) was found at Washington, D. C., in packing around fruit trees in the express from Italy. H. S. Barber, of the Bureau of Entomology, states that this is new to the National Museum collection.

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

New disease of conifers.--Diseased leaves of Sciadopitys verticillata from Japan intercepted at Seattle were referred to mycologists in the Bureau of Plant Industry who determined the pathogen as Phomopsis sp. and state that it does not agree with any Phomopsis previously reported as found on conifers.

Citrus canker.--California ports intercept citrus canker more or less frequently in fruit from the Orient, but interceptions of this disease are rarely sent to Washington for determination. A Washington navel orange from Japan intercepted at Seattle was referred to Washington and the presence of citrus canker verified by Dr. H. R. Fulton.

Beet rust from Mexico.--Uromyces betae was intercepted at San Ysidro on leaves of mangel-wurzel, the first interception of this rust from Mexico.

Nema interceptions.--Nema interceptions for which determinations were received during the month included Aphelenchoides sp., probably a new species, in stem of decayed sugarcane from Puerto Rico, intercepted at Washington. Other interceptions were Aphelenchoides parietinus in onion from Japan at Philadelphia, in parsnip from Sweden at Baltimore, and in Stachys sieboldii from Belgium at Philadelphia; Aphelenchus avenae in carrot from Africa at Philadelphia; Tylenchus dipsaci in potatoes from Germany at Corpus Christi and New Orleans, and Tylenchus pratensis in yam from Japan at Baltimore.

Orchid rust.--Stanhopea sp., an orchid imported from Guatemala and being grown at Baltimore, Md., was found to be infected with a rust, Uredo nigropunctata.

Phomopsis rudis found again.--Phomopsis rudis (see News Letter for Feb. 1933 p. 6) has been found on Laburnum watereri and Colutea kesselringi imported from Holland and being grown in Ohio.

Root-knot nematode name changed.--The Plant Disease Reporter 17:64-96, June 15, 1933, lists the 855 known hosts of the root-knot nematode and adopts the name Heterodera marioni (Cornu) Goodey for this nema. Since this Bureau follows the usage of the Bureau of Plant Industry for plant pathogens, this name will hereafter be used by this Bureau. It is suggested that the generic name may be changed to Meloidogyne later. Heterodera radiculicola and Caconema radiculicola are the best known of the various names given this nema.

Correction.--The item headed "Herbarium material" on page 5 of the July News Letter was prepared for the June issue but was crowded out and inadvertently run in July without correcting the reference to "material mentioned elsewhere in this issue" to show that mention was made in the June issue.

COTTON PACKING CARRIES PINK BOLLWORM

(Reported by W. H. Freeman from the port of New York)

On June 19 a small package of earthenware from Egypt was intercepted in the parcel post. The crockery was packed with about one quarter pound of cotton lint containing one small wad of unginned cotton with seeds. Practically every seed showed damage by pink bollworm, and two living larvae were found and submitted as an interception. Five dead larvae were also found.

IN THE JUDGMENT OF THE INSPECTOR

This phrase is of common occurrence in quarantines and regulations, where it appears in various forms such as, "as the inspector may require", "in the opinion of the inspector", etc. The use of such an expression arises from the practical impossibility of foreseeing in advance and establishing beforehand correct procedure for every situation that is likely to occur. In certain fields of quarantine work cases are constantly being met which show such endless variations and widely diversified conditions that it seems more sensible and more fair to the public to handle them with due regard to the accompanying circumstances rather than attempt to fix in advance a complete set of rules which for many individual cases are bound to be either inadequate, or useless, or unnecessarily harsh. With a measure of discretionary power incorporated into the regulations a certain flexibility is provided for and the actual procedure adopted comes more nearly in accord with the biological necessities in each case.

The term "judgment of the inspector" is not to be construed too literally, however, as denoting merely the ruling of the individual employee. It is rather to be understood as a legal term, embodying the opinion and decision of the whole Department as an administrative agency. The inspector from this viewpoint is not to be considered as an individual, but as the agent through whom the purposes of the Department are carried out, by virtue of instructions from the Bureau head, the administrative representative of the Department. The inspector's action must, therefore, be always in line with the policy of the Department and in accordance with instructions, insofar as policy has been established and instructions have been issued.

Where some particular situation falls outside the scope of such fixed policy or instructions do not cover it, the individual judgment of the inspector comes into play, though it must still be recognized that such judgment can in no case be exercised outside the regulations or the act on which these regulations are based. On such occasions the inspector becomes for the time being the Department itself in the matter of exercising judgment.

It is thus apparent that only in unforeseen situations, where instructions

or other guiding statements are inadequate, or where the exigencies of the case preclude reference of the matter to the Bureau for instructions, does the personal judgment of the individual inspector come to be properly exercised. In all such cases, and they are by no means infrequent, the phrase takes on its literal meaning.

DOMESTIC PLANT QUARANTINES

Information on court cases having a bearing on plant quarantine or similar laws is being collected for the purpose of providing Federal and State plant quarantine officers with decisions and opinions of general interest. The work is being done in response to a request of the National Plant Board, expressed at its meeting last March, that periodic synopses of such cases be assembled and distributed by this Bureau. Information as to two cases has previously been sent out.

