N E W S L E T T E R

BUREAU OF PLANT QUARANTINE

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TECHNOLOGICAL

Work on the fumigation of cotton samples with carbon disulphide for the pink bollworm has been continued by A. C. Johnson and assistants in Texas. A small, portable fumigatorium for use with small quantities of samples has been designed and tested. It is adapted to localities where vacuum fumigation with hydrocyanic acid is not available. The fumigation chamber can be made from an oil drum with the addition of a flange for a water seal and a cover at a cost of about $8. The apparatus makes a cheap, serviceable, and easily operated fumigation chamber. Recent tests, while not yet completed, indicate that it is effective.

Tests are also under way on the fumigation of cotton for the pink bollworm in fabric sacks, which are so treated that they are nearly impervious to the diffusion of the gas through the material. In these tests it was found possible to retain sufficient concentration of gas within the sacks to kill the pink bollworm inside the cotton bolls. This device is very convenient and cheap as, when not in use, several sacks can be folded up and carried in an automobile in a very small space.

Tests of a new method of installing thermograph bulbs in the cottonseed sterilizers, used by gins in the pink bollworm regulated area for the sterilization of cottonseed as it comes from the gin, have been carried on this season. This method involves the removal of about 13 inches of the flight from the spiral conveyor and the installation of the bulb in this space by means of a rigid iron pipe, the pipe being curved so that the cottonseed passes readily over and around the pipe, and is in contact with the thermograph bulb while the conveyor is in operation. With this method it is possible to get an accurate determination of the temperature of the cottonseed in the sterilizer. The mass of cottonseed, which banks up where the flight is removed from the conveyor, retains the steam in the upper part of

the conveyor more efficiently.

The roller equipment recently installed in some of the gins in the pink bollworm regulated area for the purpose of crushing any cottonseed which may be present in the lint is being tested also. It is found that this method of disinfecting cottonseed is rapid, cheap, and effective when the rollers are properly adjusted.

FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

Fruit fly from Mexico.--Seven larvae of the Central American fruit fly (Anastrepha striata Schiner) were intercepted at Eagle Pass, Tex., in guava in baggage from Mexico.

Syrphid in lily bulbs.--Eumerus sp. (Syrphidae) was intercepted at New York in lily bulbs in cargo from France.

European corn borer in lemon.--A living larva of the European corn borer (Pyrausta nubilalis Hbn.) was intercepted at Boston in a lemon in cargo from Italy. This represents an unusual host record for this insect.

Coccid from Costa Rica.--Asterolecanium aureum Boisd. (Coccidae) was intercepted at Washington, D. C., on orchid (Brassia longissima) leaves in the mail from Costa Rica.

Sweetpotato weevil from the Bahamas.--The sweetpotato weevil (Cylas formicarius Fab.) was intercepted at Miami, Fla., in sweetpotato in baggage from the Bahamas.

Scale insect on apricots.--Parlatoria oleae Colvee (Coccidae) was intercepted at New York on apricots in stores from Spain. This scale insect was first found to be established in this country in 1927, when it was discovered on California privet in Maryland.

Weevil from the Philippines.--Diocalandra frumenti Fab. (Curculionidae) was intercepted at Honolulu with a coconut in the mail from the Philippines.

Coccid from Italy.--Parlatoria pergandii camelliae Comst. (Coccidae) was intercepted at New York on camellia leaves in cargo from Italy.

Bruchid in ivory nut.--Larvae of Caryoborus chiriquensis Sharp (Bruchidae) were intercepted at San Francisco in ivory nut (Phytelephas sp.) in cargo from the Canal Zone.

Scale insect from Hawaii.--Pseudaonidia tesserata (de Charm.) (Coccidae) was intercepted at San Francisco on Hibiscus sp. in baggage from Hawaii.

Weevil from American Samoa.--Aphanocorynes humeralis Marshall (Curculionidae) was intercepted at Honolulu with coconuts in cargo from American Samoa.

Coccid from the West Indies.--Vinsonia stellifera (Westw.) (Coccidae) was intercepted at New York on leaves of Laurus sp. in baggage from Puerto Rico, and at Washington, D. C., on mango plants in cargo from Martinique.

Chrysomelid from Mexico.--Chelymorpha catenulata Boh. (Chrysomelidae) was intercepted at Mobile, Ala., on banana in cargo from Mexico.

Coffee leaf miner from Honduras.--The coffee leaf miner (Leucoptera coffeella Guerin) was intercepted at New Orleans in a coffee leaf in quarters from Honduras.

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

Plant diseases around fish in seaplane.--Seattle sportsmen returned to Seattle from Vancouver via seaplane with a nice catch of fish packed in maple leaves. The inspector found some equally nice specimens of two diseases on the maple leaves and sent them to Washington where they were added to the Bureau of Plant Industry herbarium. Host, Acer macrophyllum; pathogens, Rhytisma punctatum and Septoria sp.

Plant disease from Latvia.--A leaf spot, Phyllosticta sp., was intercepted at Philadelphia on Saxifraga umbrosa in mail from Latvia. The only previous disease interceptions from this country were on pimento peppers in stores.

Wakker's disease or yellow disease on hyacinths.--Several interceptions of Wakker's disease (Bacterium hyacinthi) on Holland hyacinth bulbs have been sent in from Detroit.

Nematode interceptions include new hosts.--Tylenchus dipsaci was found in a Chionodoxa sp. bulb from Holland intercepted at Detroit, the first record for this host, according to the Division of Nematology. A few days later Philadelphia inspectors intercepted two lots of similar material.

Nerine sp. bulbs sent in by a State inspector of North Carolina were found infested with T. dipsaci, this being the first record for this host also.

Additional interceptions of T. dipsaci were made during the month in Scilla bulbs from Holland at New York (8) and Detroit, in hyacinth bulbs from Holland at Detroit (5) and New York, and in garlic from Italy and from Spain at Philadelphia.

