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THE UNIVERSITY OF CHICAGO
DIVISION OF THE PHYSICAL SCIENCES
DEPARTMENT OF CHEMISTRY

REPORT OF THE
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UNIVERSITY OF CHICAGO
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OUTSTANDING ENTOMOLOGICAL FEATURES OF MAY 1921

The chinch bug situation in the Mississippi Valley corn belt is still the most serious entomological feature reported to the Survey. The outbreak, from present information, covers the north central part of Texas; all of Oklahoma (except the three northwestern counties and the southeastern part of the State east of a line extending from Bryant to Adair Counties); the six northwestern counties of Arkansas; the eastern third of Kansas; southern two-thirds of Missouri (being worst in Jasper, Newton, and Scott Counties); touching south central Nebraska from Franklin to Thayer Counties; and southeastern Iowa from Ringgold to Louisa Counties; thence crossing southern half of Illinois; narrowing to a belt across Indiana, extending from Vigo to Posey Counties on the west and Allen and Wayne Counties on the East; and ending in a slight infestation in the northwestern counties of Ohio, and the southeastern border of Michigan.

The hessian fly has appeared in noticeable numbers in Guilford County, North Carolina, and Barnwell County, South Carolina. In Ohio the worst fields will probably be about one-half infested, and the average infestation will probably be much lower. In Indiana the situation is more serious, the insect being abundant over the southern part of the State as high as 99 per cent of the stalks being attacked, and as far north as Lafayette infestation ranges from 50 to 90 per cent. Illinois reports the outbreak as about normal. Missouri reports the worst outbreak since 1916, in some cases as high as 78 per cent of the stalks being attacked. In Oregon there is a normal infestation, being about a quarter less severe than last year, with from 26 to 30 per cent of the stalks attacked.

The pale western cutworm is again present in destructive numbers in Montana and Colorado. In Montana it is estimated that from 10 to 75 per cent of the small grain will be destroyed in the counties infested, and in Colorado thousands of acres are being plowed out and reseeded to a catch crop.

The western wheat-stem maggot is seriously infesting wheat in central Montana. The last serious outbreak of this pest occurred in 1918.

The pea aphid outbreak in the Mississippi Valley reported in the last Bulletin seems to have died out, but reports of a very serious outbreak of this insect in Western Oregon on vetch (the principal hay crop of the region) have been received. The Experiment Station is testing out an aphid-resistant variety that gives excellent promise of success.

The two clover-leaf weevils are very much more numerous than usual in Ohio, Indiana, Illinois, New Jersey, Oregon, Michigan, Iowa, and Missouri.

Flea beetles attacking tobacco seed beds have appeared in serious numbers in Maryland, Virginia, and Kentucky.

A newly introduced scale insect is reported as attacking sugar-cane in Louisiana.

The unusual outbreak of the seed-corn maggot attacking seed potatoes, reported in the last number of the Survey Bulletin, has continued, with the advance of the season, to extend northward along the Atlantic seaboard through New Jersey to Massachusetts and outbreaks have developed inland as far as Indiana and Illinois. The most significant feature of the outbreak is the coincidence of serious damage with the use of inorganic fertilizers.

A very serious outbreak of cankerworms (both spring and fall species) has developed in southeastern Wisconsin, entirely defoliating the trees in several counties. Less serious outbreaks are reported from Illinois, New York, Connecticut, and Ohio.

Tent caterpillars are more numerous than usual in the New England and Middle Atlantic States.

Reports have been received of a repetition of the serious outbreak of the achemon sphinx which occurred last year in the vineyards of Merced County, California.

The arborvitae leaf-miner is very seriously infesting the hedges and ornamental specimens of this plant in Connecticut and on Long Island, New York.

Serious bagworm outbreaks are under way in Arkansas and Missouri.

Unusual numbers of stable flies in Oklahoma, Kansas, Nebraska, and parts of the Dakotas are reported, and a repetition of the serious outbreak of last year in which live stock suffered and farm operations were suspended in this region is threatened.

CEREAL AND FORAGE CROP INSECTS

WHEAT

CHINCH BUG (Blissus leucopterus Say.)

- West Virginia. W. E. Rumsey (May 23). "We have received no reports of chinch bug in West Virginia this year."
- South Carolina. J. M. Eleager, county agent of Saluda County (April 1). "A very light infestation distributed widely over the county."
- Ohio. H. A. Gossard (April 28). "We noticed chinch bugs flying freely at Wooster today." (May 21). "There are more chinch bugs than usual scattered all over the northern half of the State, but they are not present in sufficient numbers to be considered a menace. So far as known to me there are only two or three counties along the western border of the State that have chinch bugs in considerable numbers; perhaps Defiance County and Williams County have more than other counties. I think there are no unusual numbers at all in Erie, Ottawa, or Lucas Counties."
- Indiana. J. J. Davis (May 17). "Apparently most of the bugs have left their winter quarters and are to be found in fields of small grain, especially wheat and barley. Chinch bugs are as abundant as anticipated and plans are being made for a State-wide campaign. It is hoped to have one or more companies handling creosote to establish supply stations in the State."
- Illinois. W. P. Flint (May 17). "The cool spring delayed the flight of chinch bugs to the wheat. The general flight did not occur until the first week of May. Eggs are just being deposited, none have hatched to date. The most serious outbreak covers the lower half of the State, the southern line extending across the center of Jackson County to the northeastern corner of Wabash County, and the northern line extending across the middle of Calhoun County, running across the southern border of Christian County, and including practically all of Crawford County. The counties in which examinations have been made indicate that the bugs will be fully as bad as anticipated, perhaps a little more abundant than we at first thought."
- Iowa. F. A. Fenton (April 23). "I saw wheat fields in Decatur County which had been badly taken by chinch bugs last fall. At the time of my visit this spring (April 23) the bugs were working in wheat but a lot of them were found in the grass along the edge of the fields. This is the first record of chinch bugs in Iowa for about 25 years; at least, as far as our records are concerned."

- Arkansas. W. J. Baerg (May 9). "Chinch bugs in this State will probably be confined to the northwestern corner of the State, extending south as far as Crawford County and east as far as Carroll County. The outbreak will probably be very slight."
- Missouri. A. J. Burrill (March 17). "Chinch bugs unusually numerous in Scott, Newton, and Jasper Counties. No flight seen or indicated. In Scott County the chinch bugs were moving out of fence rows on March 15 and 16 into the corn stubble."

HESSIAN FLY (Phytophaga destructor Say.)

- North Carolina. Franklin Sherman (May 2). "Damage by this insect has been reported by a correspondent from Guilford County. Crop reports to statisticians also mention the Hessian fly, but it is evidently not worse than such outbreaks usually are."
- South Carolina. G. D. Robertson, County Agent of Barnwell County. "In February wheat was a failure, from the effects of Hessian fly over the entire county."
- Minnesota. C. N. Ainslie (May 20). "Quite a number of winter wheat fields were looked at carefully, but I could find no trace of Hessian fly in any of them. Some dipterous (?) larvae had killed some of the tillers but the pest, whatever it was, had left."
- Ohio. H. A. Gossard (May 17). "Preliminary investigations regarding Hessian fly lead us to forecast an infestation of not more than 50 per cent at harvest time in the worst infested fields and the average will be much lower than this. Some of the progeny of the spring brood have already reached the "flaxseed" stage. Eggs were still being laid at Sandusky, May 17."
- Indiana. J. J. Davis (May 17). "Hessian fly abundant wherever observations have been made in the southern end of the State. The infestation ranges up to 99 per cent of the stalks infested, and there the majority are now in the "flaxseed" stage. At Lafayette the fly is also abundant and there are two distinct sizes of larvae, one nearly mature. These are more often to be found in the small dead tillers. Others very small, probably not many days old, often occur in the larger stalks which have not yet been sufficiently injured to be evident. The infestation at Lafayette ranges from 50 per cent to 90 per cent. No observations have yet been made in the northern end of Indiana. There is every evidence that the fly will be very abundant this coming fall."

Illinois. W. P. Flint (May 17). "Normal outbreaks occur over the entire State. The weather for the past month has been very favorable to Hessian fly development. The insects are now about half in the larval stage and half in the flaxseed stage."

Missouri. A. F. Satterthwait (March 28). "Hessian fly eggs had become very numerous on the laboratory wheat between March 22 and March 26." (March 28). "At Webster Groves brown puparia are now frequently found."

H. C. Hensley (April 30). "The Hessian fly is much more abundant than usual. Present indications are that 15 per cent of the crop has been damaged in New Madrid County."

Leonard Haseman (May 15). "We will probably have the worst outbreak we have had since 1916. The fly is now mostly in the flaxseed stage. One sample sent to the Station showed 98 per cent infestation with an average of 9 larvae or flaxseeds to the infested tiller."

Dr. Haseman included with his report a map showing the general infestation of this insect as covering most of the State, with the exception of an area in the south-central part extending from Taney County on the southwest, Butler County on the southeast, Washington County on the northeast, and Camden County on the northwest.

Oregon. M. M. Reeher and L. P. Rockwood. Tulletin and Willamette Valley. "The outbreak is about average for the first spring brood, being about 25 per cent less than last year. The first spring flight was completed by May 1 at Forest Grove. About 36 per cent of the plants and 26 per cent of the tillers were infested, while at McMinnville 48 per cent of the plants and 30 per cent of the tillers were infested. The area at McMinnville was mostly winter wheat following spring and showed a high percentage of infestation for late sown winter wheat. Two fields at Forest Grove seeded in September during the fall flight of the Hessian fly had 73 per cent of the plants and 59.5 per cent of the plants, respectively, infested by the first spring brood. These fields were thinned to from 50 to 70 per cent of a stand last fall by the fall brood of the flies."