New reports on the Dutch elm disease by the Bureau of Plant Industry show that infection has been discovered on at least nine American elm trees at Maplewood, South Orange, and East Orange, N. J. One additional diseased elm has been located at Cleveland, Ohio. No nursery has been found infected nor has any connection yet been established between the various diseased trees and any nursery.

TRANSIT INSPECTION

Empty refrigerator cars arriving at Chicago from the Japanese beetle infested areas are being checked by transit inspectors to insure their being swept and cleaned of all rubbish which may carry the beetle, as provided by quarantine regulations.

Shipments of soft-shelled crabs packed in cedar boughs and parts of other plants that should have been certified under Japanese beetle quarantine regulations were recently noted at Philadelphia, coming from the Eastern Shore of Maryland. Grape leaves, packed in and saturated with salt, were found by a transit inspector at New York to have been consigned from the Atlantic to the Pacific Coast. These shipments were reported to the field office in order that the shippers might be located and arrangements made for certification of future similar shipments.

The recent interception of a greenhouse-grown oleander shipped by a New England florist without gipsy-moth certification resulted in considerable correspondence with the shipper and the carrier in explaining the certification requirements. Under the present edition of the regulations, greenhouse-grown cut flowers of woody plants may be shipped without certification when the container is marked to show plainly that the material was greenhouse grown. This exemption does not apply, however, to entire plants, such as oleander, as such plants are occasionally set out of doors and may have egg masses attached to them while in the open.

WHITE-PINE BLISTER RUST

The inspection of pine-growing nurseries in Maryland and Virginia is now under way, and it is found that Ribes on these areas are much scarcer, and the problem of Ribes eradication much simpler, than is the case in New England. Bureau inspectors working in cooperation with State authorities of Iowa and Minnesota report, on the other hand, difficulty in accomplishing complete eradication around the pine nurseries in those States. Crews had to cover the territory around some nurseries several times before the work was completed to the extent required. Several nurseries are planning on changing locations in order to provide areas where Ribes are easier to eradicate.

Favorable action on 6 applications for pine-shipping permits has thus far been taken for the fiscal year 1934. Two of the nurseries are located in Virginia, 1 in New York, and 3 in New England. Four of the permittees were found to be growing pines in Ribes-free zones, and were therefore authorized to ship, while the premises of 2 others were tentatively approved, subject to reapplication and inspection prior to shipping. About 30 other applications are under consideration. The joint certification tag described on page 8 of the June News Letter will be employed in the case of nurseries located in areas regulated on account of the gipsy moth and Japanese beetle.

NARCISSUS BULB PESTS

The Bureau is compelled, under the limitation of funds available for the present fiscal year, to withdraw all assistance heretofore given the States in the inspection for narcissus bulb pests. While there has never been specific Federal appropriation for the inspection of narcissus, employees on other projects have been able, in the past, to give some incidental aid to State inspectors in the diagnosis of pests and in maintaining high standards of treatment and practice. Notice has recently been sent by the Chief of the Bureau to officers of these various States that it will not be possible to render any such assistance this year.

Supplementary administrative instructions relating to narcissus treatment and pest suppression have been issued by the Bureau as circular BPQ-353. The new circular authorizes the use of the vapor-heat treatment for bulb flies in lieu of the hot-water treatment, if desired. It also changes the presoaking requirement by reducing the length of time dry bulbs are required to remain in cold water, from 12 hours to 2 hours. A number of interpretations and slight modifications of the administrative instructions concerning narcissus inspection issued last year are included.

BLACK STEM RUST

The checking of nurseries under the black stem rust quarantine was begun about the middle of July by L. M. Ames, of the Bureau of Plant Industry, who is working in cooperation with this Bureau. Nurserymen engaged in the shipping of barberry and Mahonia plants to or between the 13 barberry eradication States of the Middle West apply in the spring for inspection of their premises. If they

are found to be handling only rust-resistant species and varieties, permits are issued which authorize them to make such shipments. No such permits are, however required for the Japanese barberry, which is immune to the disease.

PHONY PEACH DISEASE

Under the new plan of cooperating with the States in preventing the spread of the phony peach disease, branch headquarters have been established at Texarkana Tex., and a Bureau inspector will work out from this point, going with the nursery inspectors over the environs of peach-growing nurseries. He will work primarily in Arkansas, Louisiana, and Texas. Atlanta is continued as headquarters for two other inspectors now working similarly with the State inspectors of Georgia, Alabama, and Tennessee. They expect to reach North Carolina, South Carolina, Mississippi, and Illinois a little later.

State restrictions with reference to the phony peach disease and the peach borer have been passed recently by Mississippi, Georgia, Arkansas, and Delaware, following the revocation of Federal quarantine no. 67.

DATE SCALE ERADICATION

During the month of June a small planting of palms on the property of E. E. Forrester, in the Imperial Valley, was inspected for the first time since February 1932, although located in the infested area and having shown scale in 1930. There were 13 palms in this planting, the tallest about 15 feet to the bud. Water from the main irrigation canal was allowed to flood this and adjoining properties at about a 7-foot level for several months. About 6 feet of silt was deposited, leveling the land. Incidentally the time necessary for inspection of the palms was greatly reduced. Water reached the buds of 9 of the palms, all of which died. The 4 whose buds were above the water level survived and seem to be doing very well.

