

PLANT QUARANTINE AND CONTROL ADMINISTRATION

UNITED STATES DEPARTMENT OF AGRICULTURE

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ADMINISTRATIVE

Four public hearings to consider the status and possible discontinuance of four important Federal domestic plant quarantines, those on the European corn borer, the Japanese beetle, the white pine blister rust, and narcissus bulbs, were held at Washington, D. C., March 24 to 28. These hearings were held to consider the present value, need, and effectiveness of the quarantines, and to determine the public sentiment about them. This is in line with the department policy to consider any changes in conditions which may have taken place since their establishment. It was proposed to find out just how much benefit results from our efforts and whether the cost is justified; also whether or not the investigation of control methods, parasites, and resistant varieties has reached the stage where Federal quarantines on interstate movement of plants should be removed; whether the spread of the diseases and pests has been so wide as to make further Federal control undesirable and inexpedient; and whether the States that are threatened by these pests and diseases are able to fight them as efficiently and economically as the Federal authorities can do it.

The March 24 hearing was on the advisability of revoking the European corn borer quarantine, now effective in 13 States--Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Ohio, Michigan, Indiana, and West Virginia.

In the Japanese beetle hearing March 25, the conference considered especially whether the advantages of the quarantine restrictions justified the costs of the administration and the expense to the shippers in complying with them. The Japanese beetle quarantine is now effective in Pennsylvania, New Jersey, New York, Delaware, Connecticut, Massachusetts, Rhode Island, District of Columbia, Virginia, and Maryland. Although there is no quarantine in Ohio and South Carolina, the beetle was discovered in those States last year.

The March 26 hearing considered the quarantine on the white pine blister rust. The disease was discovered last year in Iowa, Maryland, Ohio, Virginia, and West Virginia. If deemed necessary the quarantine may be extended to these five States and also to Delaware and the District of Columbia, both

of which are surrounded by infested territory. White pine blister rust has existed heretofore in parts of Connecticut, Idaho, Maine, Massachusetts, Michigan, Minnesota, Montana, New Hampshire, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, Washington, and Wisconsin.

The fourth hearing, March 28, was on the quarantine and certification of narcissus bulbs for interstate movement. The narcissus quarantine covers all interstate shipments. The States which produce a million or more narcissus bulbs a year are: California, Florida, Georgia, Illinois, Maryland, Michigan, Missouri, New Jersey, New York, Oregon, Rhode Island, North Carolina, South Carolina, Texas, Virginia, and Washington.

TECHNOLOGICAL

Dr. Lon A. Hawkins has been in the Lower Rio Grande Valley since March 4, supervising movements of citrus shipments as affected by the recently amended Mexican fruit worm quarantine. J. M. Luckie is assisting him in this work.

Because of extremely mild weather during the latter part of February, it was possible to obtain a large number of soil samples from leaded plots at and near the Japanese beetle laboratory at White Horse, N. J. A new type of tool enables a much more rapid sampling than has heretofore been possible. G. A. Russell, in charge of the soil analysis tests at White Horse, states that the time required for taking samples has been reduced at least 50 per cent by use of the new sampler.

FOREIGN PLANT QUARANTINES

RECENT ENTOMOLOGICAL INTERCEPTIONS OF INTEREST

Thrips on chinkerichee.--Haplothrips nigricornis Bagn. was intercepted at New York and Philadelphia on cut flowers of chinkerichee (Ornithogalum thyrsoides) in the mail from South Africa.

Thrips from South Africa.--The thrips Frankliniella schultzei Trybom was intercepted at Philadelphia on cut flowers of chinkerichee in the mail from South Africa. This represents the first interception of this thrips by inspectors of the Plant Quarantine and Control Administration.

Bruchid in chickpeas.--Callosobruchus analis (Fabr.) was intercepted at New York in chickpea (Cicer arietinum) seed in stores from India. This bruchid is not known to occur in the continental United States.

Erotylid from Panama.--Scaphidomorphus bosci Guer. (Erotylidae) was intercepted at San Francisco with bananas in cargo from Panama. This represents the first interception of this insect in our files.

Bruchid in the mail.--Bruchidius villosus (Fabr.) (Bruchidae) was intercepted at Washington, D. C., in Laburnum vulgare seed in the mail from Denmark and Italy. This bruchid is reported as occurring in Massachusetts.

Cucujid from Polynesia.--Telephanus insularis Sharp (Cucujidae) was intercepted at San Francisco with cacao beans in cargo from Polynesia. This beetle has also arrived from American Samoa, Guam, and Tahiti.

Bruchid from France.--Phelomerus germaini Pic. (Bruchidae) was intercepted at Washington, D. C., in Parkinsonia aculeata seed in the mail from Paris, France. This bruchid is not recorded from the continental United States.

Endomychid from Panama.--Adults of Phalantha championi Gerh. (Endomychidae) were intercepted at San Francisco on bananas in cargo from Panama. This beetle was taken on bananas in cargo from Jamaica in 1926.

Larva in evergreen cone.--A larva of Ernobium abietis Fabr. (Anobiidae) was intercepted at Philadelphia in an evergreen cone in the mail from Germany. This insect, which has also arrived in spruce cones from Poland, is reported to be very destructive to cones in Europe, where it eats the seeds.

Cucujid from Panama.--Telephanus brontoides Sharp (Cucujidae) was intercepted at San Francisco with bananas in cargo from Panama. This cucujid has also arrived with bananas from Costa Rica, Guatemala, Honduras, and Mexico.

Pyralid in Lima beans.--Adults of Fundella cistipennis Dyar (Pyralidae) were found in Porto Rico in Lima bean pods intended for export in cargo. This insect, which bores in the pods and stems of legumes, is not known to occur in the continental United States.

Sweetpotato weevil from Mexico.--A pupa of the sweetpotato weevil (Cylas formicarius Fabr.) was intercepted at Brownsville, Tex., in sweetpotato in baggage from Mexico. This weevil, which was introduced into this country years ago, attacks the sweetpotato tuber both in the field and in storage.

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

Thrips on rhododendron.--Haplothrips aculeatus forma funebris Pr. was intercepted at Washington, D. C., on a rhododendron cutting in the express from The Netherlands. J. R. Watson, of Gainesville, Fla., states that "Haplothrips aculeatus is one of the most common thrips in Europe. It is not known to occur in this country."

RECENT PATHOLOGICAL INTERCEPTIONS OF INTEREST

Olive knot caused by Bacterium savastanoi was intercepted on olive cuttings from Italy found in baggage at New York. The specialist who verified the determination found typical pockets with millions of bacteria in them; in sections made through the outgrowth. This disease seems to gain entrance frequently through wounds made in harvesting the fruit and in early stages may be mistaken for callus tissue. It was introduced into California before Nursery Stock, Plant, and Seed Quarantine #37 was promulgated.