Aphelenchus avenae was intercepted at Philadelphia in Dioscorea sp. from Jamaica and in garlic from Italy, and at New York in a hyacinth bulb from Holland.

An onion from England intercepted at Philadelphia was infested with Aphelenchoides sp.

Aphelenchoides sp. (may be A. parietinus) was found in bulbs of Lilium neilgherrense from India intercepted at Philadelphia.

ADVERTISEMENT OUT OF STEP WITH THE QUARANTINE

W. W. Wood, of Detroit, notes that his attention was called to a suspicious advertisement in an American periodical by a Detroit customs inspector. The European advertiser listed a bargain lot of bulbs for the American buyer and promised to include also with the order a small premium indefinitely described. The suspicion in this case arises from the fact that similar advertisements have come to light from several other sources, and some of these list narcissus and iris bulbs among the selection which the American public is freely urged to buy. The objectionable feature here is that, while the other bulbs listed may be imported readily by anyone, the narcissus and iris mentioned are subject to more stringent restrictions, and may be imported for certain public-service purposes only; consequently the American buyer who pays in advance for such lots may find himself unwittingly prevented from importing these specially restricted bulbs, for which he has already paid. The suspicion arising in connection with the advertisement noted in Detroit is based on the same lack of consideration of the quarantine regulations involved; while the bulbs there specifically listed may be imported by any person, there is no assurance that the indefinitely described premium lot may not include bulbs under special restrictions, as was openly done in the similar advertisements referred to. In such cases the American buyer is put in the awkward position of violating the Nursery Stock, Plant, and Seed Quarantine, since he is technically the importer of such a shipment. Although advertising of this type may not be illegal, it would be much more commendable if the interests of the buying public had been given proper consideration.

HAWAIIAN FRUIT COMES IN BY AIRPLANE

A. G. Webb, writing from Seattle on September 16, 1932, reports a case illustrating rather clearly the way in which airplane traffic adds to the danger of pest introduction. A traveller from Hawaii arriving by steamship at Vancouver September 13, 1932, took off for the South in a passenger airplane, which was inspected at Seattle. This traveller had in his possession 12 avocados brought in a bag from Honolulu. Although the fruit in this particular instance showed no evidence of infestation, the possibility of fruit fly infestation in Hawaiian fruit is known to be great, and it is plain that if such materials were allowed to enter in this manner a very dangerous channel for pest introduction would immediately be created.

HURRICANE DAMAGE IN PUERTO RICO

A letter from Richard Faxon, Plant Quarantine Inspector in Puerto Rico, reports that he and his associates came through the hurricane of September 26 unharmed, and that no damage was done to Bureau equipment. This terrific storm swept over the northern third of the Island and devastated the entire grapefruit area, breaking a large percentage of fruit from the trees. Many of the trees were blown down or entirely denuded of foliage. This disaster, coming so closely on the heels of the hurricane of 1928, has been a severe blow to the fruit and vegetable export industry of Puerto Rico. It may be 18 months before another citrus crop can be grown, though in the interval there is likely to be an increased production of winter vegetables.

HIDING THEM FROM THE INSPECTOR

Still another attempt to circumvent the watchful eye of the inspector is reported by W. W. Chapman, of Philadelphia, as follows:

On September 12, while searching the crew's quarters of the American SS Cayo Mambi from Jamaica, Inspector Wm. J. Ehinger and Customs Guard John Masterson discovered two 5-pound yams in a pair of boots. Their suspicions were first aroused when they noticed that three pairs of gum boots were lying limp on the floor while a fourth pair were standing up straight--an unusual position for a pair of empty boots. The yams were found to be infested with nematodes.

DOMESTIC PLANT QUARANTINES

TRANSIT INSPECTION

Arrangements are being made for the assignment of State inspectors to work cooperatively on transit inspection at New York, Chicago, St. Paul, Kansas City, St. Louis, and Milwaukee. At the two latter points the work will be carried on almost entirely by State men as this Bureau is unable to resume the services of Federal inspectors at these cities and at several others where inspection has heretofore been carried on throughout the season. At Jacksonville, the combination of transit inspection and terminal inspection will be continued. The work of State inspectors at these various points, it is believed, will be a very material aid in checking on compliance with the Federal quarantines as well as with the State inspection regulations in which they are especially interested.

Approximately 3,000 narcissus bulbs were intercepted at Jacksonville on October 12 by Paul Thomas in four consignments from a Florida shipper to chain

stores in Illinois, Minnesota, and Wisconsin. The shipments did not have attached the certificate or other evidence required by Federal quarantine No. 62, that the bulbs were free from bulb-fly or eelworm infestation. The investigation to determine whether the bulbs had been inspected is not yet completed.

Notices of the issuance of State quarantines relating to the European corn borer, following the revocation of Federal quarantine No. 43, have been received at the office of Domestic Plant Quarantines from the following States: Arizona, California, Florida, Georgia, Illinois, Iowa, Kansas, Louisiana, Missouri, Nebraska, Nevada, Oklahoma, Texas, Utah, and Wisconsin.

PHONY PEACH DISEASE

The Bureau of Plant Industry reports the recent finding of the phony peach disease in Marion and Union Counties, Ill., and confirms the recent reports of this disease in Pulaski County.

NARCISSUS BULB PESTS

A very material reduction in the amount of eelworm infestation found in Michigan-grown narcissus bulbs this season was reported by J. M. Corliss, who assisted the Michigan State inspectors in the discovery and diagnosis of narcissus-bulb pests.

WHITE PINE BLISTER RUST

Applications for pine-shipping permits have been received from various nurseries in Pennsylvania, West Virginia, Iowa, and Wisconsin. Under the new white-pine blister-rust quarantine regulations such permits are required for all interstate shipments from the lightly infected States as well as from those nurseries of the New England States, New York, and the Pacific Northwest, who desire to ship outside the more generally infected areas. Checking on the environs of the nurseries concerned is now in progress, for such pine-shipping permits are issued on condition that the pines have been grown from seed in an area free from currant and gooseberry plants within the distances specified in the regulations. Permits may also be issued to nurseries located at considerable distances from blister-rust infections pending the completion of Ribes eradication around the premises.