This changing of the land level has been noticed on several previous occasions when digging out worthless palms along ditch banks. Sometimes it has been necessary to remove about 5 feet of soil before reaching the base of the trunk.

No new infested properties were found during the past fiscal year. The last new infested property in the Imperial Valley was found in June 1932, in the Coachella Valley in May 1930, and in Arizona in April 1930. The number of infested palms found has decreased from year to year as follows: Fiscal year 1929, 1,590; fiscal year 1930, 621; fiscal year 1931, 232; fiscal year 1932, 59; fiscal year 1933, 8.

JAPANESE BEETLE AND EUROPEAN CORN BORER

Exclusive Japanese Beetle Work

Reports received from transit inspectors during May largely served to eliminate most instances of the use of dual certificates on shipments certified under the gipsy moth and Japanese beetle quarantines. All shipments observed in transit bearing two certificates were reported to the inspectors responsible for issuance of the certificates. Rubber stamps for use of inspectors whose duties include the certification of material under both quarantines have been distributed to all employees authorized to perform this joint service. The stamped certificate is slightly less than 1-1/2 by 2 inches in size. In addition to the Department and Bureau heading, it contains the words "Quarantines No. 45,48" and "Issued to ____." A changeable date stamp occupies the center position on the stamp. Each stamp bears a different number prefixed by "Certified by Inspector No." A line headed "Destination" is also provided for use when there is a destination limitation such as that imposed by the white pine blister rust quarantine. Final lines state "Void after five days" and "Certificate not transferable." After the "Quarantines No. 45,48" may be added any other quarantine numbers for which the contents of the package are certified. If certification for only the two quarantines is involved, a line or check is placed after the "48". Use of the stamped certificate will not supplant entirely the issuance of the regular certificates to classified establishments. Many classified establishments in uninfested sections of the regulated zone are furnished with monthly supplies of Japanese beetle certificates. Use of these by such establishments will continue. In all other instances, inspectors of the two projects are authorized to use the joint certificate stamp to fulfill the requirements of both quarantines. Since the joint certificate is stamped directly on the shipping package, presence of the inspector is required in connection with the affixing of this type of certification.

Approach of the seasonal quarantine on fruits and vegetables required the formulation of a definition of "commercially packed apples". A provision of one of the quarantine regulations exempts "commercially packed shipments of apples in any quantity". State officials of each State included within the regulated zone were requested to submit such State laws or interpretations as might assist in formulating a uniform definition to conform to existing State standards. While the State requirements in many instances parallel the Federal standards or grades, the standard requirements for grading and packing of apples are not uniform in the 11 States involved. The intent of the regulation as originally written was to exempt apples which have been subjected to a grading process or such other intermediate handling between picking and packing as would eliminate beetle infestation. As finally defined in BPQ-352, issued June 26, the term "commercially packed apples" includes all apples in closed barrels, boxes, or baskets, of sizes and types customarily used in the apple trade; and apples in open packages when such apples have been graded in accordance with the official standards for apples promulgated by the United States Department of Agriculture or in accordance with any official grades authorized by the State in which the apples were grown and when the containers are marked with such grade. The so-called "unclassified" grade is not, however, considered a grade within the meaning of this definition, and apples in open packages so marked are not considered commercially packed.

Mimeographed sheets listing all inspection centers established on June 15 for the inspection and certification of quarantined fruits and vegetables were distributed by road inspectors to truckers passing the vehicular inspection stations just prior to the effective date of this year's summer quarantine. Twenty-eight inspection centers are required to supply the demand for this type of service. These are located in the following produce growing and marketing districts: Norfolk, Va.; Washington, D.C. (two inspection points); Baltimore, Hagerstown, and Cumberland, Md.; Wilmington, Dover, Milford, Georgetown, Bridgeville, Wyoming, and Woodside, Del.; Philadelphia, Pittsburgh, and Altoona, Pa.; Cedarville, Glassboro, Trenton, Rutherford, Bridgeton, and Hammonton, N. J.; New York City, Syracuse, and Albany, N. Y.; New Haven, Conn.; and Boston and Springfield, Mass. Hours of service conform to local shipping requirements. In Baltimore, 24-hour service is available from Monday to Friday. Decrease in the demand for inspection in Philadelphia permits operation of the platform from 4 a.m. to 8 p.m. Monday to Friday and 4 a.m. to noon Saturday. In previous years the Philadelphia platform has maintained 24-hour service on all days except Saturdays and Sundays. The majority of the centers supply all inspection required by operating during the usual hours of 8 a.m. to 5 p.m. Monday to Friday, and 8 a.m. to noon Saturday.

Activities of a Japanese beetle road inspector were given a prominent part in a full-page colored comic strip appearing in the New York Herald Tribune and other papers syndicating the same cartoon on Sunday, June 25. H. T. Webster, in his strip entitled "The Timid Soul", portrayed Caspar approaching a Japanese beetle quarantine station in his automobile and being flagged by a uniformed inspector. The inspector inquired whether or not any fruit or vegetables were being transported. After replying that he had none, Caspar was told to proceed. The next picture depicts Caspar approaching a detour. Then follows his travels over an unusually bumpy road. After proceeding over many obstacles, an interior view of the car shows Caspar observing a strange insect on the windshield of the car. The automobile is then shown retracing the detour. The final picture shows Caspar back at the road station post where he informs the inspector that he has found a strange insect in his car and since he did not know whether or not it was a beetle he brought it back. The inspector registers amazement. The title strip shows Caspar and his wife in their coupe with the windows closed. His wife wishes the windows opened but the Timid Soul says he would rather not open them since he is afraid a Japanese beetle or a Florida fruit fly will get in.