Elsinoe canavaliae was intercepted at Boston on Lima beans from Jamaica, in baggage. This seems to be the first report of this disease from Jamaica.

Ascochyta pisi, the asexual stage of Mycosphaerella pinodes, the cause of a serious blight, was found in peas in ship's stores at New Orleans. The peas were from Brazil. While the disease is widespread and has been intercepted from several other countries, this is the first interception of it from Brazil.

Colletotrichum lagenarium, mentioned in the March, 1932, News Letter, p. 3, as being collected in Porto Rico on squash, has been intercepted at Boston on marrow, a type of squash, from Cuba.

Puccinia urbaniana, a leaf rust, was intercepted in a package of Stachytarpetta sp. mailed locally at San Juan, Porto Rico. The host resembles verbena and is in the same family.

Coniothyrium hellebori recently reported as intercepted from Holland (see the News Letter for Nov. 1931, p. 5) has been intercepted at New York on Helleborus sp. from Germany, in mail.

Plants of loco weed from Mexico intercepted at Douglas, Ariz., were affected with Phoma astragali and Puccinia sp. Seymour lists Uromyces spp. as occurring on loco weed but does not list any species of Puccinia.

The specialist who was interested in a study of the possible relationship of Ceratostomella adiposum and Thielaviopsis sp. on Chinese waterchestnuts (see page 3 of the March, 1932, News Letter) has been transferred and will be unable to continue this study at present. He now believes that the Thielaviopsis, which he has determined as T. paradoxa, is distinct from the Ceratostomella in so far as the material studied is concerned.

A specimen of rust collected on tree cotton leaves (Gossypium sp.) in the field in Porto Rico proved to be Cerotelium desmum. This disease is listed under the name Kuehneola gossypii in Stevenson's manual, p. 83.

Cerotelium canavaliae was collected on Canavalia sp. in Porto Rico. Thus far there have been no reports of Elsinoe canavaliae on this host in Cuba.

or Porto Rico, making it appear that the Lima bean scab organism is a distinct strain if not a new species.

Aphelenchus avenae was intercepted at Philadelphia in potato from Italy in the mail. The only previous interception of this pest from Italy was in onion.

PACKING MATERIAL HARBORS INSECTS

That packing material from foreign countries may often serve as hiding quarters for a numerous and varied assortment of insect life, both injurious and harmless, is well illustrated by a foreign mail shipment examined by plant quarantine inspectors at Philadelphia on February 2, 1932. From the moss packing used in a package of 100 grape cuttings from Czechoslovakia, the inspectors took out the following living insects. (Interception Nos. 14737 - 14743.)

27 miscellaneous coleopterous adults determined as - Atheta sp., Stenus sp., Tachyporus chrysomelinus, Meligethes aeneus, Coccinella 7-punctata var. externepunctata, Coccinella 14-pustulata, Sciaphilus muricatus, Apion sp., Ceutorhynchus sp., Phyllotreta nemorum, P. vittula, P. atra.

20 hemipterous adults - Eurygaster hottentotus, Eurydema oleraceum, Dolycoris baccarum, Aelia acuminata, Rhyparochromus chiragra, Peritrechus geniculatus, Trapezonotus ullrichi, Lygus pratensis.

4 thrips - Haplothrips acauleatus, Limothrips denticornis.

1 dipterous larva and 1 dipterous pupa - Sciara sp., sp. of Syrphidae.

2 coleopterous larvae - Cantharis sp.

3 lepidopterous larvae - sp. of Pyralidae: Pyraustinae.

4 ants - not yet determined.

All the determinations given were made at Washington by specialists of the Department. As a matter of further interest some notes concerning several of these insects taken from Pierce's Manual and the Rev. App. Ent., are here assembled.

Phyllotreta nemorum, P. vittula, and P. atra (flea beetles) occur in Europe and all injure the foliage of their respective host plants. They are not known to occur in the United States. P. nemorum in Russia attacks rhubarb, hops, and cabbage. P. atra and P. nemorum in Europe injure crucifers, the adults feed on the foliage, and the larvae usually attack the stem or roots.

P. vittula (rape and grain beetle) mines leaves of *Setaria*; adults feed on beets and rape (Hungary); larvae feed in base of stems of barley, rye, and wheat, causing much damage (Scandinavia; Russia).

Several species of *Apion* are recorded as very serious cotton pests which are not known to occur in the United States. A number of species of *Ceutorhynchus* occurring in Europe and not known to occur in the United States are serious pests of such hosts as radish, rape, cabbage, and turnips.

F. Stranak, in the Rev. of Appl. Entomology 1922, p. 503, says that the damage done by thrips to grain (rye, wheat, barley, and oats) in Czechoslovakia is more serious than is generally recognized. Even the apparently sound spikelets are weakened in an infested ear of rye. The lower ones are those usually destroyed, and the upper ones are deprived of support and the ear breaks. Haplothrips acauleatus is the chief species on rye, which is also infested by Limothrips denticornis. L. denticornis is the principal species on barley. Both species also injure wheat and oats. H. acauleatus is common in Europe but not known to occur in the United States. L. denticornis is likewise common in Europe. It has been reported from two places in New York.

Eurydema oleraceum (cabbage bug) is injurious to cabbage and other crucifers in Russia and Norway, to cereals in Denmark, to lettuce in France. Aelia acuminata is one of the chief pests of cereals in the field in Spain. Dolycoris baccarum is reported to be definitely injurious to cereals and potatoes in Cyprus. Eurygaster hottentotus is reported in Russia on grain. The foregoing Hemiptera are not known to occur in the United States. Peritrechus geniculatus is not recorded in the United States but is not known to be of economic importance. Rhyparochromus sp. is a pest of grapes in Australia. R. chiragra is reported to attack gooseberries in Russia, R. chiragra var. californicus has been taken in central California. Trapezonotus ullrichi (Tripleps niger var. ullrichi) is recorded once in a catalogue from California.

It may be stated as a summary of this outstanding case that of 62 live individuals found in the moss of this one mail package, 47 were adults belonging to 20 different species of Coleoptera and Hemiptera; 6 larvae and 1 pupa represented three different insect families; the 4 thrips were of two genera; and the 4 ants are as yet undetermined.

Further, it is of interest to note that 12 of the species represented are undoubtedly to be classed as plant pests and of these 10 are not known to occur in the United States.