STRAW-WORM (Harmolita grande Riley.)

Missouri. A. F. Satterthwait (April 28). "The straw-worm is now in the pupal stage, at least in part, according to observations of April 25."

JOINTWORM (Harmolita tritici Fitch.)

Illinois. W. P. Flint (May 17). "This insect is more abundant than usual in the central part of the State; oviposition has taken place in the central and southern parts of the State during the past week."

Missouri. A. F. Satterthwait (April 28). "Ovipositing in wheat on April 25 at Webster Groves."

PALE WESTERN CUTWORM (Porosagrotis orthogonia Morr.)

Montana. R. A. Cooley. "The pale western cutworm is again present over the general territory infested last year, and, if past experience can be counted on, the losses from this insect in 1921 will be enormous. However, in one locality in the heart of the infested region, where since 1918 from 25 per cent to 50 per cent of the acreage seeded has been a total loss, no damage has as yet shown up."

A. L. Strand (May 10). "About 75 per cent of the winter wheat will be totally destroyed at Power, Teton County. Calosoma calidum has been observed preying upon these insects. 10 per cent of the rye at Sweet Grass, Toole County, has already been destroyed, and many wheat fields over Hill County are heavily infested and will be a total loss."

J. W. Manning (May 2). "More abundant than usual in Lewis and Clark County. Heavy losses of the crop expected."

D. W. Jones (March 4). "Damage to wheat by this insect just beginning to show up, much damage expected in Chouteau County."
(May 12). "Heavy damage to fall and spring wheat beginning to show up in Stillwater County."

Colorado. C. P. Gillette (May 24). "This cutworm, which has attracted so much attention in Montana, is evidently a native of Colorado and has been somewhat more active than usual in the winter wheat belt east of the mountains the present spring. Thousands of acres have been sufficiently injured to make it necessary to plow and put in another crop."

WESTERN WHEAT-STEM MAGGOT (Hylemyia cerealis Gillette.)

Montana. R. A. Cooley. "Severe losses to fall and spring wheat through central Montana have been due to a recurrence of this insect. It was first reported here in 1918. As the maggots are about full grown, destroyed fields are now being reseeded."

A. L. Strand reports this insect as almost as abundant in Cascade County as it was in 1918, when many thousand acres were necessarily reseeded. He further states that 15 per cent of the acreage in Hill County has been destroyed by this insect.

W. H. Jones reports from Stillwater County that in many fields the wheat is a total loss.

CLOVER AND AITAIKA

PEA APHIS (Illinoia pisi Kalt.)
(See also Truck Crops.)

Illinois. W. P. Flint (May 17). "More abundant than usual in the southern part of the State, but the outbreak is much less severe than last month, the weather having been favorable for the development of parasites, which have destroyed from 35 to 50 per cent of the aphids."

Oregon. A. L. Lovett (April 12). "The pea aphid has appeared in serious abundance in western Oregon on field vetch, our principal hay crop for this region. The infestation was first observed on April 12. Climatic conditions favorable to aphid development had prevailed, that is, an unusually early spring followed by continued cool rainy weather. The infestation is very irregular, volunteer vetch being the most heavily attacked. Late sown fields, particularly where accompanied by fall plowing and a general cleanup of surroundings, show few or no aphids. A vetch now being tested on the Station variety plats by Mr. Schoth of the Federal Service, known as Hungarian vetch (Vicia pauciflora) has many desirable qualities as a hay or silage crop and is particularly immune, apparently, to serious aphid injury. Beneficial insects have developed slowly. Coccinellidae and the large syrphid fly (Lesiophicus pyrastris) are the principal forms. Hymenopterous parasites are, and have been in previous outbreaks, most conspicuous by their absence. The fungus, Empusa aphidis, is present in all the fields. The unusual abundance of aphid and the cool moist weather prevailing would appear ideal for the development of this fungus, nevertheless it is of minor economic importance in control, the estimated mortality from fungous disease being from 8 to 14 per cent. Field and garden peas show no serious infestation by aphid."

H. A. Schoth (April 21). "Pea aphid at Forest Grove getting a start on volunteer vetch on April 2. One or two parent forms to a plant."

L. P. Rockwood (May 17). "Pea aphid is attacking vetch more seriously than usual. The infestation as yet is confined to the early sown vetch, but winged migrants are appearing. Last week the natural enemies, especially coccinellid beetles and syrphids, did excellent work during the few warm days, reducing the infestation to such an extent that no injury is anticipated unless the weather becomes unfavorable for them to work over a considerable period. Four species of Hippodamia and Coccinella trifasciata have been present for at least two or three weeks, but the weather conditions were not favorable for them to work; these and the syrphids are now laying eggs."

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

- New York. J. B. Detwiler (May 20). "This insect is fairly abundant at Ithaca, working in the buds, axils of the leaves, and in the heads. Some of the larvae are in the last instar."
- Ohio. T. H. Parks (April 26). "Expect damage due to the backward condition of the plants and the advanced development of the insect over last year. This insect promises to damage the red clover seriously in Darke, Shelby, Miami, Champaign, and Clark Counties in western Ohio. The first larvae were observed to be hatched April 26 as compared with May 14 in 1920. Pasturing the infested fields until May 15 is being advised by the Extension Service."
- Indiana. J. J. Davis (May 17). "We are beginning to get in reports of considerable damage to clover, particularly big English clover, and apparently the area of heavy infestation in Indiana is by the lesser clover leaf weevil. We find the larvae in all sizes from the very smallest to those nearly full grown. This is for central Indiana."
- Illinois. W. P. Flint (May 17). "Examinations of clover in Champaign County showed 75 per cent of the heads infested. The insect is much more abundant than usual in the southern and central parts of the State, only occurring in moderate numbers on the west side of the State."
- Oregon. L. P. Rockwood (May 17). "This insect shows an increase over last year, especially south of Forest Grove, where they were scarce. The beetles are now actively feeding and laying eggs. The damage is not serious at this time. The parasite, Bathyplectes exigua Grav., is more numerous than the Phytonomus adults. Male parasites greatly predominating at this time. These, however, will not be sufficiently developed to kill the larvae until the middle of June. This insect is gradually working southward, as Forest Grove is apparently the southern limit, and was very scarce in 1919 and 1920. Fortunately the pest is accompanied by its natural enemies."

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

- New York. L. P. Wehrle (May 17). "The first beetle found today was still in the cocoon and newly transformed."
- New Jersey. T. J. Headlee (April 27). "This is the first outbreak of this insect I have seen. It is in sufficient numbers in the northwestern portion of the State to clean up completely the foliage and the tender stems of clover. The clover in most cases seems to be a little red."

- Ohio. R. C. Osburn (May 7). "The clover leaf-weevil was very abundant in red clover during April. Clover was retarded, due to the late spring freezes, while this insect was advanced in its development as compared with 1920, consequently considerable damage occurred. Cocoons were being spun on April 26."
- Indiana. W. H. Larrimer (April 30). "This insect is half again as numerous as during average years. About 60 per cent of the larvae have spun cocoons in preparation for pupation, while half of these have been destroyed by the fungus disease, Empusa sphaerosperma Fres."
- Illinois. W. P. Flint (May 17). "Much more abundant than usual over the entire State. Damage has been reported from 75 counties, one county reporting 75 per cent of the clover killed. Adults are now abundant. The fungus disease, Empusa sphaerosperma, has destroyed about 25 per cent of the insects."
- Michigan. R. H. Pettit (April 29). "County agent R. L. Olds reports damage by this insect from Kalamazoo."
- W. H. Larrimer (May 5). "Report received through county agent F. L. Simanton of St. Joseph, Michigan, that Mr. Umphrey failed to get control of this insect, which is more abundant than usual on both alfalfa and clover at Coloma. He sprayed with both arsenate of lead and black leaf 40."
- Iowa. H. E. Jaques (April 22). "Has caused heavy damage to clover in southern Iowa. Yesterday I visited a 65-acre field north of Eldon where a good stand of second year growth had been totally destroyed. A cutworm, apparently the striped cutworm, was aiding in the destruction."
- Missouri. Leonard Haseman (April 15). "Reports received from Oakhill and Hallsboro indicate damage by this insect as more serious than usual. Communication from A. M. Walker of Iacleda, dated May 5, says: "Damage is being done to clover by a green worm, probably the clover-leaf weevil."

MISCELLANEOUS CLOVER AND ALFALFA INSECTS.

- New York. Northern grass worm (Drasteria erechtea Cramer.)
E. P. Felt (May 8). "Mr. W. A. Hoffman reports that the clover semilooper, probably D. erechtea, was abundant in fields near Albany on May 8."
- Delaware. C. O. Houghton (May 9). "This species was common at Newark during the last week in March. The sudden change from warm weather to very cool weather March 29 and 30 (a drop of about 60 degrees in 18 hours, together with snow storms of freezing temperatures on April 9 and 10, appears to have destroyed a great many of these insects."