Imposition on June 1, 1933, of a fine of \$50 for a violation of the plant quarantine act concluded the first proceedings instituted in the Western District of New York under the Japanese beetle quarantine. One July 20, 1932, Henry Rudner, of Rochester, N. Y., was stopped at the quarantine vehicular station at Buttonwood, Pa., at which time he was trucking 70 bushels of uncertified apples from Baltimore, Md., to Rochester, N. Y. He was given an opportunity to return to Williamsport, Pa., for inspection and certification of his fruit. He refused to return. Instead he proceeded to his destination with the contraband. Complaint against the violator was filed before United States Commissioner Cyrus W. Phillips in Rochester. The defendant was not apprehended until November 10. He was arraigned before the Commissioner and released under bond in the sum of \$500. The case was held over for the May term of court in Rochester. On May 18 last the defendant pleaded guilty and the fine was imposed on June 1.

In addition to trap control work undertaken in Maryland in cooperation with the State Horticultural Department, cooperative operation of traps is being carried on in Clayton, Dover, Middletown, Smyrna, Milford, and Wyoming, Del. The latter State-owned traps were placed and are being tended by Delaware inspectors working from the Dover district office. Last year's trapping demonstrations in southern New Jersey are being repeated with modifications by E. S. Rex, of the New Jersey Department of Agriculture. This year, 1,000 of the State-operated traps are equipped with containers holding approximately 10 gallons of beetles. All traps are baited with liquid bait. In addition to the recommended geraniol-eugenol mixture, the New Jersey bait contains a small quantity of phenyl ethyl alcohol. Prior to distribution of the South Jersey traps, a survey of larval population in the trapped sections was made by New Jersey employees in cooperation with the Japanese beetle research laboratory of the Bureau of Entomology.

One new article of merchandise sold for the first time this season as a means of controlling beetle injury, consists of a package of small, perforated cellophane envelopes. These envelopes are designed for placing over rose blooms to prevent beetle feeding as the buds unfold. Thorough spraying of rose foliage with lead oleate coated lead arsenate does not protect the expanding bloom, since the opening flower cannot be kept covered with a film of the poison. Consequently the flower is attacked as soon as the petals appear. It is not unusual for owners of choice roses to protect a few rose bushes by covering the same with mosquito netting. Use of the cellophane envelopes is intended to supplement foliage spraying, and to protect the flowers until their cutting. The cellophane protectors first were advertised by one of the Philadelphia department stores.

Placement of traps in 54 towns and cities in South Carolina was completed by June 27. Set-up crews then moved to North Carolina. Trap routes were established in 53 towns and cities in North Carolina by the end of June. Trap distribution in 8 North Carolina communities remained for completion in July. Set-up crews also completed during June their work in Blacksburg, Emporia, Franklin, and Smithfield, Va. This was only the beginning of the establishment of trap routes in Virginia. Traps were set during the month in 21 towns and cities in the non-regulated territory of Maryland. Trapping for control within the regulated zone began during the last half of June in Washington, D. C., Alexandria, Va., Delmar, Del., and 33 Maryland communities.

After revision to conform to the latest practices, instructions to trap inspectors were mimeographed and assembled in booklet form for ready reference. Boxes containing sufficient trap inspector's supplies and forms for use during a 30-day trapping program were also prepared. Instructions to road inspectors were similarly revised and a set issued to each inspector stationed at the road stations. Each temporary employee is also supplied with a manual containing instructions regarding procedure to be followed in case of a motor vehicle accident or accident involving personal injury. This latter manual also lists all Government medical facilities in the States in which Japanese beetle quarantine activities or outside trapping activities are performed.

Tabulation of data pertaining to treated nursery plots and heeling-in area analyzed early in the spring by the Toxological Division shows that 771,656 square

feet of heeling-in area and 4,954,497 square feet of nursery plots containing growing plants, or a total area of 131.5 acres, was sampled and analyzed for lead arsenate content. Of the areas analyzed, 358,023 square feet of heeling-in area and 3,000,248 square feet of nursery area required retreatment with varying amounts of arsenate of lead. The surface area requiring retreatment is approximately 59 per cent of the total analyzed. During May and June, 51.1 acres of nursery plots and 7.2 acres of heeling-in area were retreated with sufficient lead arsenate to bring the concentration up to the required 1,500 pounds per acre.

District supervisors conferred at the Harrisburg headquarters for the first time on June 2. Considerable time was given to a discussion of several new phases of enforcement of the summer quarantine on fruits and vegetables. Personnel matters in connection with nursery and greenhouse scouting and farm products inspection were talked over, and the necessity emphasized for employment of only a minimum temporary force and elimination of all motor vehicles possible.

Visitors to the storage warehouse of the project at the General Depot of the U. S. Army at New Cumberland, Pa., usually are driven the length of the six bays in an automobile or else ride bicycles during the inspection trip. The warehouse is 840 feet, or 0.16 mile long, with a round trip, through one lane of fire doors and back the other lane, of approximately one third of a mile.