To complete the picture it is added that this shipment was being sent through the mails without the safeguarding identification tag, required for all foreign nursery stock brought in by mail, and the vigilance of the inspection system was all that prevented this assorted lot of foreign insect population from being liberated somewhere in the United States of America.

HIDING THEM FROM THE INSPECTOR

On February 25, William J. Ehinger, while engaged in the examination of foreign parcel-post packages at Philadelphia, intercepted a box which to outward appearances contained dried peas and preserves. A close examination, however, revealed the presence of a false bottom under which were found 57 rose cuttings. The rose cuttings were immediately removed and destroyed.

ROPE CARRIES COTTONSEED

O. D. Deputy, Chief Inspector of District No. 1, at Brownsville, Tex., notes in a letter of February 17, a rather unusual interception.

"Yesterday while on duty at the new bridge, Mr. Haller made a rather surprising interception. It consisted of some Mexican rope said to have been made in Monterey, Mexico. At any rate it had evidently been twisted in an old warehouse that had been used to store everything imaginable, for the rope had braided into it shooks, small bits of cloth, cottonseed, seed cotton, cotton lint, and other bits of debris. The rope was refused entry. The importer was allowed to return it to Mexico."

A HALF-CENTURY OF FOREIGN QUARANTINE

It is of considerable present historical interest to recall that on March 4, 1881, fifty-one years ago, an act was approved by the California legislature authorizing quarantine action with respect to vine diseases and vine pests. Because of the total absence of any Federal activity in quarantine matters at that time, it may be surmised that this act covered the field of foreign as well as domestic quarantine. On March 13, 1883, this act was amended to include diseases and pests of fruit and fruit trees, and on March 9, 1885, it was further broadened to give it jurisdiction over practically all materials concerned in carrying insects and diseases, coming into the State either from another State or from foreign countries. Apparently this California act was the first legislation in North America to provide for general quarantine action against the insects and diseases of crop plants. Prior to the date of its passage, Massachusetts had placed a ban on the maintenance of barberry plants (1760); Michigan had a peach yellows quarantine (1875); and several States, including Missouri, Minnesota, Kansas, and Nebraska, had passed local grasshopper laws (1877). Apparently the first plant quarantine law in Canada was a local one against peach yellows enacted by the Province of Ontario on March 4, 1881.

DOMESTIC PLANT QUARANTINES

Announcement received from the Florida State Plant Board in a special bulletin dated February 17, regarding recent modifications in quarantines of that State, includes the following statement:

A number of the State regulations which have heretofore been somewhat in conflict with Federal regulations covering the same subject matter have been so revised as to bring them into conformity with the quarantine requirements of the Plant Quarantine and Control Administration, United States Department of Agriculture, as applying to both domestic and foreign subjects.

The domestic quarantines referred to are those relating to the Japanese beetle, the European corn borer, the gipsy moth and brown-tail moth, and the Mexican fruit worm. The Florida State rule on the movement of narcissus bulbs parallels now, as heretofore, the Federal quarantine on the subject.

TRANSIT INSPECTION

Nursery stock shipping through Saint Paul and Minneapolis during the fall of 1931 was almost 15 per cent less than that in the fall of 1930, according to a statement by George W. Nelson, transit inspector at the Twin Cities, in his recent annual report. The week having the largest number of shipments came earlier than last year, the peak of the 1931 fall shipping having been reached the second week in October, while in 1930 it was not reached until Thanksgiving. The total number of violations intercepted, however, Mr. Nelson states, is 20, the same as last year. They were as follows: Four violations of the Japanese beetle quarantine, 9 of the white-pine blister rust, and 7 of the narcissus bulb quarantine. More violations were intercepted in the mail than in express and freight combined.

The importance of Springfield, Mass., as a transit inspection point, where inspection has been carried on since last May, was emphasized by Inspector E. J. McNerney in his recent annual report for 1931, in which he states:

The outstanding fact noted was that the bulk of the parcels inspected originated in the generally infested Japanese beetle area. More than 95 per cent of the parcels were in sacks and made up as directs from the office of origin to the terminal.

It is safe to say that had no attention been given to this point, the 129 parcels shipped in violation of the Japanese beetle quarantine would never have been intercepted.

The report shows that 175 violations of the various quarantines were found during the year at Springfield. At Boston, 1,017 violations were found.

Among the State inspectors cooperating with the Federal Department of Agriculture on transit inspection this spring are Mr. Rodgers, Knoxville, Tenn.; Charles Denny, St. Louis, Mo.; J. Carl Dawson, Kansas City, Mo.; V. F. Peterson, St. Paul, Minn.; A. L. Piller, Milwaukee, Wis.; H. F. Seifert, W. R. Jack, and James S. Conard, Chicago, Ill., and P. L. Wray, Hamlet, N. C. Arrangements are being made for the assignment of a Nebraska State inspector at Omaha.

PHONY PEACH DISEASE

Florida State officials announce that a rule has been adopted restricting intrastate movement of peach and nectarine trees and roots from the area affected with the phony peach disease. The rule parallels the Federal quarantine on the subject.

DATE SCALE

During February fan and other ornamental palms were inspected on infested properties. Four large fan palms were found lightly infested on a property in the Imperial Valley. In 1928 one large date palm was found heavily infested on this place and dug out. The fan palms were not inspected at that time. Treatment in this case consisted in cutting off all the foliage except the bud and spraying with a heavy oil spray. All leaves were carefully examined and some of the older dead leaves (which were probably the first round of expanded leaves when the date palm was dug out) were rather heavily infested. The scales on these leaves were, of course, dead. The intensity of the infestation decreased toward the green leaves. On one palm 21 dead and 3 green leaves were found infested. On two others scale was found on the dead leaves only.

From this and other instances it would seem that the Parlatoria scale will live and breed on young fan palms and recently expanded crown leaves. As the leaves become older they harden and only a small percentage of the scale lives. The leaves grow rapidly and die in a comparatively short time, so the palm naturally has a small top of green leaves with the trunk shielded from base to crown with dead leaves. The bases of the leaves harden rapidly after expanding, so there is no danger of infestation below the fiber line. The leaves of the date palm remain alive for many years, and neither the leaves or leaf bases harden as in the case of fan palms.

The Coachella Valley is a widened continuation of the San Geronio pass, a rather narrow cut between the San Bernardino and San Jacinto Mountains. From Banning in the pass to Indio in the valley, a distance of about 45 miles, there is a drop of from 2,300 feet above sea level to 22 feet below. Mecca, near the Salton Sea, at the lower end of the Coachella Valley, is 198 feet below sea level. The water for irrigation is pumped from the underground reservoir supplied by the run-off of rain and melting snow in the surrounding mountains. The water table in the lower end of the valley is high and many of the wells are artesian. As a result of this, mesquite and other desert vegetation grow rapidly and in dense masses.