- Kentucky. H. Garmen (March 27). "Observed these insects in grasslands at Lexington. Clover butterfly, Eurymus philodice Godart, becoming frequent at Lexington.
- New York. Clover-seed caterpillar (Enarmonia interstinctana Clemens.)
- New York. L. P. Wehrle (May 18). "Still in hibernation, and for the most part in the larval stage; one pupa found."
- Ohio. H. Osborn (May 2). "Adults observed at Columbus on this date."
- Ohio. Clover leaf-tyer (Ancylis angulifasciana Zell.)
- Ohio. H. A. Gossard (April 28). "On April 25 I first noticed the clover leaf-tyer in great numbers flying in a field of alsike clover. The moths were more numerous than I have seen them for 14 or 15 years. Mr. Houser reports having noticed the same phenomenon in a different field. Both of these fields are at Wooster. We have no information whether this is simply a local outbreak or whether this insect may be expected to attract general notice over the State this spring."
- New York. Clover seed midge (Dasyneura leguminicola Lint.)
- New York. L. P. Wehrle (May 18). "First adults beginning to appear at Ithaca."
- Oregon. Bibio nervosus Loew.
- Oregon. A. L. Levett (May 16). "Have been received and reported as injuring the roots of clover, alfalfa, gardens, and grass lands from Umatilla, Wasco, Gilliam, Lincoln, and Marion Counties."
- Oregon. Clover root-borer (Hylastinus obscurus Marsh.)
- Oregon. L. P. Rockwood (May 17). "The practice of short clover rotations and weather conditions have undoubtedly reduced this pest within the last two years. Birds have been noticed feeding upon these insects at the time of migration, notably the cliff swallow and violet green swallow."
- Nevada. Alfalfa weevil (Phytonomus posticus Gyll.)
- Nevada. C. W. Creel (April 28). "The alfalfa weevil was discovered in the John Raffetto field, one half mile north of Reno, by Mr. K. M. Pack, who visited Reno in June, 1920, and at that time found 7 or 8 weevil larvae. No further trace of the insect in this locality was found during the summer, either by myself or the California quarantine officials, although several examinations were made. Yesterday, however, I found the insect in all three stages and from the size of the larvae judge that oviposition must have commenced as early as April 15." (Special Report No. 12).
- New York. Tychius picirostris Fab.
- New York. J. D. Detwiler (May 20). "The beetles are just making their appearance on the opening clover heads at Ithaca. Eggs first found on April 22."

- Oregon. Western twelve-spotted cucumber beetle (Diabrotica soror Lec.)
A. L. Lovett (April 7). "Was found devouring the developing leaves as they appeared on young clover plantings on April 7 in the Willamette Valley."
- L. P. Rockwood (May 14). "This insect is badly damaging young beet tops and is present in very large numbers at Cornelius. The beets are mangels and are grown as stock feed."
- Oregon. Garden slug (Agriolimax agrestis L.)
A. L. Lovett (Late March). "The gray garden slug has flourished under the past winter and spring conditions and caused serious injury to corn and clover fields in the lower Willamette Valley in late March."
- Louisiana. Fall army worm (Laphygma frugiperda S. & A.)
T. H. Jones (April 29). "A few larvae about one quarter inch in length were seen on young corn at the Sugar Experiment Station in New Orleans. The first larvae seen or reported this year in Louisiana." (May 4). "The first larvae noted at Baton Rouge on this date. A very few small larvae measuring about one-quarter inch in length were collected."
- Louisiana. Sugar-cane borer (Diatraea saccharalis Fab.)
T. H. Jones (May 7). "Specimens and inquiries received on the following dates: April 28, Hohen Solms; May 3, Elton; May 6, Lafayette; May 7, Breaux Bridge (one pupa present)."
- L. W. Wilkenson (May 7). District agent of Agricultural Extension Work reports, 100 per cent of the planting of the last week in January at New Iberia attacked and only 5 per cent of the planting of the first week in March on the same farm infested.
- Louisiana. Brown colaspis (Colaspis brunnea Fab.)
T. H. Jones (April 29). "Two adults, first seen or reported in the field this year, were collected on young corn, at the Sugar Experiment Station in New Orleans."

MISCELLANEOUS CEREAL AND FORAGE INSECTS.

- Indiana. Grasshoppers (Acrididae)
J. J. Davis (April 30). "Recently hatched grasshoppers were first observed at Washington, Indiana, on April 24, and at Lafayette, Indiana, on April 30. Cool weather has prevented some emergence and there are still many unhatched eggs in the ground."
- South Dakota. H. S. Severin and A. L. Ford (April 23). "Grasshopper eggs are very abundant, all having come through the winter in a sound condition, at least local outbreaks are evident. Blister beetle larvae are so numerous that some trouble can be expected on alfalfa and garden stuff

later in the season from these insects, though these will probably be somewhat beneficial in controlling grasshoppers."

Minnesota. S. Lockwood (May 24). "In Kittson County, in the extreme north-western corner of the State, grasshopper eggs were in large numbers, as many as 40 and 50 egg masses to the square foot in some localities. Egg parasites were noticed fairly abundant, but not in large enough numbers to help much this year. Grasshoppers were first noticed hatching the 11th of May."

Clear-winged locust (Camnula pellucida Scudd.)

Montana. R. B. McKee (May 19). "Eggs are reported to be hatching in Flathead County. This insect is expected to prove a serious menace to crops in western Montana, where extensive areas infested with eggs have been located."

Wireworms.

Montana. A. L. Strand (May 13). "More numerous than usual in Blaine County this season."

Stalk borer (Papaipema nitela Guen.)

Virginia. K. M. King. (May 14). "This is the first appearance of this insect at Charlottesville this season. The larvae are very small, being in the first or second instar. Fifty per cent of the corn stalks were infested in a small planting of very early corn."

White grubs (Phyllophaga spp.)

Wisconsin. S. B. Fracker (May 19). "In Dane County the two-year old brood from 1919 adults are apparently more common here in old sod than we expected, outnumbering the one-year old larvae 3 to 1; in some fields there are to be found from 3 to 10 larvae to the square yard."

W. A. Toole (May 19). "Not very numerous at Baraboo."

Missouri. A. C. Burrill (April 7). "The first flight Phyllophaga gibbosa occurred at Oran, Scott County, on this date. Dissected 20 of the beetles, all of which were males. A similar report for same night received from Golden City, Dade County, Mo."

Cutworms.

Nevada. C. W. Creel (May 10). "These insects are doing more or less damage over several hundred acres in Lyon County; in one 40-acre field they are abundant enough to keep alfalfa eaten off to the crown of the plants, whereas the normal height should be 5 or 6 inches."

Migrating cutworm (?)

South Dakota. H. M. Sanderson (April 21). "These insects are much more abundant than usual. They advance several hundred feet into the small grain each night. Entire fields are reported to be taken in two or three days. The soil contains much moisture, causing the grain to come up after being eaten off; because of this the damage may not be as serious."

as it would be under ordinary conditions."

Nephelodes minians Guen.

New York. H. C. Hockett (May 12). "These insects are present in large numbers in grasslands on Long Island, but are apparently not doing much damage."

Army worm (Cirphis unipuncta Haw.)

Illinois. W. P. Flint (May 16). "Adults scarce at the three points in the State where bait traps have been run every warm night."

Twelve-spotted cucumber beetle (Diabrotica 12-punctata Oliv.)

Texas. H. J. Reinhard (May 18). "Reported as doing considerable damage to corn in Jefferson County. Some injuries in the larval stage. In some fields corn has been replanted for the third time."

F R U I T I N S E C T S

APPLE

GREEN APPLE APHID (APHIS POMI DeG.)

- New York. P. J. Parrott (May 21). "In several young apple orchards in Ontario County, the green apple aphid is unusually abundant for this season of the year. In one 40 acre orchard serious injuries are threatened if the insects continue to multiply as rapidly as they did during the past year. Individual trees have exhibited curling of the entire terminal growth."
- C. R. Crosby & Assistants report this insect as plentiful, but not as abundant as last year in Orleans County. Quite numerous in Yates County and occurring in small numbers in Niagara, Genesee, Monroe, Wayne, Clinton, Albany, Columbia and Ulster counties.
- Wisconsin. S. B. Fracker (May 19). "Unusually scarce in Dane County, reported by W. A. Toole as plentiful in ~~Sauk~~ County and by B. M. Apke as unusually common in Polk County."
- Oregon. A. L. Lovett (May 16). "First appeared March 20, about nine days earlier than last year, somewhat more abundant than usual in the Willamette Valley no evidence is present of excessive injury; also unusually abundant in the Hood River Valley."

APPLE-GRAIN APHID (Rhopalosiphum prunifoliae Fitch)

- New York. P. D. Rupert (April 30). "Some injury noticed on tips of leaves from which the aphids have already migrated to grain and grasses in Wayne County."
- C. R. Crosby & Assistants reported as scarce in Chautauqua, Niagara, Orleans, Genesee, Monroe, Ontario, Seneca, Cayuga, Onondaga, Clinton, Albany, Columbia, Ulster, Dutchess and Orange Counties.

ROSY APPLE APHID (Anuraphis roseus Baker)

- New York. C. R. Crosby & Assistants report as fairly numerous and doing some damage in Columbia, Dutchess, Onondaga and Wayne counties; not as bad as last year in Orleans County, and only slight infestations reported from Ulster, Albany, Clinton, Tompkins, Yates, Genesee, Monroe and Niagara counties.
- P. J. Parrott (May 16). "Rosy Apple Aphids relatively scarce in Ontario County."
- Oregon. A. L. Lovett (March 9). "First appeared on March 9, about 10 days earlier than last year. Unusually scarce in early spring. The infestation is now increasing due to the multiplication of the later generations. Injury is probably much below normal this season in the Willamette Valley (Lathrop)."

WOOLLY APPLE APHID (Eriosoma lanigerum Haus.)

- New York. C. R. Crosby & Assistants report this insect as occurring in very small numbers in Tompkins, Wayne, Genesee and Ulster Counties.

M I S C E L L A N E O U S A P H I D S

Massachu- H. T. Fernald (April 3). "Worcester County Farm Bureau reports that
setts. aphids are very early and plentiful for the season, April 22. Mr. L. C. Midgley visited 20 different fruit farms recently and found aphids everywhere

CODLING MOTH (*Carpocapsa pomonella* L.)