Scouting of classified nursery and greenhouse establishments and adjacent premises for a radius of 1,000 feet began in Virginia and Maryland on June 12 and in Delaware on June 15. Similar activities in New Jersey and Pennsylvania will get under way on July 1, and on later dates in the more northern States in the regulated zone.

Community spraying with coated arsenate of lead in cooperation with the Maryland State Horticultural Department was performed in Laurel, Elkton, and Colgate during June. The spray was applied by means of two 600-gallon capacity Fitzhenry-Guptill high-pressure sprayers. Truck drivers paid by the Bureau operated the sprayer trucks. Hosemen, nozzlemen, and crew foremen were paid from Maryland funds. Agent W. F. Walsh, from the Harrisburg headquarters, supervised the work. Dr. G. S. Langford, of the Maryland Department, made frequent visits to the scenes of operations. Characteristics of the three localities sprayed varied in each instance. In Laurel the spraying was in a distinctly urban community, with many shade and ornamental trees. Premises sprayed were in general well kept and had plantings of flowers and ornamental shrubs. An ordinary orchard nozzle was effective in reaching most of the foliage covered. A short Worthley nozzle was used for some larger trees. Care was necessary to keep the spray drift from houses. The lead oleate-lead arsenate spray was applied at the rate of 9 pounds of the paste to 100 gallons of water, making 54 pounds of the insecticide to one tankful of water. Water was obtained at the city pumping station in Laurel. In each of the three communities sprayed, warning placards were tacked in conspicuous places in the localities to be sprayed before the crews began their work. Scarcely any difficulty was experienced with the persons occupying the sprayed premises. The work was largely welcomed as an attempt to control an annoying pest. Three laborers were used in each crew to drag hose. The hoseman nearest the nozzle acted as crew foreman and made the tree and shrub counts with a hand counter.

Each truck carried 1,000 feet of either 1/2 inch or 3/4 inch high-pressure hose, but an average of only 250 feet was used in the built-up communities. The heaviest infestation of the three is in a woodland section north of Elkton. In addition to low wild growth, a number of tall trees were sprayed in this locality. Long and short Worthley nozzles were used exclusively in this woodland section. The infestation borders several small streams, from which water was pumped directly into the tanks. Two bridges were not strong enough to carry the weight of the loaded trucks. It was therefore necessary to adjust the work of the sprayers so that they did not need to pass over the weakened structures in going to and from operations. Foliage conditions in Colgate offer somewhat of a combination of urban plantings and woodland area. The infestation extends for a short distance back from Eastern Avenue and North Point Road in suburban Baltimore. Dwellings are of the small, frame bungalow type, with small yards and few lawns or extensive flower or shrubbery plantings. Beyond the dwellings are numerous small trees and considerable thick first growth. In spraying all foliage encountered, it was necessary to pull hose through thickets, among which considerable poison ivy grows. The men were also bothered by chiggers. From Colgate it was necessary to drive the trucks several miles to a Baltimore City fire station to obtain water from a hydrant operated by a paid fireman. In Laurel and Elkton all laborers were hired through the local welfare committee or a municipal official. Nozzlemen hired in Laurel stayed with the outfits in Elkton and Colgate. At the conclusion of the spraying in each community, small cages of perforated metal each containing a small jar of geraniol-eugenol mixture, equipped with wick for volatilizing the liquid, were hung at the rate of four or five per property in grape arbors, rose bushes, and other preferred food plants. In Erie, Pa., last year the spray mixture applied contained geraniol and syroline for the purpose of attracting the beetles to the sprayed foliage. Frequent applications of the attractant were necessary throughout the season. In Maryland communities sprayed, the cages of bait will volatilize their attractive odor during the entire period the adult beetle is active. Spraying in Laurel was performed from June 3 to 15, in Elkton from June 19 to 25, and in Colgate from June 27 to July 2. Coated lead arsenate used in these respective communities totalled 2,295 pounds, 4,178 pounds, and 864 pounds. In Laurel there were sprayed approximately 11,500 trees and 2,500 shrubs plus a strip of weed and vine growth two fifths of a mile long and averaging 30 feet wide along the B. & O. railroad at the Laurel race track. Counts were impracticable of the individual trees and shrubs sprayed in the woodland section north of Elkton. In addition to 5-1/8 acres of woodland, there were 911 trees and 738 shrubs sprayed in Colgate. Traps operated in two of these localities during the summer of 1932 caught 182 beetles in Laurel, and 54,044 in Colgate. Operation of traps in all three communities began this year the last week in June.

Corn Borer Activities

Only three prosecutions were necessary in concluding enforcement by the State of Connecticut of their compulsory corn borer clean-up campaign. Two of these actions resulted from failure of farmers to plow and burn cornstalks in compliance with orders issued by the State inspectors.