The first development in the valley and the first date plantings were in the vicinity of Mecca. Many places were cleared and planted to seedling dates and other crops and later abandoned. Parlatoria scale was brought in on imported palms and spread to the seedlings, many of them in mesquite jungles.

The larger plantings and most of the smaller ones were readily located during the first survey and more of the scattered palms were located and listed during the regular inspections following. However, it seemed probable that a few palms would be overlooked, so a careful section-by-section survey to discover unlisted palms in the infested area was begun when time permitted. During February the infested area was completed; 116 square miles were covered and 132 small unlisted palms, none of them infested, were found. More than half were seedlings and offshoots in old plantings which had been dug out.

EUROPEAN CORN BORER AND JAPANESE BEETLE

General Project News

Dealers in New York reported unusually poor business conditions during the month. In the Wholesale Flower Market, the receipt of supplies was below normal for this period of the year and reports from there indicated that if the demand had been up to normal, the supply would have been greatly inadequate.

S. S. Crossman was transferred from the Japanese Beetle and European Corn Borer Projects to the Gipsy and Brown-Tail Moth Projects, effective February 19, 1932.

W. G. Bemis, Plant Quarantine Inspector, Port Inspection Service, was elected President of the Boston USDA Club, at a meeting held in Boston on December 17, 1932. The Coordinator, First Area, and sixteen activities of the Department were represented at the meeting.

The question of the donation of a day's pay for charitable purposes was fully discussed and the following pledge was unanimously adopted for presentation to the entire personnel of the Department in Boston, viz:

"We, the undersigned employees of the U. S. Department of Agriculture, located in Boston, Mass., agree to devote at least one day's pay, or its equivalent in commodities, by the end of February, 1932, for charitable purposes, either towards the relief of unemployment and destitution personally known to us in the communities in which we reside, or by donating the amount to a worthy public charity."

Specialized Corn Borer Activities

Inspectors of the Rhode Island State Department of Agriculture are now engaged in making a survey of the corn-growing areas within the State and checking up on all persons who failed to comply with the law in relation to plowing under all corn stubble by December 1. In connection with the suppression of the European corn borer over 4,000 notices were posted throughout the State and several radio talks and press releases were issued, citing the law and the

necessity of doing this clean-up work at the proper time. All persons failing to comply with the law are being notified to appear in person before the Commissioner of Agriculture for hearings. Over 700 offenders appeared before the Commissioner last year for hearings and were warned to clean up their premises. The Department intends to impose penalties on all second offenders found this year.

The new European corn borer regulations, which became effective February 5, greatly reduced the number of calls for inspection, especially in New York City. Activities were so decreased in that area that it was possible to transfer two men to the South Norwalk headquarters for duty.

During the month, the New York City office investigated the movement of imported dried corn silk, after a shipment of this material was held up at a port in California for lack of a certificate or permit. It was found that this corn silk was imported from Italy and is used for medicinal purposes. It is dried and baled before shipment, and it was thought that there is little likelihood of infestation of the European corn borer being spread by such movement.

In the New Jersey area, a survey of growing conditions was made, with the assistance of the county agents, and some valuable information was secured pertaining to the numbers of growers and the quarantined products raised in any abundance in the southern and northern part of the State.

On February 24 and 25, M. J. Kelly, with Frank Irons, of the Bureau of Agricultural Engineering, made a check-up trip to the farms at Temperanceville, Va., where the isolated European corn borer infestation was found in October, 1931, and where clean-up work was carried on in December, in cooperation with the Bureau of Agricultural Engineering. It was found that a very good coverage of stalks had been effected during the clean-up and that no stalks had come to the surface of the ground during the winter.

Preparation of Riker Mounts Containing European Corn Borer Life Cycle and Damaged Corn

The material for the Riker mounts, in which are shown the life cycle of the European corn borer and corn damaged by it, is collected when corn borer pupae, male and female moths, larvae, egg masses, and damaged corn material can be most readily found. Pupae are collected in June; moths, and corn tassels broken over by the corn borer, in July; and stalks, stubble, and ears showing injury, in September and October. Larvae are collected in January or February, and egg masses are secured with the aid of the Bureau of Entomology, in July.

To secure the egg masses, male and female moths and sheets of black paper are placed in a room in which temperature and humidity are controlled, and the female moths deposit the egg masses on the black paper. After the deposition of the eggs, the black paper is immediately cut into small sections with

one to several egg masses on each. They are then placed in a solution of formaldehyde and alcohol for preservation.

The corn material is heat treated prior to the preparation of the mounts to kill any corn borer larvae it might contain.

The damaged corn ears, after the heat treatment, are placed in small metal pans, made for the purpose, and then covered with hot paraffin. When the paraffin has cooled and hardened, the ears are split down through the middle with a power circular saw. The paraffin protects the grain from shattering during the sawing process. The halves of the split ears will show either damage to the grain or tunnels in the pith of the cob, and frequently plenty of both are visible.

The Riker mounts in which the material is placed for exhibition are 12" x 16" x 1 $\frac{1}{2}$ ". In one mount are placed a high stubble, a low stubble, and a tassel. The stubbles are half sections, so that the internal damage can be seen. The tassel is shown with the break caused by the tunneling of the corn borer in evidence, and a section cut out so that the tunnel made by the borer is visible. Preserved larvae are placed in the tunnels of the stubbles and tassel.

The preserved larvae placed in all corn material in the mounts are preserved as follows:

A slit is cut in the anal end of a living larva. The larva is then laid on a piece of blotting paper and the viscera forced out through the slit by rolling a pencil or some other round object from the head to the rear. The pointed end of a glass tube (one end of the tube is heated and pulled to a point with forceps, the very tip then being broken off so as to have a small aperture) is inserted into the slit made in the borer, the other end of the glass tube being attached to the rubber tubing of a cautery outfit. A small metal clip fastened to the glass tube holds the larval skin in place. Before placing the larval skin on the glass tube, the tube is filled with a mixture of hot paraffin and beeswax sucked into it by using the bulb of the cautery outfit. The paraffin and wax mixture cools and hardens while the borer skin is being placed on the glass tube, so the tube is held over a small gas burner, the heat of which soon melts the mixture. A slight pressure on the bulb injects some of the mixture into the empty skin, inflating it to normal size. The inflated, or stuffed, larval skin is immediately dipped into cold water which hardens the wax and paraffin mixture and gives to the whole a realistic appearance.