Virginia. L. A. Stearns (May 25). "The following statements are based on the records of approximately 1000 individuals under observation in the open-air insectary at this field laboratory (Leesburg) and checked by notes of development in the orchard. The transformation of overwintered larvae has ceased; the peak of emergence for the spring brood of moths is about reached at the present time; the duration of the pupal stage for individuals emerging now is about an even month; the date of first egg deposition was April 24; the date of first egg hatching was May 10; the length of incubation of eggs earliest laid was 16 days; the length of incubation of eggs at present is about 8 days; preoviposition period for moths is averaging 3 days; the development of the codling moth is about normal for this section of the state; the development of the trees is far in advance of normal."

Ohio. H. A. Gossard (May 12). "Codling moth commenced to issue at Marietta on May 6 and by May 12 was emerging in numbers."

Oregon. A. L. Lovett (May 12). "Apparently passed the winter well. Majority are as yet in the larval stage in cocoons."

FRUIT TREE LEAF ROLLER (*Archips argyrospila* Walk.)

New York. P. J. Parrott (May 16). "Abundant in neglected orchards."

C. R. Crosby & Assistants report this insect as 100% more abundant than last year in Niagara County, hatching a week later than normal by opening of buds; generally distributed in Genesee County, but not so serious in well sprayed orchards; abundant in some unsprayed orchards; plentiful in southern part of Orleans County, rather bad in some sprayed orchards, more abundant than last year; a few more than last year but not many in Columbia County and as occurring in small numbers in Albany, Dutchess, Monroe, Onondaga, Orleans, Tompkins, Ulster and Wayne Counties.

Oregon. A. L. Lovett (May 16). "The leaf roller in the Hood River Valley is apparently less abundant, there appears to be a gradual decrease over the areas of greatest abundance and injury during the past three years. There is accompanying this condition a gradual spreading to new areas. In the new areas probably injury is slightly on the increase."

CIGAR CASE BEARER (*Coleophora fletcherella* Fernald)

New York. P. J. Parrott (May 16). "Abundant in neglected orchards in Ontario County.

C. R. Crosby & Assistants. Quite a few in neglected orchards in Onondaga County; abundant in southern part of Orleans County, in poorly sprayed

orchards for the most part in their new cases by May 14; especially abundant in poorly sprayed orchards in Wayne County; more abundant than last year, especially in neglected orchards, in both Genesee and Monroe Counties. The insect is also reported as occurring in small numbers in Albany, Columbia, Dutchess, Niagara and Yates Counties.

PISTOL CASE BEARER (Coleophora malivorella Riley)

New York. P. J. Parrott (May 16). "Abundant in neglected orchards in Ontario County."

C. R. Crosby & Assistants. "More abundant than last year, especially in neglected orchards, but not as abundant as the cigar case bearer in Genesee County; abundant in the southern part of Orleans County, for the most part in their new cases by May 14; abundant in Wayne County; not as abundant as last year in Onondaga, Niagara, Columbia, Monroe, Yates, Dutchess, Ulster and Albany Counties."

RIBBED COCOON MAKER (Bucculatrix pomifoliella Clem.)

New York. C. R. Crosby & Assistants report as abundant in neglected orchards in Genesee County and a few present in Wayne County.

BUD-MOTH (Tmetocera ocellana Schif.)

New York. C. R. Crosby & Assistants report this insect as very abundant in Wayne and Ontario Counties, also the southern part of Orleans County; about as numerous as usual in Albany, Genesee and Tompkins County; on the decrease in Monroe County; and very scarce in Columbia, Dutchess and Yates Counties.

GREEN FRUIT WORM (Kylina antennata Walk.)

New York. E. P. Felt (May 13). "Green fruit worm work is beginning to appear at Milton, Ulster County."

P. J. Parrott (May 13). "Quite numerous in neglected orchards throughout Ontario County."

C. R. Crosby & Assistants report this insect as quite common in Ulster County; abundant in a few orchards, with a few present in most orchards in Orleans County; present in a few orchards and doing some damage in Wayne County; and present in small numbers in Niagara, Onondaga, Wayne, Columbia, Monroe and Dutchess Counties; being unable to find it in Albany County.

SPRING CANKER-WORM (Paleacrita vernata Peck)

Wisconsin. S. B. Fracker (Telegram May 26). "Most serious cankerworm outbreak in years, defoliating many orchards in several of the southeastern counties of Wisconsin lying between Waukesha and Dane Counties. Both the fall canker-worm and spring canker-worm are involved in this outbreak."

Illinois. W. P. Flint (May 17). "Has caused defoliation of a number of unsprayed orchards in West Central part of the State."

New York. C. R. Crosby & Assistants report this insect as showing up in orchards where no spraying has been done in Wayne County and as doing considerable damage in

neglected orchards in Genesee County, where they were first observed on April 25; causing considerable damage in unsprayed orchards and also in orchards which did not receive the calyx application in Monroe County; noticeable in orchards that received regularly only the calyx application in Nassau County; common in Niagara County; a few larvae were observed April 26; by May 18 the insect had become quite bad in neglected orchards in the southern part of Orleans County; is abundant in the southern part of Wayne County, some unsprayed orchards being defoliated. The larvae began hatching the latter part of April; these insects were observed in Columbia, Dutchess, Onondaga and Ulster Counties, while none were seen in Albany County."

FALL CANKER WORM (Alsophila pometaria Har.)

- Ohio. H. A. Gossard. "As expected some orchards near Wooster were only saved from defoliation by spraying soon after the worms hatched. Reports of damage by canker-worms are not coming in, hence I conclude the hatching must have been somewhat late or possibly the late frosts caught many of the young caterpillars just after hatching, thus disposing of many of them.
- Con- B. H. Walden (May 20). Locally common nearly every year but perhaps not in
necticut. the same localities as this year. Common at New Haven and Branford.
- New York. G. E. Smith (May 18). "Bad in neglected orchards in the southern part of Orleans County."

TENT CATERPILLARS (Malacosoma americana Fab.)

- Maryland. L. B. Flohr, Federal Bureau of Markets (May 14). "Observed many tents and several trees were entirely defoliated by these insects in Frederick County, Maryland. They were so numerous as to attract the attention of a group of automobilists traveling through the county."
- New T. J. Headlee (April 27). "The apple-tree tent caterpillar has hatched
Jersey. quite generally over the State, but is not doing any considerable damage."
- Delaware. C.O. Houghton (May 7). "This insect is more abundant than usual. Caterpillars are now full grown here and migrating to find suitable places for spinning up. Accumulated excess of temperature since January 1 approximately 850 degrees."
- Con- John T. Ashworth (May 17). "This insect has been scarce for three or four
necticut. years in Windham, but is now increasing again."
- K. F. Chamberlain (April 28). "Though scarce for three or four years this species is now again on the increase in Litchfield County."
- Massa- Edward R. Farrar (May 13). "About twice as bad as usual in Lincoln."
chusetts.
- L. C. Midgeley (April 22). "Infestation is light as considered with other years in Wooster County."
- New York. E. P. Felt (May 19). "Apple tent caterpillars very scarce in eastern part of the State, although a scattering infestation was noted in northeastern Rensselaer County, May 23. Tent caterpillars present in very small numbers at Newport, Herkimer County."

New York. H. C. Hockett (May 20). "More abundant than for the last four years in Nassau County."

C. R. Crosby & Assistants report this insect as occurring in normal numbers in Yates, Tompkins, Rensselaer, and Douglas counties, as scarce in Monroe, Genesee, Albany, Columbia, Ulster and Clinton Counties, and as not occurring in Niagara and Wayne Counties.

APPLE RED BUG (Heterocordylus malinus Reut.)

New York. P. J. Parrott (April 28). "Nymphs observed in large numbers in several neglected orchards, most of them in the 3rd instar." (May 18). "Very abundant in one orchard in Ontario County now in fourth and fifth instar and injuring terminal leaves."

C. R. Crosby & Assistants. Second instar nymphs common on Newton Pippins in Ulster County April 24. Quite abundant in Onondaga County. Had reached fourth and fifth instar by May 7. Scarce in Wayne County, and not observed in Columbia County.

FALSE APPLE RED BUG (Lygidea mendax Reut.)

New York. P. J. Parrott (May 13). Conspicuous injury to terminal leaves. Observed in a number of orchards in Ontario County. Serious injury to the fruit in a number of plantings may be expected. The first nymph of this species was observed in Ontario County on April 22, by Hugh Glasgow.

D. D. Ward (May 7). "Hatching in considerable numbers and foliage injury is common in Onondaga County; by May 14 some of the nymphs had reached the third instar."

C. R. Crosby & Assistants. A little more abundant than last year in Monroe County; abundant in many orchards in Dutchess County; nymphs mostly in the third instar by May 6; very actively working on unsprayed trees in Wayne County, being more abundant in the western, southern and northern parts of the County; about as abundant as last year in Orleans County; and reported as scarce in Albany, Columbia, Genesee, Nassau, Niagara, Tompkins, Ulster, and Seneca Counties.

TARNISHED PLANT BUG (Lygus pratensis L.)

New York. P. J. Parrott (May 16). "Observed puncturing apple and pear buds in Ontario County."

Washington, D.C. F. H. Chittenden. "The unusual warm weather of the winter 1920-1921 has enabled the tarnished plant bug, among other insects to successfully pass the cold months, and as a result, by the end of April, the bugs had reached the last two stages of the nymph and were exceedingly abundant on the wild plants on which it breeds in early spring. It was particularly abundant on chickweed, wild cross, shepherd's purse, and other crucifers, and there is grave danger that it will become a pest to nursery plants, especially apple and possibly on vegetables later in the season, since there is nothing to prevent its increase as far as known. Only two serious outbreaks of this species have been observed by the writer in the District of Columbia where these observations were made; one on various ornamental composites several years old and another on potatoes about a year ago, but further North there are often severe outbreaks."

Kentucky. H. Garman (March 23). "Tarnished plant bug is working on fruit buds of apple and destroying whole clusters."