During June, inspection and certification continued of articles requiring Federal certification under State European corn borer orders for movement into the

States of Arizona, California, Colorado, Georgia, Louisiana, Nevada, Oregon, and Utah. Eleven inspectors devoted full time to this work. A number of others performed some Japanese beetle quarantine inspection work in connection with their corn borer inspection visits. This combined work was compensated for by an equal amount of corn borer inspection performed by the regular Japanese beetle inspection corps. The greatest demands for Federal corn borer certification service were in the New Jersey, Long Island, and Boston areas. To and including the month of June approximately 3,500 shipments were certified for movement to the States accepting only Federal certification. In view of the general business conditions in the nursery trade, this quantity of stock moving to eight rather distant States constitutes quite an item in keeping open the regular channels of trade, and offers somewhat of a marginal outlet for stock which without Federal inspection would be prohibited movement.

MEXICAN FRUIT FLY

The greater part of the month was occupied in completing the application of poison spray which was started May 22. A rainy spell of four days set the work back after it had gotten off to an excellent start. With this one exception the weather remained ideal, and since the growers as a whole had no pressing routine jobs confronting them, the spraying moved along rapidly. A number of outlying groves of young trees which experience has shown are not likely to harbor an infestation were omitted from this application. However, 3,875,075 trees or approximately 55,000 acres of bearing groves were sprayed. A total of 21,240 gallons of molasses and 1,059 gallons of nicotine were used. Five hundred knapsack sprayers were used by approximately 7,500 individuals in applying the spray. In addition to the knapsack sprayers, a few of the growers preferred to use their power sprayers.

The set-up for the distribution of the material was much the same as in previous applications. Where only small quantities of molasses and nicotine were required, delivery was made at the grove by the inspectors. Owners of large plantings called at the distribution depot for the material. Each inspector was assigned certain roads or areas and had from 15 to 20 knapsack sprayers. It was his duty to contact the growers of his area, make arrangements for the spraying of the groves, deliver the material and the sprayer, supervise the application of the spray and pick up the sprayer when the spraying was completed and deliver it to the next grower who was ready to start. It was found that the most effective work could be done from about 6 to 9 p.m. when most of the growers could be found at their homes.

In addition to the supervising done by the district inspectors three inspectors were assigned full time to this duty. Considering the large number of individuals applying the poison it was found that an exceptionally good application had been made. Abandoned and absentee-owned groves constituted a difficult problem. The spraying of these properties was accomplished by various methods. In some instances neighboring owners were prevailed upon to spray them for their own protection. In other cases civic organizations furnished the labor. Municipal

governments furnished labor in a number of instances.

Upon completion of the spraying, the equipment was gathered up and, after being cleaned, was stored in the warehouse at Harlingen. Surplus molasses was barreled and stored at Harlingen and Mission, while the nicotine remaining was stored at the warehouse in Harlingen.

Trapping operations were resumed as the spraying was completed in the various districts. Since most of the inspectors were on legislative furlough during the latter part of the month this work did not get into full swing during June. It is expected that about 6,000 traps will be in operation during July.

Three adult fruit flies were taken in traps in Matamoros during June. Mangoes reaching the market, particularly those from the State of Michoacan, were found to be heavily infested. During the month 5,214 larvae and pupae were taken from mangoes from that State. This does not include the larvae from 11 boxes of this fruit that were confiscated and destroyed without inspection.

Following the arrival of so much infested fruit and the taking of the 3 adults it was deemed advisable to give all trees in the city an application of nicotine spray. This work was accordingly started during the latter part of the month.

PINK BOLLWORM

The main activity on the pink-bollworm project during the month was in connection with trap plats of cotton instituted as one of the measures to reduce the heavy infestation of pink bollworm in the Big Bend area of Texas. Blooms have now appeared on all of the 67 plats and infestation has been found in 52 of these plats. In order to arrive at the results being accomplished by the trap-planting program, plans were made to examine blooms from local field cotton for comparative infestation, this to be carried out by inspection of an equal number of rosetted blooms from the plats and the nearest cotton fields. The field cotton was blooming sufficiently by the last week in June to begin these comparative examinations. Blooms collected from 37 fields disclosed that 14 of the fields were infested, while blooms from 37 adjacent plats showed 24 of the plats to be infested. From the 14 infested fields 27 pink bollworms were taken, and the 14 adjacent plats yielded 46 pink bollworms. The following week infestation counts were made in 50 nearby fields, 26 of which were found to be infested, yielding 80 pink bollworms, while 346 pink bollworms were taken from the blooms of adjacent plats. While it is early to draw conclusions as to the ultimate benefit of the traps, the above readings indicate that the advanced trap plantings are more attractive to the moths than field cotton.

It may be of some interest to note that at Castolon, in Brewster County, where only a small isolated cotton acreage is grown and it was impracticable to carry out the special program, 21 rosetted blooms were gathered from one half acre of cotton, from which 19 pink bollworms were removed. It will be recalled that Brewster County was a noncotton zone for the season of 1928.

In the Salt River Valley of Arizona a small amount of field inspection was made in the 1933 crop. Some 800 squares and 750 bolls were collected from the Ring field at Laveen and examined, with negative results. It will be remembered that this was one of the last fields to be found infested in that district, no infestation having been found in the area since the 1931 crop.

In Florida the clean-up program of wild cotton on Key Largo was completed at the close of June. There was considerably less wild cotton on the extreme upper end than on the remainder of Key Largo. There was a very heavy distribution on Sound Point, which is actually a separate island but at the time of the original survey was thought to be a part of Key Largo. During the month 50 acres were cleaned, from which 20,735 mature and 5,925 seedling plants were removed, and of this amount 15,365 mature and 4,355 seedling plants covered 40 acres on Sound Point. In addition to the above, 147 domestic dooryard cotton plants were removed from 21 different locations in Dade County, and a total of 240 bolls examined from these plants gave negative results.