DATE SCALE

During the month of September routine inspection was continued in the Coachella Valley. Sixteen thousand nine hundred and thirty-four palms were inspected and no scale was found. Since the first of the year all palms in the

infested area have been inspected, those in infested gardens two or three times, without finding any scale.

In the Imperial Valley routine inspection in the infested area was continued and no scale was found. A considerable portion of the northern part of the Valley, where Parlatoria scale has not been found to date, was scouted with negative results.

In the Salt River Valley in Arizona 166 sections were scouted for unlisted palms. Eight hundred and eighty palms were found, 33 of which had been overlooked in previous inspections. The remainder (847) were from seed or offshoots planted since last inspection. Inspection of the infested area was begun. Four thousand one hundred and twenty-four palm inspections were made, and no scale was found.

EUROPEAN CORN BORER AND JAPANESE BEETLE

Specialized Corn Borer Activities

Field scouting in the western corn borer area was completed and the men checked in at the area headquarters in Springfield, Ohio, by September 17. Rechecking of previously scouted territory began on September 6 in Indiana and Kentucky and continued until the crews were disbanded between September 14 and 17. Men employed by the State of Wisconsin discontinued scouting activities on September 10. Federal scouts in the latter State ceased scouting on September 13. State-employed scouts in Illinois were dismissed on September 14, while Federal scouts continued their work one day longer. West Virginia crews reported to the Springfield headquarters for dismissal on September 14 and 15. Four crews of two men each continued to scout in Ohio River bottom territory until September 16. Scouting in western territory failed to disclose any borer infestation, nor did the recheck and rescout work yield any but negative results. Failure to locate any infestation in previously scouted territory indicated thoroughness of the initial scouting and eliminated the necessity for further scouting.

Scouting by temporary men for the European corn borer continued until September 13 in Pennsylvania, New Jersey, Delaware, Maryland, and Virginia. On September 14 all crews checked in their trucks and equipment at the Army Reserve Depot, New Cumberland, Pa., and were dismissed.

A first-record infestation of the corn borer was found on September 6 in Willards District, Wicomico County, Md., when of 24 specimens forwarded for identification, 2 were determined to be the European corn borer.

Shortly after the termination of the regular scouting season, five of the

appointed men began rescout work in Maryland and New Jersey in an effort to make sure that no infestation exists in that territory that was not picked up by the field scouts. To date, no infestation has been found by these men.

In cooperation with the Bureau of Entomology, survey work was carried on throughout the month in New Jersey, Long Island, and all the New England States. The results of this work are being tabulated by the Bureau of Entomology office at Arlington, Mass.

Exclusive or Combination Japanese Beetle Work

This summer's survey of the extent of area exhibiting intense foliage damage by the Japanese beetle was the first undertaken by the Bureau. Two men who have had ample opportunity over a period of years to observe the depredations of the insect in the heavily infested zone were assigned to this work. Their observations began on July 12 and continued through September 1. The survey was divided into two stages--a first observation of general conditions of beetle injury made from July 12 to August 4 with determinations of the degree of damage then existing, and a second observation from August 4 to September 1 to establish percentages of maximum injury. Four degrees of infestation were recorded, divided as to those showing 25 per cent, 50 per cent, 75 per cent, and 100 per cent leaf injury. Sweet cherry trees, where present, were used somewhat as indicator trees, since they were usually attacked most vigorously by the beetle. Beetle injury to the foliage of shade trees, fruit trees, certain vegetables, and small fruits was recorded. Readily observable damage to ripening fruit, berries, and corn was also noted. Numerous pictures were taken to illustrate typical conditions encountered. Maps prepared as a result of the seven weeks' observations show that in an area of 1,647 square miles in southern New Jersey, southeastern Pennsylvania, and the northern tip of Delaware, foliage damage to preferred food plants ranges from 75 to 100 per cent. A further zone of 1,378 square miles concentric to the sections showing heaviest infestation in New Jersey exhibits similar foliage damage to the extent of 50 to 75 per cent. An outside ring comprising the area showing 25 per cent defoliation includes 1,353 square miles. This latter area represents the season's increase of territory in which adult beetle population has increased sufficiently to cause easily detected foliage damage. Based on the 1930 Federal Horticultural Census for the crop year 1929, there are within the area surveyed 18,978 farms with a total farm area of 1,220,222 acres out of a total land area of 2,764,398 acres. Farms in the surveyed zone average 64.5 acres each. Of the land in farms, 761,663 acres are cropped, 200,824 acres are in pasture, and 130,775 acres are in woodland not pastured. A remainder of 126,960 acres is not devoted to any of these uses. There are harvested 628,291 acres, or 82 per cent of the total crop land. Farm land and buildings in the territory designated in the defoliation zones are valued at $250,836,531. The reported value of implements and machinery is $21,366,744. Field and orchard crops, vegetables, and farm gardens having a total value of $40,376,049 are annually produced in the area designated in the survey. Vegetables account for $21,418,338 of the total production of the latter items. Fruits and nuts yield $5,726,031,

while farm and garden vegetables grown for home use are valued at $1,185,141. Another source of farm income within the area under consideration is the sale of nursery, greenhouse, and hothouse products, which nets $6,483,502 annually. Field corn is grown on 140,522 acres. Sweet corn to the value of $1,132,540 is produced on 17,286 acres. The report records 2,832 acres of soybeans grown alone and 410 acres grown with other crops. Within the defoliation zones are grown 1,332 acres of blackberries and dewberries, 77 acres of blueberries, and 760 acres of raspberries. Grapes to the extent of 907,948 vines of bearing age and 118,560 vines not of bearing age are reported, with a total yield of 3,843,627 pounds. An area of 40,456 acres is devoted to orchard fruits, vineyards, and nut trees. Nut trees constitute a negligible item. Among the fruit trees particularly susceptible to beetle attack are 1,529,262 apple trees, 1,152,269 peach trees, 48,035 cherry trees, and 14,789 plum and prune trees. Most of the specific items mentioned are subject in varying degrees to beetle injury of foliage, fruit, or both leaves and fruit.