SAN JOSE SCALE (Aspidiotus perniciosus Comstock)

New York. P. J. Parrott (May 18). "More abundant than any year since 1918 in Ontario County, because of the early season will probably be the earliest observed in 20 years."

C. R. Crosby & Assistants report as more abundant than during the past three years in Monroe County; considerable increase in abundance over last year in Orleans County; much more abundant than last year in Genesee County. Also reported from Albany, Tompkins, Niagara, Columbia, Ulster, Yates, Wayne, and Onondaga Counties.

OYSTER SHELL SCALE (Lepidosaphes ulmi L.)

New York. C. R. Crosby & Assistants report this insect as occurring occasionally on trees in poorly sprayed orchards in Broome, Albany, Columbia, Monroe, Onondaga, Orange, Orleans, Tompkins, Wayne, and Yates Counties.

Ohio. H. A. Gossard. "The Oyster Shell Scale is more frequently reported to us by orchardists this spring than any other species of scale."

Wisconsin. S. B. Fracker (May 18). "This insect is causing a revival of dormant spraying in many farm orchards. It was not a serious pest until about 1919, since when it has been slowly killing many trees."

ROUND HEADED APPLE TREE BORER (Saperda candida Fab.)

New York. E. P. Felt (May 19). "Mr. Hart reports that the round headed apple tree borer is very common in portions of Dutchess County, especially near scrub apple trees."

C. R. Crosby & Assistants report this insect as doing serious damage in Columbia County and as occurring very numerously in Ulster, Niagara and Orleans Counties.

ROSE LEAF-HOPPER (Empoa rosae L.)

New York. C. R. Crosby (May 6). "Nymphs abundant on apples in one orchard in Dutchess County."

D. D. Ward (May 11). "Nymphs becoming common in Onondaga County."

P. J. Parrott (April 28). "First nymph observed on this date. By May 16 some of the nymphs had reached the second instar. This insect is less abundant than last year."

L. F. Strickland (May 18). "Relatively abundant in Niagara County."

APPLE LEAF-HOPPER (Empoasca mali LeB.)

New York. C. R. Crosby (May 13). "Abundant in many orchards in Monroe County. May 14, nymphs appearing in abundance in Wayne County."

BLACK APPLE LEAF-HOPPER (Idiocerus provancheri Van D.)

New York. P. J. Parrott (May 18). "Common in Ontario County."

C. R. Crosby & Assistants. About as abundant as usual, but apparently doing no damage in Dutchess, Ulster, Columbia and Tompkins Counties.

BUFFALO TREE HOPPER (Ceresa bubalus Fab.)

New York. C. R. Crosby & Assistants report this insect as doing some damage to young trees in Genesee, Orleans, and Albany Counties.

Illinois. W. P. Flint (April 21). "Every tree in a 17 acre orchard at Oneida, severely damaged by these insects, egg parasites abundant."

P E A R

PEAR LEAF BLISTER MITE (Eriophyes pyri Pgst.)

New York. P. J. Parrott (May 16). "Abundant in one orchard in Ontario County."

C. R. Crosby & Assistants. "Quite common in Wayne, Albany, Orleans, Columbia, Dutchess, Ulster, Nassau, Genesee, Onondaga, and Orleans Counties."

Oregon. A. L. Lovett (May 16). "Pear leaf blister mite destructively abundant where lime sulphur sprays were omitted in the Willamette Valley. Both foliage and fruit appear already badly gone. Promises heavy losses of fruit and foliage. Appeared on apple (Childs) in Hood River for first time this spring, in western Oregon (Lane County) the first time last year. There is much evidence to substantiate the theory that the apple form is a distinct varietal type."

PEAR THRIPS (Taeniothrips inconsequens Uzel)

New York. C. R. Crosby & Assistants report this insect as increasing in abundance in several counties, but of no serious importance as yet.

PEAR PSYLLA (Psylla pyricola Foer.)

New York. P. J. Parrott (May 16). "Eggs very abundant in Ontario County."

C. R. Crosby & Assistants. "Albany County, nymphs numerous on May 9; Columbia County, heavy deposition of eggs May 9; Onondaga County abundant May 11; flies of the second brood now very abundant in Genesee County, much more abundant than last year, second brood of flies appearing May 19; second brood of flies appearing in Monroe County May 20, extremely abundant in this county, May 13; nymphs in the fourth and fifth instar on May 14 in Niagara County; eggs found in considerable numbers in Onondaga County about April 26, many of the nymphs being in the "hard shell stage" by May 14; Orleans

County May 7, flies still laying eggs, May 18, flies of the second brood appearing in numbers. Ulster County May 7, first of the second brood emerged; May 14 abundant throughout Wayne County."

PEAR MIDGE (Contarinia pyrivora Riley)

New York. C. R. Crosby & Assistants report this insect as becoming very serious in Ulster, Tompkins and Columbia Counties.

C H E R R Y

CHERRY APHID (Myzus cerasi Fab.)

New York. E. P. Felt (May 23). "Black Cherry Aphid present in small numbers on sweet cherry at Beacon, Dutchess County."

C. R. Crosby & Assistants. "Reported as fairly abundant in Ulster and Tompkins Counties, and as being noticeable in Wayne and Columbia Counties."

P. J. Parrott (May 16). "Not as abundant as during the last two or three years in Ontario County."

E. P. Felt (May 12). "Have begun to curl the foliage at Mechanicsville, Saratoga County."

PEAR BLIGHT BEETLE (Anisandrus pyri Peck)

Oregon. A. L. Lovett (May 16). "Shot hole borer destructively abundant, all fruit trees attacked, cherries possibly most serious. Almost continuous moist conditions in early fall have kept the soil saturated with water. Probably lack of soil variation is largely responsible for general devitalization of trees, permitting the attack of borers."

WHITE ANT (Reticulitermes flavipes Kol.)

Michigan. R. H. Pettit (May 18). "Orchards set in old peach ground at Shelby wherein many stumps were present seem to be attacked by these termites. They seem to attack young healthy cherry trees and work under the bark of the roots."

DIVARICATE CHERRY BORER (Ditersa divaricata Say)

Delaware. C. O. Houghton (May 8). "First adult of the season taken on this date."

P L U M

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

New York. E. P. Felt (May 19). "Injury on apple is rather common near scrub growth in Dutchess County, reported by W. H. Hart. The first signs of work were observed at Milton, Ulster County, May 18."

P. J. Parrott (May 21). "Beetle collected by jarring in Ontario County."

- New York. C. R. Crosby & Assistants report the insect as very numerous in Dutchess and Orleans Counties; first eggs found in Columbia County on May 11, while first egg punctures were observed in Tompkins County on May 20.
- Delaware. C. O. Houghton (May 9). "So little fruit survived the cold weather of late March and early April that it is difficult to get any damage data for Northern Delaware."
- West Virginia. E. C. Sherwood (April 27). "1% or 2% of apples infested of the Yorks and Rome Beauties and 10% of the Grimes Golden in Berkeley County."
- North Carolina. Franklin Sherman (May 11). "As yet I have seen but few larvae but plenty of punctures at Raleigh."
- Georgia. A. C. Lewis (April 28). "The curculio is already doing considerable damage to peaches in Georgia. They are very numerous this year. The peaches are now dropping off in considerable numbers and where the trees have not been sprayed about 80% of the drops are infested with Curculio. Infestation in the drops from the sprayed trees are much less. The cold weather of this month has killed more peaches than at first estimated."
- Alabama. W. E. Hinds (May 10). "Occurs in unusual abundance. The first generation is now maturing, spraying for the second brood being practised in many orchards."
- Louisiana. T.H.Jones (March 30). "Small attacked fruit numerous on the ground beneath trees on the above date. Adults began issuing from breeding jars at Baton Rouge May 6."
- Ohio. H. A. Gossard (May 16). "The only work of the plum curculio yet observed by me was a single puncture in a peach at Waterville on this date."
- Missouri. Leonard Haseman (May 9). "Mr. C.E.Brown reports from Carroll County that about 2% of the plums are infested."

P E A C H

GREEN PEACH APHID (Myzus persicae Sulz.)

- New York. M. D. Leonard (May 16). "Leaves considerably curled by lice on small planting in Onondaga County."

BLACK PEACH APHID (Anuraphis persicae-niger Smith)

- Indiana. J. J. Davis (May 17). "This aphid is abundant in peach orchards in southern Indiana. It attacked tender shoots but since May 1 the winged forms have been migrating to young orchards necessitating spray operations to control and prevent injury."
- Illinois. W.P. Flint (May 17). "More abundant than usual in southern Illinois."

PEACH TREE BORER (Aegeria exitiosa Say)

New York. C. R. Crosby & Assistants report this insect as increasing in abundance in Orleans, Wayne and Columbia Counties; about as abundant as usual in Monroe and Albany Counties, and less abundant in Ulster County.

Indiana. J. J. Davis (May 17). "This every day pest is very abundant over the State. We are advised that it is more abundant than usual, but this may be due to the fact that worming operations were somewhat suspended during the war on account of the scarcity of labor."

LESSER PEACH TREE BORER (Aegeria pictipes G. & R.)

New York. C. R. Crosby & Assistants report this insect as very abundant in orchards in Orleans County where brown rot is prevalent, borers infest the cankers. The species was also fairly common in Monroe County and a few were observed in Albany and Wayne Counties.

TERRAPIN SCALE (Lecanium nigrofasciatum Perg.)

Ohio. H. A. Gossard. "Several reports of terrapin scale on both maple and peach may presage more than average abundance of this insect this season."

Kentucky. H. Garman (March 8). "Terrapin scale reported from LaGrange with specimens."