Laboratory inspection has been continued throughout the month. At the Alpine and El Paso offices seed samples were examined, these samples originating in the States of Arkansas, Mississippi, Missouri, and Tennessee. At the San Antonio laboratory and the various field stations green bolls and bollies were examined. No specimens of the pink bollworm were found in any of the material inspected. In addition to boll examination at Miami, a daily collection and inspection of blooms from the plat cotton at Chapman field was continued, with negative results, throughout the month.

The working model of the small gin-trash machine, mentioned in last month's News Letter, has been completed and tested out satisfactorily. Some 8 or 10 of these will be available for use at the opening of the gin-trash-inspection season in areas of limited cotton production. These little machines combine the essential principles of the big machine; they have a drum 2 feet in length and approximately 2 feet in diameter. The machine is so adjusted that when turned too fast the material adheres to the circumference of the drum and stops feeding; otherwise the worms present in the trash would be picked up and discharged through the suction fan and lost. As stated in the last News Letter, the machine is light enough to be handled by one man, and it will undoubtedly prove a valuable addition to our inspection equipment. It will enable us to perform efficient and economical inspection in certain areas not heretofore practicable.

PREVENTING SPREAD OF MOTHS

Spraying was carried on in the Connecticut and Massachusetts section of the barrier zone during the month, a total of 15 sprayer machines being in use. Except for occasional days when there were high winds and some local showers, the weather throughout the month was hot and dry, making ideal conditions for spraying operations. The dry weather, however, brought about a shortage of water in

many small streams and brooks which were being used to furnish water to mix arsenate of lead spray solution, and because of this it was often necessary to move the sprayer trucks to new locations or haul water from a considerable distance. The two tractors transferred to this project from the Corn Borer-Japanese Beetle activity earlier in the season proved valuable in hauling sprayers over rough mountain roads to points more accessible to areas where spraying was to be conducted. During periods when the foliage was too wet to hold the spray, the men were employed in laying new hose lines and doing rough cleaning work in the immediate vicinity of infestations where spraying was being done. By the time spraying was completed at the end of the month, more than 1,900 acres had been sprayed, a total of 38 tons of arsenate of lead and 1,800 gallons of fish oil having been used.

In the Pennsylvania area weather conditions were also excellent for spraying, very little time being lost on account of rain or wet foliage. A total of 26 sprayers were in operation during the month. Although considerable difficulty was at first experienced in training local men to properly hold the spray nozzle, by diligent effort the Federal employees supervising this work taught a sufficient number of them to do this difficult task in a satisfactory manner. This type of spraying was new to them and they therefore could not at first understand why the solid stream should not be turned directly onto the foliage rather than to hold it in such a manner as to allow the mist spray to drift onto the foliage. It was also difficult to get these men to move the nozzle as rapidly as they should to prevent waste and secure the most satisfactory results. They apparently did not realize the volume of material passing through the tips such as are used in solid-stream spraying. Most of the difficulties were straightened out during the first week or 10 days and the nozzlemen, considering their limited experience in solid-stream spraying, performed very good work. To July 1, 2,800 acres of woodland, including the cut-over area, and 5,700 isolated trees had been sprayed. In addition to this work, trees, shrubs, vines, etc., were sprayed on 4,800 properties in residential sections within the heavily infested area. More than 48 tons of arsenate of lead and 1,900 gallons of fish oil were used up to the first of July. Spraying will be continued in the Pennsylvania area for about one week in July.

Although it was feared that cattle and goats might be poisoned because of negligence on the part of the owners in permitting them to graze in the sprayed area after being warned several times of the danger in allowing them to do so, no report has as yet been received indicating that any of these animals have been affected. There was a total of 38 properties for which owners or tenants refused to sign spraying permits. After being served with a State notice, these properties were sprayed under the direction of a full time employee of the Pennsylvania Department of Agriculture.

When the foliage was too wet for spraying, the men patrolled the burlap bands attached to trees in the infested area and killed gipsy moth larvae found hidden beneath them. To and including June 30, a total of 45,561 larvae had been killed under these bands.

Very little serious mechanical trouble was encountered with the spraying equipment anywhere in the field this season, and such as did arise was quickly

remedied by mechanics with service trucks detailed especially for this work. Service trucks made daily visits to every spraying machine and corrected any troubles reported by the operators.

The spraying program in New Jersey was completed by the middle of June, an area of 60 acres of woodland around the infestation in Mendham Township having been sprayed. Upon completion of this work the sprayer loaned by this project to the State was returned to Wilkes-Barre. A check-up was made of the tanglefoot bands after spraying was finished, and no living gipsy moth larvae were found. Arrangements have been completed for placing assembling cages in New Jersey. This office has furnished the State of New Jersey with 850 assembling cages together with attractant and other material necessary for the work. The cages will be put up and patrolled by employees of the State of New Jersey. It is planned to place cages in Mendham and Randolph and a group of townships surrounding them to check up on the scouting and treatment work carried on during the fiscal year 1933. The infested area will also be rescouted during the fiscal year 1934.