Intensive trapping, spraying, and treating measures have been practiced this year to control the Japanese beetle infestation in Erie, Pa. This infestation was first discovered by scouts working in Erie during July and August of last year. At that time 141 adults were collected in four adjacent city blocks in the residential section near the city park. Six hundred traps were then scattered throughout the section and succeeded in collecting 22 additional beetles. In the fall of 1931, 32 acres in and surrounding the infested premises were treated with arsenate of lead at the rate of 500 pounds per acre. This year 774 traps, widely distributed throughout Erie, were in operation from July 12 to September 6. Catches of 282 beetles were made. Of this number, 270 were collected from traps placed in last year's treated area. A single trap caught 151 beetles. Five infestations of one or a few beetles each were also detected at points more or less distant from the center of infestation. Beginning on July 28 and continuing until the end of August, weekly applications of a selected spray mixture were made by the inspectors tending the trap routes. The spray was applied where possible to all beetle food plants located in the four adjacent blocks in which infestations were discovered during 1931. Residents in the sprayed section were informed of the nature of the work and the necessary precautions they must take before eating sprayed fruit or vegetables. This informational work was performed by Mr. Adsit, of the Pennsylvania Department of Agriculture. Spray materials were purchased by the Pennsylvania Department of Agriculture. A. R. Whitcraft, of the Japanese Beetle Research Laboratory of the Bureau of Entomology at Moorestown, N. J., went to Erie at the time of the first spraying to instruct the men assigned to perform the work in the proper manner of mixing and applying the material. An attractive spray consisting of green lead arsenate, syroline, emulsified geraniol, and water was used. Experimental work performed by the Bureau of Entomology has shown that beetles will readily feed on foliage sprayed with this combination. Attractiveness of this spray largely depends upon the presence of the syrup and geraniol. Geraniol is quite volatile. Both syrup and geraniol are easily washed off by rain. Accordingly, it was necessary to make repeated applications. The spray formula used, recommended by the research laboratory, consisted of 8 pounds green lead arsenate paste, 4 gallons syroline, and 1 pint

geraniol emulsion to 50 gallons of water. Use of this spray was designed to concentrate within a relatively small lead arsenate treated section such adults as emerged and to kill those induced to feed on the sprayed foliage. At the conclusion of the trapping work, lead arsenate was applied to all premises found to be infested and to surrounding sections in which oviposition might readily have taken place. Lead arsenate application in spray form began on September 19 and was concluded on October 4. Yards in which seemed to center this year's infestation were treated at the rate of 750 pounds of lead arsenate per acre. This was in addition to last year's application of 500 pounds per acre on the same premises. The remainder of the 1931 treated zone was dosed at the rate of 500 pounds of poison per acre. Three premises and adjacent properties near the original infestation, on which were trapped single beetles this year, received treatment at the rate of 1,000 pounds of lead per acre. This latter rate was also used in treating an isolated infestation of 5 beetles. Other infestations of single beetles each received the usual dosage of 500 pounds per acre. A total of 40.6 acres were treated, and 22,400 pounds of lead arsenate were applied. Seventeen men were employed during the 14 working days occupied in the treatment. The work was supervised by Agent W. F. Walsh, from the Pennsylvania district headquarters at Oakmont.

More than usual interest attended the conclusion on September 19 of proceedings instituted against the Railway Express Agency, Inc., for a violation of the Japanese beetle quarantine regulations arising from acceptance for transportation of two large uncertified boxwood plants consigned by a textile firm in Reading, Pa., to Burlington, N. C. One unusual feature about the case was the fact that the court and the defense counsel were both well acquainted with the destructiveness of the Japanese beetle from their experiences with the insect on their own property. Consequently, they were in agreement that the common carrier must do its utmost to prevent the spread of the pest through movement of uncertified stock. Federal Judge George A. Walsh, who, until his elevation to the bench a few months ago, was Representative from the Sixth Congressional District of Philadelphia, has had contact with the project's work through the suboffice in the Philadelphia district. He resides in Germantown, which is heavily infested with the beetle, and has observed the insect's damage to foliage, fruit, and lawns. The attorney for the common carrier last fall spent over $50 for lead arsenate with which to treat against Japanese beetle larvae damage his 1 acre of lawn in Wayne, Pa., a suburb of Philadelphia. After the facts of the case had been outlined to the court by R. W. Sherman, of the South Norwalk headquarters, counsel for the express agency admitted the acceptance of the shipment by the express agent at Reading, but emphasized the millions of shipments that have been handled in the Allegheny division of the agency during the past year. Counsel stated that the violation was committed through no fault of the company in issuing proper instructions but was rather due to carelessness on the part of an individual employee who failed to conform to his knowledge of the quarantine. It was the attorney's opinion that more could be accomplished in initiating the proceedings against the individual employee responsible for acceptance of uncertified material rather than prosecuting the corporation. After most of the details had been discussed,

Judge Walsh imposed a small fine of $10 with the statement that the fine in this sum was being imposed so that the same might be passed on to the express agent at fault, thus securing the same result as though the proceedings had been instituted against the employee. The court also stated that further violations of the same nature would not receive such lenient treatment.