After the stubbles and tassel are placed on the cotton in the Riker mount a frame of pasteboard is placed over them. There are three openings in the pasteboard frame, through two of which can be seen either one or the other of the stubbles, and through the third the tassel, all lying neatly on cotton. On the pasteboard frame and at the sides and bottom of the openings are legends with explanations of damage and recommendations for control.

The second mount contains the different stages in the life cycle of the European corn borer, and portions of stalks and ears in which damage is apparent.

The moths collected the previous July are now relaxed in small crocks containing moist blotting paper, or moist sawdust, with a few drops of carbolic acid added to keep out the mold. After the relaxation, the moths are spread in the position desired.

One male and one female moth are placed in the second mount on the cotton filling. Next the female, and to the right of it is set a small vial containing an egg mass still on a small section of the black paper on which it was deposited by the female moth during the oviposition period the previous July. The edge of the black paper containing the egg mass is pressed between the glass of the vial and the cork, so that there is no chance for it to become turned around and the egg mass hid from view. To the right of the vial containing the egg mass is placed a vial containing a corn borer larva. The corn borer is glued to a narrow strip of celluloid, one end of which is placed in a slit in the cork of the vial to prevent the borer from becoming turned around. It is desired to show the dorsal or back view of the borer larva on account of the characteristic markings that can be seen there. The vials containing the egg mass and the pupae are filled with a solution of alcohol and formaldehyde which acts as a preservative.

In this second mount are also placed three halves of the split ears previously described, and portions of two stalks. One of the half ears is dent corn, one is sweet corn, and the third is flint corn. In some instances the ears are placed so that the damage to the grain can be seen; in others, so that the tunnels in the pith of the cobs are visible. Inflated larvae are placed in the tunnels of the ears and stalks.

A pasteboard frame is then placed over the above-mentioned material as in the first mount. There are four openings in the frame. Through one the stages in the corn borer life cycle are visible; in one a half ear of damaged flint corn appears; in one is seen a damaged half ear of sweet corn; and, in the fourth, two portions of damaged stalks with a damaged ear of flint corn between them complete the picture. Legends with explanations of the life cycle and damage are printed at the sides and bottoms of the openings in the frame.

Glass covers are then fastened on the mounts by means of passe partout tape. A hole $1\frac{1}{2}$ " in diameter is cut in the back of the mount and through it is poured $1\frac{1}{2}$ ounces of paradichlorobenzene to serve as a repellent for dermestids and other museum pests.

The mounts are then placed in boxes, one of each in a box, the box packed with excelsior, and the set is ready to be sent out for educational purposes. One hundred sets of these mounts were made up in February of this year. A set of these mounts is usually termed "A County Agent Set of Corn Borer Mounts."

Exclusive or Combination Japanese Beetle Work

After the receipt of the new regulations, work was begun in New York City on the posting of plant dealers and the Wholesale Flower Market, and informing dealers of the new regulations.

On February 17, H. N. Bartley attended a conference at Albany, N. Y., with Messrs. P. M. Eastman, C. P. Norgord, and Commissioner B. A. Pyrke, of the State Department of Agriculture, on the Japanese beetle and European corn borer quarantines. New York State's policy was explained by Commissioner Pyrke. Briefly, New York is not in favor of road patrol work as it affects the stopping of all vehicles. They would operate stations on roads leading out of the heavily infested districts for the purpose of stopping trucks that might be carrying uncertified balled nursery stock.

Messrs. C. H. Hadley and W. E. Fleming, of the Japanese beetle research laboratory of the Bureau of Entomology, Moorestown, N. J., on February 3 conferred with officials at the South Norwalk headquarters concerning methods and practices in chemically treating nursery stock as a requisite for certification. Dr. Lon A. Hawkins, of the Administration's technological division, and Messrs. V. A. Johnson and G. K. Handle, from the project's New Jersey district office, were also in South Norwalk on February 4 for the purpose of similar discussions.

Conferences have been held with H. B. Weiss, of the New Jersey Department of Agriculture, in anticipation of a program involving the use of approximately 1,250 traps in Sussex County, N. J., during the coming season of adult Japanese beetle flight. Past scouting in this northernmost county of the State has been with negative results. As contemplated, the trapping activities are designed as a check on the negative finds of previous years. The results should also give some indication of the relative efficiency and economy of scouts and traps in covering a definite territory.

For the purpose of testing and certifying Federal and State automobile equipment used on the Japanese beetle project in Pennsylvania, the State Department of Revenue in Harrisburg has designated the garage operated in conjunction with the new Japanese beetle district office at Oakmont, Pa., as an official testing station. Brakes, lights, horns, and windshield wipers on the motor vehicles are being thoroughly serviced so that they may be inspected and certified before March 31, the concluding date of the Commonwealth's safety campaign.

Available personnel of the project suboffices, not otherwise assigned, were during February engaged in a survey of all greenhouses, nursery establishments, and plant dealers located in the zones of Japanese beetle quarantine operations. Visits are being made principally to those unclassified establishments with whom the inspection corps does not usually contact. This is the most intensive visitation campaign undertaken within recent years throughout the entire restricted zone. It should prove of considerable value in informing

dealers of their privileges of moving quarantined articles under certification. Each firm or individual visited is being supplied with a copy of the regulations, and such verbal information as circumstances require.

A survey was completed during February of 24 nurseries and 41 greenhouse establishments located in those portions of Erie, Blair, Lycoming, Clinton, Wayne, and Pike Counties, Pa., added to the regulated territory under the 10th revision of the regulations effective January 1, 1932. An inspector visited each establishment, furnished the management with quarantine information, and obtained data concerning the extent of their business, with particular reference to shipments requiring certification. None of the establishments visited are within a quarter of a mile of a Japanese beetle infestation. Most of them are a mile or more from a beetle find. Accordingly, such of these 65 establishments as desire certification may obtain the same under Class I conditions, which entail a minimum of inconvenience to the shipper.

Letters were dispatched during the month to all classified establishments for the purpose of securing information as to the different units of their premises they desire scouted during the coming summer. On several occasions last year nurserymen failed to notify suboffices of additional leased or purchased ground isolated from their establishments. Since a Class I status is conditioned upon determination by scouts of freedom from infestation of the premises concerned and adjacent area within a radius of 500 feet, it is necessary to impose Class III requirements upon such unscouted units until opportunity is afforded during the next adult season to determine absence or presence of the insect. Requests for information dispatched to classified establishments emphasize the desirability of supplying us with advance information of plots to be scouted so that their premises may acquire as preferential status as possible.