Preparations for the assembling cage work which is to be carried on in July were well under way by the end of June. The substation at Middleboro, Mass., on Cape Cod, where bait materials are obtained, and where collections of various stages of the gipsy, brown-tail, and satin moths are mounted for specimens, was opened and preliminary work started. Considerable scouting has been done for sizable gipsy moth infestations at which large collections of female pupae may be made. It is planned during July to put up assembling cages in 53 townships in and surrounding the known infested area in Pennsylvania. In the barrier zone in New England and in the area directly to the east of the zone, it is planned to place assembling cages in 87 towns. As mentioned above, assembling cages and material have already been furnished to the State of New Jersey. In accordance with a request from the Canadian Department of Agriculture, this office has furnished them with 25 assembling cages. These are to be put out in Canada along the international border, as was done last year.

At this season of the year when both gipsy and brown-tail moths are in the larval stage, inspectors examining shipments prior to certification may find larvae of one or the other on almost any type of materials, sometimes where least expected. In illustration of this, a report has been received from the district inspector of the Concord, N. H., district that he found a brown-tail caterpillar on a consignment of monumental granite being shipped from Concord to a destination in Iowa.

Although there is a growing tendency toward moving the various types of quarantined products by truck instead of by freight, such movement is commonly confined to distances within a comparatively few hundred miles of point of origin. Rapid transportation between exact point of origin and exact destination, avoiding the necessity of movement to and from railroad shipping points, is a factor that has decided the choice of trucks over freight. For long distance moving, however, usually such materials are shipped through railroad channels. Occasionally, a shipment is moved for a long distance by truck because of unusual circumstances surrounding the shipment in question. Recently, a large and valuable ornamental evergreen was shipped by truck from Connecticut to a point in Ohio, a distance of

over 800 miles. The tree with ball of earth weighed about two tons and as it was particularly valuable it was decided to have it reach destination with as little delay as possible. It could be transported by truck much more rapidly than by freight, and also there was no possibility that it would be injured by heating, a condition to which it might have been exposed if shipped in a freight car.

A summary of the survey of brown-tail moth distribution which was carried on by employees of this project during the winter and spring, together with reports from State officials, indicates there has been a marked increase in the infestation in New England as compared with last year. This is based on the number of brown-tail moth webs cut and reported during the winter of 1932-33. Over 1,127,000 hibernating webs were cut and destroyed in New Hampshire and Massachusetts. No record is available of the webs that were cut in the State of Maine. There was a material spread of this insect beyond the quarantine line in Maine and New Hampshire, even reaching into five towns along the Connecticut River in the State of Vermont. In Maine, 20 towns beyond the quarantine line were found infested, and in New Hampshire 18 towns beyond the quarantine line were found infested. In Massachusetts, Rhode Island, and Connecticut, no infestations were found in towns outside of the quarantine line.

For the past few months considerable time has been given at this office to plans in connection with the gipsy moth work which might be done as a part of the Emergency Conservation Reforestation program. On April 1, S. S. Crossman, of this office, was placed in charge of this Bureau's activities with relation to the gipsy moth part of the emergency program. The reforestation work was organized so quickly and in such an extensive way that it has been difficult to plan the work and procedure, and some readjustment has been necessary.

The object of the Emergency Conservation Gipsy Moth work east of the barrier zone is to find and destroy the gipsy moth infestations that are present between the barrier zone and the Connecticut River. This will protect the barrier zone and aid materially in preventing the westward spread of this insect. It is hoped to use approximately 1,000 men from 9 emergency conservation work camps situated between the barrier zone and the Connecticut River. Four camps are located in Connecticut, four in Massachusetts, and one in Vermont. The use of 100 men has been asked for from each of the 8 camps in Connecticut and Massachusetts, and 200 men from the camp in Vermont. It is expected that positions will be approved for three supervisors, one for each of the three States. These supervisors will direct and manage, under supervision, the gipsy moth work from all camps in the State where men have been placed for this work. The immediate supervision in each camp where 100 men have been placed for gipsy moth work will be done by 4 foremen, consisting of a top-foreman who will be assisted by 3 under-foremen. The first work of the foremen in the camps is to train a small crew of enrolled men from whom small-crew foremen will be chosen. The gipsy moth work in the Vermont camp where 200 men were asked for will be supervised by a top-foreman assisted by 6 under-foremen, and approximately 18 men from the labor group will be trained to act as small-crew foremen. The foremen who are being recommended for positions in this work are being picked with considerable care. These men must have had at least three years of experience in actual field gipsy moth control work in order to qualify.

The top-foremen are already in the four camps in Connecticut training men,



About 55 men have been turned over for this instruction. In Massachusetts and Vermont no foremen have been placed in the camps as yet, as the State foresters of these States expressed a desire to use all of the labor in the camps on other projects at first. It is believed that by the end of July or very early in August our entire quota of foremen will be in and that actual scouting work can be started.

The plans call for scouting of all the woodland in the area between the Connecticut River and the barrier zone in Connecticut and Massachusetts and for similar work in a large area in the southern part of Vermont. As infestations are found, the egg clusters will be treated with creosote, and thorough cleaning work such as chopping and burning of undesirable tree growth will be done. It is hoped that this work can be followed next June with an intensive spraying program.

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