Operation of 389 traps in Detroit, Mich., from July 28 to September 15, resulted in the catching of 7 beetles in the residential district just south of the Michigan Central railroad station and the trapping of a single beetle over 2 miles away in the vicinity of the Michigan Central freight yards. Through cooperative arrangements made with the Michigan Department of Agriculture and the Department of Parks and Boulevards of the City of Detroit, lead arsenate was applied to the sections surrounding the infestation centers. J. S. Stockbridge, from the South Norwalk headquarters, supervised the work for the Bureau. Spray material, equipment, and labor for the operations were furnished by the City of Detroit Department of Parks and Boulevards. Spraying began on September 14 and was completed on September 21. A 400 gallon capacity spray outfit was used, the solution being prepared at the rate of 400 pounds of lead arsenate to 400 gallons of water. Each tankful was sprayed on 16,000 square feet of ground. The tank was then flushed and clear water applied to the ground to wash in the lead. Labor was supplied through the City of Detroit Welfare Department. Three different crews of from 5 to 7 men each were employed, since each man could be allotted but a few days' consecutive work under the welfare regulations. In the locality most heavily infested 3.3 acres were treated, and 2.5 acres surrounding the point where a single beetle was discovered also received the poison application. Six thousand four hundred pounds of arsenate of lead were sprayed at an approximate rate of 1,100 pounds per acre on a total of 5.8 acres. While the work was in progress, visits to the scene of operations were made by Messrs. A. C. Carton and E. C. Mandenberg, of the Michigan Department of Agriculture, and Messrs. Smith, Schreiber, and Hermann, of the Detroit Department of Parks and Boulevards.

Record interceptions of larvae at road posts thus far this year were made in September. Among the contraband material surrendered to vehicle inspectors at the boundary of the regulated zone were 12 lots of plants with soil which yielded a total of 68 Popillia japonica grubs. One shipment consisting of 13 evergreens intercepted while in transit from Media, in the heavily infested section of southeastern Pennsylvania, to unregulated territory in Chautauqua County, the westernmost county of New York, was found upon examination of the soil balls to contain 22 Japanese beetle larvae. Soil accompanying a single plant in the possession of a motorist proceeding from Fayetteville, Pa., to Ottawa, Kans., contained 3 grubs of this species. Another important interception consisted of 3 geraniums containing 6 grubs surrendered by a motorist destined from Collingdale, Pa., to a point in West Virginia. A Cleveland, Ohio, bound motorist surrendered a plant containing 2 larvae. Plants originally intended for transportation to western Pennsylvania points yielded as many as 11, 10, and 7 grubs per lot. Road posts on U. S. Route No. 30, Lincoln Highway near Chambersburg, Pa., and on U. S. Route No. 22, William

Penn Highway at Atkinson Mills, Pa., led in the number of interceptions of infested material made during the month. In September, 1931, interceptions of only 12 Japanese beetle larvae were made. The high month since larvae from surrendered quarantine material have been determined as to species was in October of last year when 87 grubs were intercepted.

Sojourners in the Adirondack Mountains in numerous instances this summer had fresh vegetables regularly shipped to them from their home vegetable gardens in Westchester County, N. Y., and nearby Connecticut points. To meet the certification requirements for articles of farm products under quarantine for the Japanese beetle, periodic inspections were made of the fruit and vegetables before they were shipped from the regulated area, or the produce was certified without actual inspection on the basis of freedom from infestation of the premises where grown as determined by several scoutings during the adult season. One summer resident in the Adirondacks had a standing order with a fancy fruit and vegetable dealer in New York City for the weekly shipment of two dozen selected ears of sweet corn. Needless to state, very little effort was necessary to determine these roasting ears as free from beetle infestation and certify them for shipment from the infested zone. One estate owner testified to the joys of home-grown products as follows: "I have just returned home from our camp in the Adirondacks and hasten to thank you for permitting us to ship vegetables from my farm. Farm vegetables, butter, cream, eggs, etc., helped to make camp life most enjoyable."

Rapid disappearance early in September of adult Japanese beetles made possible lifting of the farm products certification requirements on September 17. Active adult flight of the beetles ceased several weeks before lifting of the seasonal quarantine on the items of farm products determined as likely carriers of beetle infestation. What few adults were still in evidence in mid-September were largely inactive, confining their activities to feeding on blooms of specially favored food plants, such as dahlia. This latter condition necessitated the enforcement until October 15, the maximum date of adult beetle presence, of the inspection and certification requirements on the movement of all cut flowers to unregulated territory. Inspectors operating in the wholesale cut flower establishments in Philadelphia were still removing beetles from inspected blooms as late as September 30.

Approximately 130,000 cut flowers were inspected under the Japanese beetle quarantine regulations before being displayed at the Third National Atlantic City Flower and Garden Pageant held in the Atlantic City Auditorium from September 3 to 10, inclusive. As in the two previous years, cut flowers played a particularly important part in the exhibitions. Some of the blooms came from as far south as North Carolina. The southern-grown cut flowers were kept fresh during transportation by means of a small toy balloon which was filled with cracked ice and water. One such balloon was attached to each individual bloom. Among the flowers inspected before entry in the pageant were 50,000 gladioli, 60,000 dahlias, 10,000 cut roses, and 10,000 miscellaneous garden flowers. In exhibits containing both certified and uncertified balled

evergreen stock, the two classes of stock were separated by some satisfactory division.

Damage to government property by motorists passing Japanese beetle road posts is not infrequent. Usually collection of replacement cost of the broken equipment is made on the spot by the road inspector on duty. Upon payment of the assigned amount for the articles damaged, the inspector issues to the motorist a numbered receipt, the numbered stub of which is transmitted to the headquarters office along with full details of the motorist and automobile responsible for the damage, nature of the damaged equipment, and description of the accident. Over a three weeks' period in late August and early September, motorists collided with and broke or damaged 7 sign standards, 2 signs, 3 lanterns, 2 lantern globes, 1 bomb torch, and 1 flag. A total of $31.40 was collected for these damages and forwarded to the Bureau headquarters for deposit in the United States Treasury.

Arthur R. Collins, a road inspector stationed at the vehicular inspection station on the Lincoln Highway near Chambersburg, Pa., on September 4 was struck by an automobile and seriously injured. In attempting to stop for inspection, a car proceeding west skidded on the slippery road and struck Mr. Collins with its left front fender. The inspector was forced into the other traffic lane in the path of a truck going east. The truck was unable to swerve or stop in time to avoid hitting the inspector. Mr. Collins, an employee of the Pennsylvania Department of Agriculture, was taken to the Chambersburg Hospital where he was found to have a broken left shoulder, complete fracture of all left ribs, large laceration on the back of his head, and numerous cuts, bruises, and lacerations about the body. The injured employee is still in the hospital, but is expected to recover.