Cost data have been compiled to show comparisons between lead arsenate applications as a dry mixture in combination with sand and a fertilizer, and in spray form. Since the first lead arsenate-sand-tankage mixture was applied with fertilizer distributors in Springfield, Mass., in June, 1929, a total of 137,743 pounds of lead has been applied by this method to 565 acres at isolated infestations. The average rate of application has been 244 pounds, which has been applied at a cost of \$65.12 per acre or 26.7¢ per pound. The last dry mix was spread at the Boston Navy Yard in May, 1931. Spray applications to soil surface have been practiced in all subsequent treatments. Almost identical acreages have been treated by the two methods, a total of 558 acres having been poisoned through the wet application. A much larger quantity of the arsenical; 248,158 pounds, has been applied by the latter method and at a lower cost. It has been possible through spraying to apply an average dosage of 444 pounds per acre at an acreage cost of \$60.99, or 13.7¢ per pound. The spray method is now exclusively employed in soil poisoning of infestations remote from the zone of continuous infestation. Tests are being conducted at the New Jersey district office of a number of mechanical contrivances, constructed at that office for the purpose of removing adult beetles

from string beans. Enforcement of the farm products quarantine this coming summer will require the thorough inspection of thousands of bushels of beans that in the past have in the most part been eligible for certification without inspection on the basis of freedom from infestation of the premises where grown. Cedarville, Cumberland County, is the center for the bean-growing section in southern Jersey. One grower alone raises 175 acres of string beans. Prior to last summer's scouting season only scattered infestations had been evidenced in this vicinity. Inspection of a percentage of the beans shipped and the fields in which they were grown failed to disclose any beetles in 35,627 units inspected during 1930. Last year 67 beetles were removed from 61,706 units certified. It is anticipated that the infestation in 1932 will be sufficiently general to require actual inspection of the major portion of the beans shipped from the Cedarville district to points outside the regulated territory. Accordingly, it is essential that some satisfactory means of expeditiously removing beetle infestation from the beans be perfected. Beans used in testing the mechanical "debeetlers" are infested with live Japanese beetles obtained from uncertified greenhouses in the Philadelphia area.

Reconditioning and painting of traps continued throughout the month. Failure to fulfill specifications of white paint purchased for painting baffles and funnels necessitated discontinuation of spray painting for a short period. A large movable drying rack has been constructed on which may be stored baffle and funnel combinations between coats. Accumulation of green painted cylinders finished during the interim when paint was not available for completion of the remainder of the trap assemblies formed a pile 7 feet high, occupying 540 square feet of floor space.

Potted Azalea hinodegiri have successfully been grown in soil containing a dosage of arsenate of lead equivalent to 1,840 pounds per acre. Plants so grown appear to have a darker foliage and to be stockier and heavier budded than specimens potted in soil containing lesser dosages of the poison. These results were obtained in a few preliminary chemical treating tests made to determine effect of the arsenical soil insecticide on growth of this plant species.

February collections of adult beetles in greenhouses connected with Horticultural Hall, Fairmount Park, Philadelphia, netted a total of 376 beetles. During a similar period in 1931, 757 were collected. A log of daily hand collections is kept by X. E. Schmitt, superintendent of the greenhouses. This city-owned institution does not operate commercially, nor do exhibit plants housed therein move to points outside the regulated environs.

Readjustment of nursery and greenhouse classification records to conform to revised requirements in newly promulgated regulations has been accomplished. A total of 697 Class II establishments automatically reverted to Class I status. This means a lessening of restrictions on all uninfested premises previously of Class II status, irrespective of their proximity to infestation beyond the 500 feet radius prescribed by the regulations.

Numerous complimentary responses have been received from classified nurserymen, postmasters, and others to whom have been distributed the recently mimeographed "Shipper's Guide" containing a list of cities and towns within the territory regulated under Quarantine No. 48. Guides have been delivered to classified establishments and are in process of distribution to all post offices within the regulated area.

PINK BOLLWORM

At the close of the gin trash inspection season the findings made in the Salt River Valley of Arizona were carefully analyzed to determine the present status of the infestation, and it was found that light infestations still exist in the vicinity of Laveen and in a small area southeast of Chandler, both of which are in Maricopa County. This is a considerable reduction in both the number of specimens found and the area infested over the previous year, and seems that we are now in a very favorable position to eradicate the insect entirely from the Salt River Valley. Therefore, definite recommendations as to the procedure to be followed in producing the coming crop were submitted to the Arizona Commission of Agriculture and Horticulture early in February. These recommendations were that all fields in the infested areas be cleaned, plowed, and irrigated, and the planting of the new crop be delayed as late as practicable; also that no stub cotton be grown or allowed to grow within the two areas. A survey was made in the two areas to determine the intention of the growers for this year's operations. Due to economic conditions it was impossible to obtain definite information in a number of cases. It was learned, however, that approximately 1,800 acres would be planted to cotton and 1,350 acres would be stubbed. On 4,200 acres the owners were undecided. It was further learned that some 2,300 acres in cotton the past season would be abandoned. The latter part of February the Chairman of the Commission called a meeting of growers and other cotton interests to discuss ways and means of complying with the recommendations. The growers were somewhat hesitant to clean their own fields unless some way could be found to take care of the abandoned acreage. An effort is now being made to devise plans for cleaning this abandoned acreage.

A considerable amount of field inspection has been performed in Maricopa County for the presence of the pink bollworm, and also to determine the condition of the roots of cotton stalks. In some sections practically 100 per cent of the roots are alive, while in others only 25 per cent are alive. The roots seem to be in a much better condition in light sandy soil than in the heavier soils. A number of farmers who had intended to stub some of the fields have recently stated that not enough plants are alive to make this profitable, and that they would plow them up and plant in the regular way. Rains and cool weather have retarded the stub cotton, and up to the present time no new growth has been observed.

A laboratory for the inspection of seed samples has been opened at El Paso, using the quarters formerly occupied by the Technological Division. The seed samples to be examined were collected from local gins throughout the El Paso Valley, and also a considerable supply from various oil mills in east Texas. The method of inspection is the same as that followed at the San Antonio laboratory last season; that is, the seeds are imbedded in paraffin blocks and then sliced. Some 76 samples of seed grown in Hudspeth County have already been inspected, 54 of which gave negative results. From the remaining 22 samples 98 pink bollworms were taken.

Satisfactory progress has been made in the inspection of green bolls at the San Antonio laboratory. To date approximately 240 samples have been inspected, representing cotton fields in the States of Arkansas, Oklahoma, North Carolina, and South Carolina. No signs of the pink bollworm have been found in any of the material inspected.