BLISTER BEETLE (Pomphopoea aenea Say)

Georgia. Oliver I. Snapp (March 10). "All of the blossoms and foliage were removed from 50 trees in a four thousand tree orchard. The outbreak was checked within two days by arsenate of lead and hand picking."

P E C A N

PECAN NUT CASE BEARER (Acrobasis hebescella Hulst)

Texas. G. B. Watkins (May 27). "Reports indicate that this insect is working over the whole state and threatens the crop, which otherwise would be heavy."

C U R R A N T

CURRENT APHID (Myzus ribis L.)

Connecticut. B. H. Walden (May 20). "Fairly abundant at New Haven, is usually present each season."

New York. E. P. Felt (May 13). Beginning to appear at Milton, Ulster County.

P. J. Parrott (May 16). "More abundant than usual in Ontario County."

C. R. Crosby & Assistants. "More abundant in Tioga County, Tompkins County, and fairly abundant in Ulster County."

Delaware. C. O. Houghton (April 12). "Half grown plant lice of this species survived the snow and freezing temperature, of April 10-11, at Newark."

IMPORTED CURRANT WORM (Litronidea ribesi Scop.)

New York. E. P. Felt (May 18). "Currant worms are about 1/3 grown at Scotia, Saratoga County."

C. R. Crosby & Assistants report as doing damage in Suffolk and Ulster Counties.

Delaware. C. O. Houghton (May 10). "Larvae are full grown now and leaving the bushes. Polistes sp. destroys many of the larvae here."

R A S P B E R R Y

RASPBERRY FRUIT WORM (Byturus unicolor Say)

Connecti- B. H. Walden (May 20). "Very abundant on each of three visits to East cut. Haven, is now laying eggs."

New York. E. P. Felt (May 13). "Is locally abundant and very injurious to raspberry plantings in the vicinity of Milton and Marlboro, Ulster County, and this season has already caused serious losses to the prospective berry crop. This insect is credited with being an important factor in bringing about the reduction in area devoted to this fruit. A very considerable percentage of the blossoms had been destroyed by May 13 and the beetles were still active and were controlled to only a relatively slight degree by repeated poison applications or spraying with a tobacco preparation."

P. J. Parrott (May 16). "Observed in small numbers in Ontario County."

C. R. Crosby & Assistants. "First noticed on May 12 and very numerous on May 22 in Ulster County."

MISCELLANEOUS RASPBERRY INSECTS

Monophadnoides rubi Harris

Connecti- B. H. Walden (May 20). Present in every plantation visited in New Haven out. East Haven and North Bradford. Adults first observed April 16 and newly hatched larvae at New Haven April 27.

Bembecia marginata Harris

Oregon. A. L. Lovett (May 16). "Reports from Washington and Lane Counties of serious injury to loganberry and raspberry plantings by the crown borer are at hand. Probably the climatic conditions have served to seriously de-vitalize the plants to such an extent as to accentuate the injury by the borers."

B L A C K B E R R Y

ROSE CURCULIO (Rhynchites bicolor Fab.)

Oregon. A. L. Lovett (May 12). "The rose curculio is appearing on the buds of small fruits, principally blackberries in the vicinity of Portland. The beetles injure the blossom buds by feeding and oviposition punctures. The buds wilt and never open. The same injury occurred in 1912 and 1913 but has been almost negligible since that time."

GRAPE

GRAPE LEAF HOPPER (Typhlocyba comes Say)

New York. C. R. Crosby & Assistants found this insect fairly abundant towards the end of May in Ulster County.

Cali- A. J. Flebut (May 18). "Much more abundant than usual at Fresno, hatched
fornia. about May 3, second instar May 10. Considerable work done with a dust
containing black leaf 40 against the adults but with no success."

GRAPE FLEA BEETLE (Altica chalybea Ill.)

New York. C. R. Crosby & Assistants reported in very small numbers from Columbia and Ulster Counties.

GRAPE PLUME-MOTH (Oxyptilus periscelidactylus Fitch.)

New York. E. P. Felt (May 13). Larvae very common on grape tip at Milton, Ulster County.

MISCELLANEOUS GRAPE INSECTS

Grape vine hoplia (Hoplia callipyge Lec.)

Cali- A. J. Flebut (May 7). "Reported several days ago by F. H. Howard, also
fornia. reported on young vines near Delano by P. R. Jones, more abundant than
usual."

Grape mealy bug (Pseudococcus maratimus Ehrh.)

Cali- A. J. Flebut. "Many more insects on foliage than usual at Fresno."
fornia.

Achemon sphinx (Pholus achemon Dru.)

Cali- A. J. Flebut (May 1). "Much more abundant than usual. Last year this
fornia. insect stripped 1000 acres near Livingston. They are now abundant in the
same vineyard and have spread to vineyards several miles away. Emerged
25 days earlier this year than last. Oviposition May 1st. First hatched
May 9."

Grape leaf folder (Desmia funeralis Hubn.)

New York. J. D. Detwiler (May 20). Larvae fairly abundant at Ithaca.

Grape leaf skeletonizer (Harrisina americana Guer.)

Delaware. C. O. Houghton (May 7). "First adult of the season taken on a lilac."

CITRUS AND SUB-TROPICAL FRUITS

RUST MITE (Eriophyes cleivorus Ashm.)

Florida. E. F. DeBusk (April 23). "Rust mite appeared earlier this year. Is much more abundant than usual. 75% of the crop is infested in Lake County."

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

K. E. Bragdon (April 21). This insect has damaged the fruit to the extent of 50% on a few trees causing the fruit to drop to the ground by feeding thereon. Damage observed in Brevard County.

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

Alabama. W. E. Hinds (May 10). "Cottony maple scale reported as attacking an area of several acres in the extreme southeastern part of Baldwin County, occurring upon the orange, satsuma orange included but not in great abundance thereon."

BLUE GREEN CITRUS WEEVIL (Pachnaeus opalus Oliv.)

Florida. H. E. Stevens (April 18). This insect is always present over the southern portion of the State, but seldom becomes numerous enough to cause much damage. At the present time it appears to be very numerous in Little River Vicinity, and is working in conjunction with the Artipus floridanus and is causing considerable damage.

Artipus floridanus Horn

Florida. H. E. Stevens (April 18). This insect has for years been known to attack limes on the Florida Keys. Last year is the first time it has been known to do noticeable damage to braded citrus trees. This year it is doing considerable damage in the vicinity of Dade. It attacks the young foliage eating around the edges of the leaves, also does slight damage to mangoes and considerable damage to avocado.

A. R. Oakley (May 14). "Doing serious damage to young citrus on Hypoluxo Island."

S O U T H E R N F I E L D C R O P I N S E C T S .

TOBACCO

TOBACCO FLEA-BEETLE (Epitrix parvula Fab.)

- Maryland. E. N. Corey (April 16). "J. P. Burdett, county agent in Charles County, reports that these insects are much more abundant than usual. Farmers report that 10 per cent. of the plants in the seed beds are being destroyed by flea beetles. The farmers generally cover their beds with muslin, but many report that the beetles get under the muslin." (April 22) "Much more serious than usual in lower Prince George's County. The weather conditions have retarded the plants so that the injury is even more serious than would normally be the case. Yesterday I went to lower Prince George's County on a request from the county agent, Mr. W. B. Posey, who reported that the black fly was doing considerable damage. The black fly proved to be Epitrix parvula, and it would seem that it has been partially responsible for the loss of a number of seed beds in the lower portion of the county. The injury ranges from 33 to 50 per cent. of the plants at present found in the beds."
- Virginia. W. J. Schoene (April 28). "We have received a number of complaints during the past ten days of injury to tobacco beds by flea-beetles. Some of the reporters state that the injury is serious and that some of the earliest plants were entirely destroyed."
- Kentucky. H. German (April 25). "Flea-beetles are becoming very destructive in some tobacco beds in this State."

SOUTHERN TOBACCO HORNWORM (Phlegethontius sexta Johan.)

- Florida. D. L. Campbell (April 23.) "This insect is just making its appearance. It is a little earlier than usual this year. Only a few eggs have been observed so far in Gadsden County."

BUDWORM (Chloridea virescens Fab.)

- Florida. "This budworm appeared earlier than usual this year and is present as usual on every plant in the fields in Gadsden County."

SCALE INSECT (Aclerda sp.)

Louisians. T. H. Jones (April 11.) "Specimens of this scale insect were sent me on May 8 by Mr. T. C. Barber, though the pest had been noted some time previously by him. It was taken on sugar cane growing in the greenhouse at the Sugar Experiment Station at Audubon Park, and Mr. Barber has more recently reported it outdoors on grass near the greenhouse, the grass being Andropogon muricatus. Both Mr. H. Morrison and Professor G. F. Ferris have seen specimens of the scale insect reporting nothing further than genus. It appears that it may be an undescribed species, that it has not been taken in Louisiana before, and possibly is a recent introduction. Indications are that it will not prove to be a serious pest of sugar cane at least, and Mr. Barber reports that it is highly parasitized." (Special Report.)

COTTON.

COTTON APHID (Aphis gossypii Glov.)

Texas. A. J. Reinhard (May 18). "Not abundant thus far in Brazos County. A very severe infestation during April was reported from Karnes County, wherein the reporter states that they have completely destroyed a large acreage this year."

CUTWORM (Undetermined)

Texas. A. J. Reinhard (May 18). "In ~~Brazos~~ and Karnes Counties cutworms are reported abundant in all fields; in some fields from 10 to 15 per cent. of the plants have been destroyed."

PINK BOLLWORM (Pectinophora gossypiella Saund.)