Announcement was made by the Department on September 6 of a public hearing on the Japanese beetle quarantine to be held at Washington on October 4. The hearing is called to consider the advisability of extending the quarantine to the States of Maine, Michigan, New Hampshire, North Carolina, Ohio, South Carolina, Vermont, and West Virginia, and to the unregulated portions of Maryland, Massachusetts, New York, Pennsylvania, and Virginia. Maps, scouting reports, and a statement of the present status of the insect for use at the hearing were in course of preparation at the South Norwalk headquarters late in September.

Discontinuance on September 3 of organized scouting efforts in nurseries and greenhouses, lifting of the quarantine on farm products effective September 17, and abandonment of trap work throughout the month resulted in a greatly reduced personnel by the end of the month.

MEXICAN FRUIT FLY

The poison bait spray program was completed near the middle of the month. September 1 had been set as the goal for the completion of the second application, but as a result of the heavy rains during the latter part of August and the first of September, a number of groves on adobe soils were impassable for several weeks. Every property with bearing trees in the valley was given at least one application of bait, and practically all were given both applications. A total of 35,781 gallons of molasses and 1,795 gallons of nicotine-sulphate were issued to the growers for the two applications. The bait was applied to 3,645,034 trees in the first round, and to 3,255,480 trees in the second, or a total of 6,900,514 tree applications in the two rounds. A total of 385 knapsack sprayers were furnished for the application of this bait. In the first application a total of 11,841 properties and city lots were baited, while in the second application a total of 11,644 such properties were sprayed. A fairly efficient job of spraying was done considering that more than 5,000 individuals applied the bait and that the force of inspectors was not large enough to give personal supervision to each job.

Upon completion of the program, the spray guns and barrels and other equipment were congregated in Harlingen. The sprayers and miscellaneous equipment were washed, oiled, and stored. The barrels were washed and returned to the lenders. To facilitate the washing of these, a rack was built somewhat on the principle of the rotary churn. The barrel was clamped in this rack, filled about one-third full with water, and rotated for several minutes, after which it was drained and set aside for delivery.

Inspections were made of all groves in the "infested zones" of last spring. Such inspections gave negative results. Further inspections were made during the month as clearances were called for by the packers. Heavy rains prevented regular routine inspections. The rainfall for the month amounted to 9.88 inches, which was 4.36 inches above normal for the month. Such rains are unusual for this section where the average for the year amounts to only about 27 inches. In addition to the rains, the Rio Grande was in flood stage practically throughout the month. Most of the excess water was carried off through the flood control system and very little damage was done. On account of breaks in the levees, some 600 acres of groves were inundated.

The shipping season opened on September 15. The first shipment of fruit of the 1932-33 crop was made on the 21st. Among the first shipments was a truck load consigned to Philadelphia, Pa. Comparatively little fruit moved during the month, largely because the rains set back the fruit in passing the maturity tests and made the groves impassable.

There is considerably less fruit on the trees this year than last. As a result the trees are holding the fruit and very little drop fruit was found on the ground. Some few oranges were splitting. This condition will probably

increase during the next month because of the large amount of moisture in the soil.

Trapping was continued in Matamoros during the month. One Anastrepha pallens was taken in the traps, but no ludens. Inspection of guavas produced locally in Matamoros gave negative results. These were about the only local fruit ripe enough to support an infestation during the month. Rail transportation between Matamoros and Monterrey, the distributing center of northern Mexico, was seriously hampered during the month by the flood waters of the Rio Grande. As a result, comparatively little fruit was imported. Infestations were found in oranges from the State of Michoacan, quince from San Luis Potosi, and apples from Coahuila.

A meeting of all inspectors of the project was held in Harlingen on the 14th for the purpose of outlining the coming season's work.

PINK BOLLWORM

The eradication of wild cotton in southern Florida has been continued, most of the work being done along the west coast. Some time was lost early in the month because of unfavorable weather conditions. By the 20th of September all of the wild cotton in the more accessible locations had been removed. The clean-up was then temporarily discontinued, so that the inspectors might devote all of their time to field inspections in the cotton-growing areas in northern Florida. Present plans are to resume the clean-up of wild cotton after the above field inspections have been completed.

The operation of the gin-trash machine in northern Florida, beginning the latter part of August, has continued throughout September. The volume of trash handled was not as large as in some other areas, due to the absence of special cleaning machinery at the gins. On September 26 a specimen, which was later identified as the pink bollworm, was found in trash from a gin at High Springs, in Alachua County. It was found in an accumulation of trash from the ginning of cotton from several counties. After this finding several additional inspectors were sent to the area, who are now making intensive field inspections to delimit the infestation as soon as possible. Since the initial finding, one additional specimen has been taken with the gin-trash machine at a gin in Lake City. Field inspection has resulted in the finding of 10 living larvae and 4 pupae in a field about 10 miles northwest of High Springs, in Columbia County. By the time the next News Letter is issued the infestation will undoubtedly have been delimited, and more complete information will be available on this new situation.

Gin-trash inspection in the Salt River Valley of Arizona is now well under way. The first part of the month the inspectors devoted all the time

available to the inspection of green bolls in the field. About the 20th of the month ginning had reached the stage where gin-trash inspection could begin, and 6 machines were placed in operation. These have been able to take care of all of the trash available thus far, and have inspected almost 6,000 bushels. The results have all been negative.