Traffic at the road stations remains approximately the same as last month; however, interceptions have decreased considerably. A large percentage of the interceptions consists of small lots of cotton being carried by tourists as souvenirs. Since the harvesting of the present crop is almost completed, a decrease in interceptions is naturally to be expected. Two interceptions made during February were found to be infested with the pink bollworm. One was made at the Alpine, Tex., station on February 4, and consisted of 45 cottonseed taken from cracks in the body of a truck. One dead larva was found in the seed. The other interception was made at the Van Horn, Tex., station on February 6, and consisted of a quarter of a pound of cottonseed, also taken from a truck body. From this material 8 dead larvae were taken. It is interesting to note that during the entire season all specimens found in seed interceptions have been dead, thus indicating that sterilization has been efficient.

Regulatory activities have progressed satisfactorily and are nearing completion. A small amount of cotton remains to be ginned, most of which is in the Salt River Valley of Arizona. This season approximately 91 per cent of the seed produced has been shipped to designated oil mills, 88 per cent of which has already been crushed. Also 86 per cent of the cotton ginned this season has already been treated and shipped.

The *Thurberia* plant and weevil survey being conducted in southeastern Arizona has made very good progress, although excessive and continuous rains during February have interfered. No new plant colonies have been found. A considerable amount of inspection has been made in the old plant colonies, but no specimens of the *Thurberia* weevil were taken. It was considered advisable to have the men make these inspections so as to become more familiar with the general appearance of the plants. This seems to have helped them considerably in locating isolated plants by their rather peculiar and outstanding color. As soon as the new foliage appears it is thought that much better time can be made in getting over the large area involved.

The pink bollworm quarantine regulations were amended effective February 1, 1932, so as to authorize the issuance of permits for the interstate movement of cottonseed from certain lightly infested sections of the pink bollworm regulated areas. This permit is issued on the condition that such seed shall be heated to a temperature of not less than 145° F. and held at such temperature for at least one hour; that the maintenance of such temperature shall be witnessed by an inspector, and that cottonseed so treated shall be immediately placed in sacks or other approved containers and shipped, or shall be segregated in a manner satisfactory to the inspector. Under this amendment some seed has already been treated and shipped from the El Paso Valley of Texas to be used for planting purposes.

PREVENTING SPREAD OF MOTHS

Seventy men were transferred to New Jersey from the scouting force that was working in the barrier zone area of Massachusetts and Connecticut. The first of these scouts left on February 12, and three days later the transfer of the remainder was completed. In addition to these men, there were three field supervisors transferred to assist in supervising the scouting work there.

During the current fiscal year, it is planned to scout approximately 4,300 acres of woodland in the northern portion of Bridgewater Township and approximately 2,700 acres in the southern portion of Hillsboro Township. Six scouting crews, totaling 47 men, were assigned work in the extreme eastern part of Bridgewater Township and they will work westward toward the borough of Somerville. This procedure was deemed advisable owing to the fact that the last known gipsy moth infestation in New Jersey was found and eradicated in a small area in Piscataway Township which borders partly on the eastern limits of Bridgewater Township. There has not been any scouting work done in that section of Bridgewater Township which is now being examined since the fiscal year 1930. Three scouting crews, aggregating 23 men, began work in the southwestern end of Hillsboro Township, near Zion, N. J. It is in this area that the largest amount of woodland is found in Hillsboro Township. In past years, when work in this township was conducted (particularly in the western and southwestern parts) the roads were in most instances impassable during March and April due to the mud conditions. To relieve the unemployment situation, the county and township authorities have had considerable work done on these roads and they have been greatly improved. In addition to other road work, many trees on both sides of wooded roads were cut down, affording the roads a chance to dry out. The wood from the trees was distributed among the needy in the immediate vicinity.

The scouting work in New Jersey has always been of an intensive nature owing to the fact that exterminative rather than control measures were employed and numerous trees were climbed for the purpose of removing loose bark, cleaning

out cavities, etc., thus revealing any gipsy moth egg clusters that might have been concealed. The necessity of stripping the bark from trees in Bridgewater and Hillsboro Townships to any great extent is eliminated and will result in speeding up the scouting work appreciably. In New Jersey, a scouting crew of 5 men will examine approximately 50 acres of woodland a week on an average, using the close intensive scouting method. By this method, the men are deployed in line, each man examining every tree that is in his respective strip. All debris, scattered or piled in the vicinity of the trees, cavities, bird nests, fences, etc., are examined. Nothing is omitted which would afford concealment to the gipsy moth female adult in laying her eggs. Each scout has a distinctive mark which he places on every tree, fence, stone wall, etc., examined. This mark is made either with a special knife or lumber crayon, depending on the type of tree that is to be marked. Smooth bark trees, fruit trees, or seedlings are usually marked with crayon in order not to disfigure them.

In addition to the work now in progress in New Jersey, there are two scouting crews in Dorset, Vt., and two in Rupert, Vt., engaged in the examination of wooded areas by the 40-foot strip method. In this type of scouting there are usually eight or more men in a crew. The scouts in going through woodland work about 40 feet apart, marking each tree as they are examined. This type of scouting is used only in areas where no gipsy moth infestations are known to exist. To February 29, approximately 8,200 acres and 9,000 acres of woodland were scouted in Dorset and Rupert, respectively, with no infestations discovered. This leaves about 8,000 acres more in Dorset and about 1,800 acres more in Rupert to be scouted.

There remain three scouting crews in the barrier zone area in Massachusetts engaged in an intensive survey of the wooded areas in New Marlboro, Sandisfield, and Sheffield. To February 29, a total of 33 infested places consisting of 265 new gipsy moth egg clusters were found and treated with creosote. Seventeen of these sites are located in New Marlboro, 3 in Sandisfield, 12 in Sheffield, and the remaining 1 in Tyringham. All of the ground work, in the areas considered most likely to be infested with gipsy moths in the Massachusetts portion of the barrier zone, has been finished. This work is confined chiefly to the examination of stone walls, debris, and trunks of trees for a distance of approximately 3 feet about the ground, and was given priority in order that as much of it as possible could be done before deep snow would interfere with it.

Five scouting crews were left in Connecticut after the transfer of men to New Jersey. These are engaged in intensive scouting of woodland in Canaan, Salisbury, Warren, and Washington. Up to and including February 29, there were 7 infested sites discovered consisting of 109 new gipsy moth egg clusters, all of which have been treated with creosote. Three of these sites are located in Canaan, 1 in Salisbury, and the other 3 in Warren. All of the ground work planned for this year in areas likely to be infested with the gipsy moth in the Connecticut portion of the barrier zone has been finished.