At the conference relating to the pink bollworm situation, held at Washington, May 16, 1921, attended by representatives of the States of Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, Texas, Arkansas, Oklahoma, New Mexico, Arizona, and California, the following report was unanimously adopted as embodying the opinions of the conference:

(1) We indorse and commend the Policies of the Federal Horticultural Board in dealing with the pink bollworm situation in the United States. We wish, furthermore, to express our approval particularly of the work of Dr. W. D. Hunter, who has been in direct charge of the field work of the infested States; his energy, persistence, and tact in dealing with an unusually difficult situation are especially to be commended. To his efforts and to those of the proper State authorities who have worked in cooperation with him, especially in Texas and Louisiana, the other cotton-growing States feel deeply indebted that this cotton pest has not spread more widely since 1917.

(2) It is clear to the conference that the only practicable method of eradicating the pink bollworm is by continued prohibition of the growth of cotton in infested districts for a period of years. The feasibility of extermination work where conducted according to the methods and maintained for the period of time recommended by the entomologists of the Cotton States and approved by the Federal Horticultural Board is completely demonstrated in the Hearne district, where a noncotton zone has been maintained since the fall of 1917 and intensive scouting each year thereafter has failed to show any recurrence of the infestation. Furthermore, it is apparent in the Trinity Bay district that the maintenance of a noncotton zone for one year only is not long enough to accomplish extermination.

(3) The conference believes that there is now a possibility of exterminating the pink bollworm but that this opportunity is one that must be taken prompt advantage of. On the other hand, we feel that the continuance of the infestation in any areas under a regulated system is fraught with grave danger to the entire cotton industry. Therefore, we believe that the present establishment of regulated areas in west Texas and New Mexico should be considered only as a temporary arrangement, to be conducted only so long as may be necessary for appropriations to be made to maintain this district as a noncotton zone. In the meantime, also, we would recommend that efforts be made to secure the cooperation of the Mexican authorities in maintaining a noncotton zone on the Mexican side of the border. In order to provide further safeguard against the introduction of infestation, we believe that the Immigration Service along the Mexican border should be so strengthened as to secure the movement of all laborers coming from Mexico into the United States through the proper points of entry where adequate inspections may be maintained.

(4) In dealing with the pink bollworm situation, adequate provision should be made in State laws for a technical commission, which should be vested with full authority in establishing the fact of infestation, as well as in exercising wide discretion in relation to the fixing of the limits of any areas which may be placed in noncotton zones or regulated zones, such zones to be continued in force automatically until changed by the act of the commission.

(5) With reference to States bordering on Mexico, the conference believes that action should be based upon infestation conditions prevailing on the Mexican as well as on the American side, in such action both Federal and State authorities should cooperate.

(6) We believe that inasmuch as the work of eradication is undertaken for the benefit of the country at large, as well as for the direct benefit of the States wherein infestation may be found, that the funds utilized in maintaining noncotton zones should be supplied jointly by the State and Federal Governments, in accordance with precedents already established in the case of the work against tuberculosis and the foot and mouth disease of cattle.

(7) We hereby express our appreciation of the present attitude of the citizens of Louisiana and Texas in favor of extermination work, as reported by their representatives in this conference. We are gratified with the assurance we have here received that it is proposed, through a special session of the Texas Legislature, to be held in July, 1921, to strengthen and make fully effective the eradication work now under way, or to be hereafter instituted in that State.

TRUCK CROP INSECTS

POTATO

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

Massa-
chusetts.

H. T. Fernald (May 10) " This insect was observed in the region extending from South Deerfield to Hatfield in the Connecticut River Valley. It is the first case I have seen in the State, some fields suffering as high as 25 per cent damage. Where cotton seed meal was used as a fertilizer the injury seemed greatest and maggots taken in the field and put into the same material fed on it. The growers noticed this and asked if the maggots could possibly have come in the meal. The insect was bred from the maggot and identified as an adult, verifying the larval (tentative) identification. Just as the insect had been identified the special report on this pest was received. The maggots seemed worse on the lower spots in the fields but were not wholly absent on the higher ground. "

New
Jersey.

F. J. Headlee (April 27) " The seed-corn maggot has appeared this spring in considerable numbers over the southern third of the State and has done damage to pea and bean seed, to lettuce plants, and in some cases to potato seed. "

D. E. Fink (May 11) "This insect is 100 per cent more abundant than last year over the entire southern part of the State. By actual count 10 per cent of the string bean and lima bean plants were found to be injured. In the vicinity of West Palmyra fish scrap was used in the bottom of sweet corn hills and this field was nearly ruined. Another field planted a day later had no fish scrap in the bottom of the hills but the fish scrap was applied on top after the corn was up. This latter field was not injured. "

Indiana.

J. J. Davis (May 17) " Reports of injury to corn and beans in central and south central Indiana have been received. "

Illinois.

S. C. Chandler (May 17) "This insect was bred from dying strawberry plants. Twenty-five per cent of the plants in a field at Richview were found to be in this condition. It was impossible to tell whether or not the maggots attacked healthy plants. "

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

New York.

C. R. Inglee (May 13) " Beetles attacked plants soon after the latter showed through the ground in Suffolk County. "

H. C. Hockett (May 14) " Eggs now becoming noticeable in some fields in Nassau County. "

New Jersey D. E. Fink (May 12). "Much more abundant than usual. The beetles are now attacking potatoes; in some localities they are more in evidence than in others. Eggs are now being deposited."

West Virginia E. C. Sherwood (April 29). "Very few adults observed. The first egg masses of the season observed today."

South Carolina L. B. Altman (county agent). "Some damage done this spring in Greenwood County."

POTATO APHIS (Macrosiphum solanifolii Ashm.)

Delaware C. O. Houghton (May 9). "This species is quite common on rose here this spring but I have not yet observed it on potato. It apparently is being held in check by Adalia bipunctata."

West Virginia E. C. Sherwood (April 29). "Could find no signs of aphids on potatoes in Mineral County. First observed aphids on potatoes and tomatoes on May 23."

North Carolina Franklin Sherman (May 11). "This pest is as yet unknown to me in the field. If present it certainly has not been a subject of complaint in this State."

Missouri L. Haseman (May 9). "Mr. C. E. Brown, of Carrollton, Carroll County, reports that there is a slight infestation of potato aphids in his part of the State."

Alabama W. E. Hinds (May 10). "Occurs, but not in numbers to cause complaint. This species has not yet attracted much attention in Alabama."

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

New York C. R. Inglee (May 13). "Rather heavy infestation in Suffolk County but recent rains seem to have driven many of them off the vines."

E. P. Felt (May 12). "Adults were first noticed in small numbers on garden plants in Rensselaer County today."

H. C. Hockett (May 14-21). "This beetle is about as numerous as usual in Nassau County this year."

R. Matheson (May 25). "Beetles have been active for a week, doing considerable damage to young tomato plants at Ithaca."

E. P. Felt (May 25). "A report has just been received from Genesee County that the small black flea-beetle is very numerous on tomato plants."

Delaware C. O. Houghton (May 7). "Quite numerous and doing about the usual amount of damage at Newark."

- New Jersey D. E. Fink (May 12). "About as numerous as usual in the southern part of New Jersey. Beetles are just beginning to attack potatoes and tomatoes."
- West Virginia E. C. Sherwood (April 29). "First observed on this date in Mineral County. A few beetles on the larger plants in the lower parts of the fields. Potatoes are about three inches high."
- Oregon A. L. Lovett (May 10). "The western potato flea-beetle (Epitrix subcrinita Lec.) is present in most fields but less numerous than usual."

CABBAGE

CABBAGE WORM (Pontia rapae L.)

- New York C. R. Crosby and assistants report that cabbage butterflies were first observed in Erie County on May 14; eggs first observed in Tompkins County on May 13; by May 26 larvae were in the third and fourth instar and considerable damage was being done to garden cabbage in the latter county.
- Delaware C. O. Houghton (May 9). "This species does not appear to be as common as during the 1st week in March and I believe that the cool weather of March 29 and 30 and the snow and freezing temperature of April 9 and 10 destroyed many of the adults."
- Kentucky H. Garman (March 15). "First adult of the season observed on this date. Adults common by March 27 at Lexington. The southern cabbage butterfly (Pontia protodice B. & L.) was quite common about the flowers of the common weed Lithospermum arvense on March 27."
- Ohio H. A. Gossard (May 7). "Cabbage butterfly laying eggs at Marietta the first week in May."
- Oregon A. L. Lovett. "First eggs were found on May 10; so far adults seem very scarce."

CABBAGE MAGGOT (Hylemyia brassicae Bouche)

- New York C. R. Crosby and assistants report that on April 29 females were actively laying in Nassau County, as high as 80 per cent of the plants in many rows having eggs at the base. By May 14 egg laying had almost ceased and injury was apparent both in seed beds and in the field. By May 20 cabbages grown for seed were showing signs of injury. It appears that in such cases the maggot does not injure the roots but attacks the plant in the region of the old head entering the stem at the axils of the leaves. Within three inches 88 maggots were removed from one plant. Growers of cabbage seed have removed all the leaves in the hope of saving the healthy plants. This may be the main reason for the lack of success that growers of cabbage seed have had during the past season. On May 14 flies were quite numerous and laying eggs in Erie County; May 18 reports of serious damage to radish in Orleans County were received and on the 21st serious damage to early cabbage in Suffolk County was reported.

P. J. Parrott (April 25). "Flies observed in considerable numbers in cabbage seed beds May 16. Egg laying not extensive; the larvae are now hatching."

New Jersey T. J. Headlee (April 27). "Some damage by the cabbage maggot attacking early cabbage."

Indiana J. J. Davis (May 5). On May 2 I was at Hammond and there found cabbage maggot eggs on every plant examined, and in many cases 15 or more eggs to a plant. In this connection it is interesting to know that last year there was practically no damage by the cabbage maggot in that section of the State."