Gin-trash inspection outside of the regulated areas is also well under way. One of the mobile machines is operating in the Palo Verde Valley of California, and another is taking care of the inspection work in the Yuma Valley of Arizona and the Bard Valley of California. A mobile machine is also operating in each of the States of Oklahoma, Arkansas, Mississippi, and Alabama, and two machines each in Louisiana and Georgia. Another machine is operating in South Carolina, but will also do some work in North Carolina. The operators of these machines report that in many instances the volume of trash inspected is not so large; however, it represents the ginning of a large amount of cotton. In connection with the operation of gin-trash machines, the inspectors are having a supply of green bolls collected for future laboratory inspection. All of the State officials concerned are deeply interested in the work. Some of them are having all the bolls collected, others part of them, and the remaining ones, due to lack of funds, are unable to assist, even though they would like to do so.

Plans for a clean-up campaign in the Big Bend area this fall were discussed in the last News Letter. About the 11th of September a considerable part of the cultivated acreage was flooded, and practically all of the adjacent acreage in Mexico. This flood was caused by a cloudburst along the upper reaches of the Conchos River in Mexico. This river empties into the Rio Grande about 2 miles above Presidio, Tex. The latter part of September and the first of October there was another flood in this area, which was some 3 feet higher than the previous flood. Practically all fields in the area were flooded. No accurate estimate of the damage is available at this time, but it will be quite high. As most of the cotton crop is ruined, the clean-up will probably begin as soon as the fields are dry enough.

The question has often been raised as to whether infested material from the Big Bend might be carried down the river and cause infestation in the lower Rio Grande Valley. Since the first flood covered practically all cotton fields on the Mexican side of the river, and many of those on the American side, this seemed an ideal opportunity to make a thorough investigation. Accordingly, inspectors were sent to various places along the river from Del Rio southward. Nothing was found to indicate that any cotton products were carried that far. Inspectors in the Big Bend section followed the crest of the second flood to make similar observations, and their findings will be given in the next News Letter.

PREVENTING SPREAD OF MOTHS

The assembling cage work for this season is practically completed. The cages, which are used for attracting male gipsy moths, have not yet been entirely removed and a final report can not be given at this time as to the results of this work. All cages in Massachusetts have been removed, and a total of 159 male moths were trapped at 59 cages. All cages in New Jersey were collected by the end of September, and no male gipsy moths were caught in that State. In New Jersey the cages were placed in an area which had not previously been scouted, to the south and west of the area in which the extermination work was done. The absence of catches in New Jersey is reassuring as to the thoroughness of the work which has been done in that State. To date, no male moths have been caught at cages in Vermont. An interesting record was obtained when a single male gipsy moth was taken from assembling cage tanglefoot at Hillsdale, N. Y. This is the only catch made in that State so far this season, and all of the cages that have been patrolled by the New York State Conservation Department have been collected. This cage was located less than 1 mile west of the Massachusetts State line on a road not previously caged, a little over three-fifths of a mile northeast of a 1929 gipsy-moth infestation, and about 2 miles northeast of another 1929 gipsy-moth infestation. A cage near one of these infestations caught a male moth in 1930, but subsequent scouting around these colonies has not resulted in the discovery of the insect. The catch of 1930, however, and the one of 1932, indicate that somewhere in this section there may be a small gipsy moth colony.

As a result of experiments at the gipsy moth laboratory at Melrose, Mass., it has been determined that the cotton and tips which have been used in assembling cages still have considerable attraction qualities. This year, therefore, the cotton and tips are being saved and sent to Greenfield for storage. As soon as the material arrives, the charges are doubled up and put into bottles containing xylene or benzol as the solvent. This material can then be used in some places next year, as it has considerable value.

During the month observations were made in the southeastern part of Massachusetts as to defoliation and egg deposition in some of the areas where defoliation was extremely severe during the summer of 1932. It was found that in many cases the trees have not refoliated as much as would be expected. There are large areas where partial (up to 75 or 80 per cent) defoliation of deciduous trees occurred in which very little refoliation has taken place. In such cases the new foliage is not normal and is not spaced evenly over the trees, but is bunchy, with many of the leaves small and deformed. In places where the deciduous defoliation was complete, refoliation has occurred, but it is bunchy and the trees do not carry their normal amount of foliage. In some areas much scrub pine and blueberry were also entirely defoliated, resulting in the death of a large amount of blueberry. A few blueberries have partially refoliated. Most of the scrub pine is slowly refoliating but its foliage is not one-half as long as the foliage on trees which were not defoliated. The white pines in many places have suffered severely. Many of them are in about

the same condition as when the caterpillars stopped feeding, except for a small amount of new foliage on the tops of the trees. There is no foliage on many of the lower branches, but where a feeble attempt to refoliate has occurred the needles are short and in general are at the tips of the twigs only. The damage to the smaller pines--those from 1 foot to 8 or 9 feet in height--is even more apparent at this time than it is on the larger ones. In some sections quite a number of these pines are dead and the needles of those that are still alive are in many instances not more than one-half inch long. The season is so late now that there can not be much more growth this year. These pines, if alive at all next spring, will be in a very weakened condition and deformed, for in many cases the tips of the leaders and twigs are already dead.

As would be expected, new egg clusters are scarce where large areas were defoliated early in the season, which resulted in great mortality of the caterpillars before pupation, due to starvation and other causes. Other sections, however, have a heavy deposition of large egg clusters. A watch was kept along roadsides for the presence of new gipsy moth egg clusters, and in a great many towns egg clusters were noticeable on street trees. The infestations are representative of general conditions, occurring in both woodland and residential sections. It is evident in the area visited that a large amount of injury to trees occurred this summer by defoliation, and the heavy egg deposition in many places indicates that there will be severe defoliation next year.

Headquarters for the Pennsylvania subproject have been established at 201 Carey Avenue, Wilkes-Barre, Pa. Storage and office space is being leased by the Pennsylvania Department of Agriculture.

In connection with the discovery of the gipsy moth in Pennsylvania, arrangements have been made to obtain records of temperature, wind direction, and wind velocity from a number of Weather Bureau stations in New Jersey, Pennsylvania, and New York. These records are for the 10-year period from 1923 to 1932, inclusive, for April and May, the months during which small caterpillars are likely to be carried by the wind. A study of these records from a number of stations in each of these States may be helpful in determining the direction where spread was most likely to have occurred from the gipsy-moth infestation in Pennsylvania.