During February, the weather in the New England section of the barrier zone has been to a great extent unfavorable for scouting and much time was lost on account of rain, snow, and ice. In New Jersey the weather has been rather dark during the latter part of February. While this condition would ordinarily retard the progress of the scouting work, it was possible for the crews in New Jersey to select for such work small growth in the area to be examined during the dark, overcast days. Consequently, very little time was lost on account of the weather condition in New Jersey during the month.

There were 31 shipments of quarantined products and 4½ cords of wood inspected and certified in New Jersey during February, on which no gipsy moth egg clusters were found.

On Long Island there were only eight shipments of nursery stock inspected during February and no gipsy moth infestation was found on them. The quarantine inspector there continued to scout certain areas in the vicinity of Roslyn, L. I., as prearranged with the New York Conservation Department. He has examined a quarter of a mile of roadside and 14 acres of woodland with negative results.

A map received from the New York Conservation Department indicates that 41 scouting crews were engaged in the examination of wooded areas during February in the following barrier zone towns in New York: Fort Ann and Hartford, in Washington County; Chatham, in Columbia County; Stanford and Amenia, in Dutchess County; Kent, Phillipstown, and Southeast, in Putnam County; Courtlandt, Bedford, Lewisboro, North Castle, Rye, Mamaroneck, Scarsdale, and Pelham, in Westchester County. No sign of the gipsy moth has been found in the barrier zone area scouted by the State force during this current fiscal year.

There are four scouting crews at work on Long Island: Two in Babylon, one in Hempstead, and the other in the Borough of Queens. The entire area on Long Island that was originally infested with the gipsy moth has now been scouted. In addition thereto, an area extending approximately 6 miles east and west of the infested zone centering at Roslyn, Nassau County, and bordered on the north by Long Island Sound and on the south by the Atlantic Ocean, has also been scouted. Up to and including February 29, a total of 30 infested sites consisting of 601 new egg clusters have been found and treated with creosote by the New York Department of Conservation. These colonies, with the exception of one located near Glen Cove and another near Great Neck, Nassau County, are within approximately a 2-mile circle with North Roslyn, Nassau County, as a center.

The largest infestation found on Long Island this fiscal year is situated near Glen Cove and consists of 307 new egg clusters. The size of this colony is undoubtedly accounted for by the fact that locust trees are abundant there. These trees are infested with the locust borer, Cyrtene robiniae, and as a consequence numerous trees are losing their bark. This shaggy bark condition frequently prevails from the base to the top of the tree affording ideal hiding places for the females to deposit their eggs. It is evident that

some egg clusters concealed under the loose locust bark were overlooked when the trees were scouted during the fiscal year 1930. This year, in searching for gipsy moth egg clusters, the scouts stripped the loose, dead bark from many locust trees. The discovery of a gipsy moth egg cluster on one of these trees necessitated the removing, by permission of the owner, of considerable dead bark resulting in the finding of additional egg clusters. In this particular area, an unusual ~~gaunt~~ spectacle resulted on about 12 large locust trees situated directly in front of a mansion on a large estate.

The next largest colony in size is one of 141 new egg clusters located near Roslyn. An unusual condition exists at this colony. It is confined to a few locust trees in a bull pen. Several strips of furring about 4 feet long were nailed perpendicularly to the trunk of each tree, upon which a fine mesh wire of about the same height was wound several times. The purpose of this was to keep the cattle from injuring the trees. The bulls were evidently loose in this yard when the scouts reached there on the occasion of the previous examinations as there were no scout marks on the trees or any other evidence that would indicate the trees had been examined. During the absence of the bulls from the pen this year, the trees in the enclosure were examined and the 141 new egg clusters were found concealed under the wire.

It has been found that forest ground cover (leaves, branches, and other debris) has been raked up in and around gipsy moth infested sites and carted to leaf compost piles within the gipsy moth infested woodland blocks before the property owners were aware that the gipsy moth was present in the localities where the materials were gathered. This year a special effort was made to learn of the disposition of such material when removed from the vicinity of gipsy moth sites. It appears that this transfer of debris accounts for 5 or 6 infested sites ranging from 4 to 16 egg cluster infestations.

During the latter part of February several nurseries in central Connecticut in the gipsy moth quarantined area started shipping deciduous shrubs from storage for the spring trade in the Southern States. Seven carloads and over 400 less-than-carload shipments were certified. This material was inspected about the middle of October at the time it was placed in storage. A large percentage of these shipments this month were rose bushes for department store trade.

A unique process, which is said to be an important horticultural discovery, has been recently patented. This process aims to keep the life-giving sap intact within rose bush stalks and other small deciduous plants by preventing moisture evaporation and consequent drying, when these plants are exposed for sale over a period of at least six weeks in heated stores where the temperature averages 75° F. When the rose bushes and other small plants are freshly dug, the roots with the soil clinging to them, are carefully encased in damp moss or peat. A water-proof, asphalt-lined, three-ply paper is then wrapped about the moss. This protects the roots. The stalks are then dipped into a vat containing a special solution of paraffin and wax, heated to 190° F. A quick dip is all that is required to form a moisture-proof transparent film

that seals the plant and prevents evaporation. When the shrubs are eventually planted, the buds start and break through the wax film. It has also been stated that this coating retards the development of fungi appearing on the plant at the time previous to the dipping process.

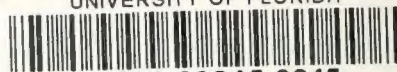
Rose bushes for shipment are packed in large corrugated pasteboard cartons. As many as 35,000 bushes are packed in a single carload.

Since cellophane has been generally used for wrapping purposes, an attractive container for individual rose bushes and shrubs is being used at many nurseries in the gipsy moth quarantined area. One side of the paper container, which varies in length up to 3 feet, has a cellophane window through which the contents may be seen. A colored plate of the inclosed plant in bloom is pasted at the top of the cellophane.

The association of the gipsy moth quarantine with the preparation of medicine was evidenced during February when an inspection was made of 26 bags of black birch chips at Preston, Conn., for shipment to Cincinnati, Ohio. Birch branches ranging from 10 to 25 feet in length were gathered and put through a machine which cut them into chips. These black birch chips are brewed in steam vats to extract an oil which is used in a medical preparation recommended by the manufacturer in the treatment of rheumatism. Approximately nine tons of black birch branches are used daily in the process. About three pounds and ten ounces of oil are extracted from a ton of these branches.

The testing at 1,000 pounds working pressure of 22,000 feet of 1" high pressure spray hose which was delivered during January has now been completed.

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