The agents on the scouting force who were on administrative furlough for one month returned to field duty September 16 and were assigned to work in Pennsylvania. They began work in crews of five men each in townships immediately to the west and south of Wilkes-Barre, in the northern section of Luzerne County. All trees in these townships along the roadsides, in the open fields, and 100 feet or more in depth along the wood edges, were thoroughly examined in an effort to locate any scattered infestation that might exist. As a rule, isolated infestations near the extreme outside limits of infestation are small and can not be located satisfactorily unless intensive scouting methods are employed.

By the end of September, the men who had been working in the above townships started scouting along the Susquehanna River between Pittston and Nanticoke, in order that the areas likely to be flooded during the late fall or spring may be examined while the river is very low. This precaution is being taken to prevent debris which may be infested with gipsy moth egg clusters from being washed down stream to points outside of the present area of infestation. The Susquehanna River, flowing as it does through a portion of the generally infested area, is one possible source of long-distance spread of the insect. As a result of the scouting work already done along the Lackawanna and Susquehanna Rivers, four infested locations have been found bordering the Lackawanna River in Pittston Township, and one infestation was discovered on the banks of the Susquehanna River in Hanover Township. Pittston is situated north of Inkermann, and Hanover is situated south of Wilkes-Barre. All of these infestations were small except one, which consisted of approximately 60 egg clusters.

In weather unfit for scouting the men creosoted egg clusters in the villages near Inkermann, in Jenkins Township, which is the center of the infestation. Work in these villages is very slow because all fences, wood, lumber sheds, cellars, and piazzas of houses, etc., must be examined thoroughly in order to find the egg clusters. In some cases it is necessary to remove the boards on piazzas, sheds, etc., to treat egg clusters which can be seen but nor otherwise creosoted. This work will be continued on days when weather conditions are unfit for scouting but not too severe to do some work out-of-doors.

The inspection of empty telephone cable reels is quite constant throughout the year, and in some inspection districts furnishes a very large amount of work for the district inspectors. From the beginning of the gipsy moth egg laying season until early winter, reels are more apt to be found infested than at any other time. As these reels have considerable value, they are not allowed to remain in the field for long periods and are usually shipped back to cable manufacturing concerns as soon after unloading as possible. When cable lines are run through or near infested woodlands, the reels do not have to remain for any appreciable length of time in the vicinity of infested trees without being subject to infestation. This is particularly so when egg clusters are being deposited. After the egg laying season is finished, reels are less apt to be found infested and it is for this reason that the majority of egg clusters found on such objects are located in the first few months of the fiscal year; in other words, from July through October, and possibly November.

During all seasons of the year the quarantine inspectors devote as much time as possible to the inspection of premises from which quarantined materials are shipped. Such activity is engaged in particularly from the time the new egg laying season commences. Changing infestation conditions necessitate such inspections in order to guard as much as possible against the spread of infestation from surrounding woodland to materials which might be

shipped at future dates. At all permanent locations such as quarries, from which materials are shipped regularly, owners or managers are given information on infestation conditions and advised to adopt eradication measures as soon as possible in order to guard against materials becoming infested. In many cases owners of property who ship quarantined materials are able to keep their immediate premises free from infestation, but surrounding property may not be under their control and eradication measures are sometimes neglected. Since last July many areas around quarries, nurseries, lumberyards, storage yards, and other localities have been inspected and records of infestation have been made. Information on conditions has been given to owners or managers, and in all cases assurances have been received that such infestations will be eradicated as soon as possible. The removal of such infestations is an added guard against infested material being shipped to uninfested sections of the country.

Formerly at this season of the year the district inspectors in Vermont and western Massachusetts found it necessary to devote quite a bit of their time to the inspection of small spruce boughs used in packing collected ferns, which would be placed in cold storage for use in the florists' trade. Beginning about the 1st of September, and continuing until approximately Thanksgiving, unless snowfall interferes, fern fronds are picked extensively in towns in central Vermont and western Massachusetts. The ferns gathered are of two different species, the so-called fancy fern (Dryopteris intermedia), and the dagger fern (Polystichum acrostichoides). These ferns grow abundantly in the towns where gathered. When gathered they are tied in small bundles of 25 each and are later packed at some central point in shipping crates. These crates are constructed of wooden slats which permit ventilation. They are lined with paper, and usually from 5,000 to 7,500 ferns, depending upon the size, are packed in each crate. At one time the fern shippers placed a number of small spruce boughs on top of the ferns. These boughs provided a small amount of moisture and also served as a springy top underneath the wooden top of the crate and this prevented injury to the ferns. As much of the shipment was composed of materials from points inside of the quarantined area, it was necessary to have all of these spruce boughs inspected.

The fern shippers, because of the inspection, have changed their methods of packing, although the inspection did not interfere with their business to any great extent. In some few cases ferns were packed close to the point of picking and transported to an assembling point, from which they were shipped. In such cases it was necessary to remove the spruce boughs for inspection and replace them after this had been done. Because of the wide area over which ferns are picked, it was possible to inspect the boughs at assembling points only, and many of the shippers considered that it would be more satisfactory to adopt a substitute for the boughs rather than apply for inspection. At present, moist sphagnum moss is used as a top covering and over this several layers of newspaper are placed. Of late years the inspection of spruce boughs for this purpose has been confined to an amount sufficient for only a few hundred crates, whereas formerly boughs for thousands of crates were inspected.

The change from boughs to paper has been entirely voluntary on the part of the shippers. Occasionally the crates themselves require inspection, for after being returned from the cold storage plants they may be stored inside of the quarantined area at points where they may be exposed to possible infestation. After the ferns are packed they are shipped principally to New York, where they are placed in cold storage and sold later to florists for use in preparing bouquets and decorative floral pieces.