(May 17). "For the past 15 years the cabbage maggot has been a regular pest in northwestern Indiana; last year, however, it was conspicuous by its absence. A second visit to Hammond, May 14, showed a heavy infestation of small maggots in cabbage, cauliflower, and radish, and dozens of eggs about every cabbage or cauliflower plant in the favored areas."

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

New York J. D. Detwiler (May 20). "Beetles fairly numerous, have been laying eggs for the past two weeks at Ithaca."

Delaware C. O. Houghton (May 9). "More numerous than usual at Newark. With this species has appeared Crioceris 12-punctata L., but much less numerous than the asparagus beetle."

Ohio H. A. Gossard (May 12). "Beetles were observed at Marietta on May 11."

Michigan R. H. Pettit (May 17). "More abundant than usual, damage being quite serious. Have observed hymenopterous egg parasites attacking the eggs of this beetle."

BEAN

BROWN COLASPIS (Colaspis brunnea Fab.)

Florida E. Frierson (May 12). "Noticed for the first time today at Elfers; about 10 percent of the beans were damaged by actual count. The variety flavida is the one present."

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

Alabama W. E. Hinds (May 10). "Continued to emerge in large numbers from hibernation, and even the earliest planted table beans are now threatened with extremely serious injury. Cold weather has delayed the crop and favored the increased damage from this species."

F. H. Chittenden, Bureau of Entomology. "Investigations of the distribution of the Mexican bean beetle show that it is continuing to spread. It has been reported under dates of May 30 and June 1 as follows:

- Tennessee 11 miles north of Chattanooga, and from McDonald in Bradley County, to Tucker Springs in the same county.
- Georgia Dade County (Rising Fawn, Trenton, Sulphur Springs), Chattooga county (Lyerly and Holland), Floyd county (Gammon), and Walker County (Flintstone, Highpoint, Cooper Heights, Cassandra, Shaw, and Lafayette).
- Alabama Cherokee County (Pleasant Springs), Calhoun County (Piedmont, Anniston), Clebourne County (Muscadine, about 2 miles from the Georgia line, showing a spread of about 60 miles due east).

It is evident from the information already obtained that the bean beetle will spread much more rapidly than was at first believed. There is indeed reason to believe that the extensive spread could only be accomplished by strong migration immediately before hibernation last fall. This habit is characteristic of other Coccinellidae and may be reasonably expected with the Mexican bean beetle and other *Epilachna*."

CUCUMBERS AND MELONS

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- Alabama J. J. Davis (May 10). "Made their conspicuous appearance at Lafayette today; coming in swarms, apparently with an easterly wind, from bottom-lands of the Wabash river. They attacked cucumbers in frames in swarms."
- Texas H. J. Reinhard (May 19). "This pest is reported unusually abundant in Tarrant and Montgomery Counties and is causing serious damage to the melon crop."

COTTON APHIS (Aphis gossypii Glov.)

- Florida Jeff Chaffin and assistants report that this insect was first noticed on May 1 in Orange County; by May 4, it was doing considerable damage over the entire county; and by May 9, at least 15 per cent of the watermelons that had not been sprayed were seriously damaged. At Arcadia this insect was reported as being more abundant and doing many times as much damage as usual in watermelon fields located near citrus groves by April 18; and was much more abundant than usual in Pasco County by April 19.

STRAWBERRY

STRAWBERRY WEEVIL (Anthonomus signatus Say)

New York E. P. Felt. "Strawberry weevil adults were observed in small numbers in Saratoga County on May 18."

C. R. Crosby and assistants report that they were quite numerous and doing considerable damage in Ulster County by April 27. In one planting about 10 per cent of the blossoms had been already cut off. By May 7 it was noticeable that serious injury was confined to the variety William Belts; varieties Sample, Schofield, and Bubach are only slightly injured. Slight damage was also reported from Orleans County, while a more serious outbreak developed in Columbia County; here one dusting was applied on April 22 and another on April 30. The two treatments held the pest in check from the report received on May 7; here again, the William Belts variety seems to be the worst infested.

STRAWBERRY LEAF-BEETLE (Paria canella Fab.)

New York E. P. Felt (May 18). "Adults feeding in small numbers on strawberry plants at Scotia, Saratoga County."

C. R. Crosby and assistants (May 9). "Adults found occasionally in Columbia County."

STRAWBERRY LEAF-ROLLER (Ancylis comptana Froehl.)

New Jersey D. E. Fink (May 12). "Moths were out last month, and by the end of the month eggs were deposited. Larvae are now attacking foliage at Mooretown and Haddonfield."

Otiorhynchus rugifrons Gyll.

New York J. B. Palmer (May 14). "Very serious injury by grubs working in the crown of the plants in Ulster County."

MISCELLANEOUS TRUCK CROP INSECTS

Onion Maggot (Hylemyia antiqua Meig.)

New York C. R. Crosby and assistants report that the maggots are less numerous than usual in the onion section of New York State up to May 21.

Striped Blister Beetle (Epicauta vittata Fab.)

Florida H. Mowey (May 13). "Damaged about 10 per cent of the plants at Jacksonville."

Sweet Potato Flea-Beetle (Chaetocnema confinis Gr.)

Arkansas W. J. Baerg (May 17). "This pest is apparently quite numerous in certain localities. It is not generally destructive, however."

Pea Aphis (Macrosiphum pisi Kalt)

- New Jersey D. E. Fink (May 9). "About as numerous as usual over the southern half of the State. The insect seems to be on the increase and spraying is being resorted to by many farmers."
- False Turnip Aphis (Aphis pseudobrassicæ Davis)
- Texas H. J. Reinhard (May 11). "Very injurious to turnips in Potter County."
- Southern Green Plant-bug (Nezara viridula L.)
- Alabama W. E. Hinds. "This insect is appearing in large numbers and will certainly again become a serious problem in the southeastern part of the State. This insect was greatly reduced by the extreme cold weather of January, 1918, and has not occurred until this time in large numbers."
- Horse-radish Flea-beetle (Phyllotreta armoraciæ Koch.)
- Connecticut B. H. Walden (May 9). "Abundant and eating leaves of horse-radish at New Haven."

F O R E S T A N D S H A D E T R E E I N S E C T S

SPRUCE

Spruce Gall Aphid (Adelges abietis Kalt.)

New York. C. R. Crosby and Assistants report this insect as badly infesting Black Hills spruce, attacking three or four year old seedlings, as well as older trees at Brentwood on Long Island.

MAPLE

Silver Maple Leaf Mite (Phyllocoptes quadripes Shim.)

New York. E. P. Felt. (May 23). "Maple bladder galls fully developed and locally abundant on soft maple at East Schodack, Rensselaer County."

M. D. Leonard (May 11-16). "One tree with galls very numerous on the leaves at Baldwinsville, and another at Elmira."

Chaitophorus lyropicta Kess.

New York. E. P. Felt (May 19). "Females are scatteringly present on Norway maples at Albany. This plant louse is somewhat abundant every year and occasionally is very injurious to Norway maples."

Drepanaphis acerifolii Thos.

New York. E. P. Felt (May 19). "Adults were scatteringly present on soft maples at Albany. This aphid is a very prevalent one, although rarely markedly injurious."

Chaitophorus aceris L.

Maryland. E. N. Corey (May 24). "More abundant than usual at College Park and reported as very numerous at Annapolis."

Woolly Maple Leaf Scale (Phenacoccus acericola King)

New York. E. P. Felt (May 23). "Reported as common on most of the sugar maples at Oneonta, Otsego County."

Cottony Maple Scale (Pulvinaria vitis L.)

New York. E. P. Felt (May 23). "Present on soft and silver maples at Oneonta."

Terrapin Scale (Becanium nigrofasciatum Perg.)

New York. E. P. Felt (May 23). "Black banded scale abundant on maples at Cambridge, Washington County, there being numerous eggs."

Green-Striped Maple Worm (Anisota rubicunda Fab.)

North Carolina. F. Sherman (April 16). "Adults sent from Rockledge County. Seems like early appearance for this species."

Box Elder Aphid (Chaitophorus negundinis Thomas)

Indiana. J. J. Davis (March 16). "This aphid is becoming exceptionally abundant in several parts of Indiana, and in some cases has resulted in a decided dropping of the foliage. This aphid is one of the very first to hatch from the egg in the spring and this year at Lafayette they were first hatching, according to our observations, on March 16. The dimorphic form is already abundant."

BIRCH

Calaphis betulaecolens Fitch.

New York. E. P. Felt (May 19). "Both adults and young were abundant upon weeping birch at Albany, and the foliage was already becoming coated with honey dew."

C. R. Crosby & Assistant report that trees are badly infested at Nyack and less so at Warwick."

White Marked Tussock Moth (Hemerocampa leucostigma S. & A.)

Kentucky. H. Garman (April 18). "Hatching from the eggs today at Lexington."

Bronze Birch Borer (Agrilus anxius Gory)

New York. E. P. Felt (May 19). "Seriously injuring cut-leaf white birch foliage and during the last three or four years has killed a number of large trees in Albany Parks and the remainder are in a sickly or dying condition. This insect has been very destructive to ornamental birches throughout most of the State."

BEECH

Beech Aphid (Phyllaphis fagi L.)

New York. E. P. Felt (May 19). "Adults and young decidedly abundant on copper beech at Albany."

ASH

Ash-Mid-Rib Gall (Contarinia canadensis Felt)

New York. E. P. Felt (May 18). "Galls are well developed and abundant in Albany County, many of the larvae being half grown and some attacked by parasites."

HOLLY

American Holly Leaf Miner (Phytomyza obscurella, var. ilicicola Loew)

New York. A. F. Bartlett (May 19). "Occurred on a hedge at Syosset. Much more destructive in the vicinity of Philadelphia and farther South."

LARCH

Woolly Larch Aphid (Cnaphalodes strobilobius Kalt.)

New York. M.D. Leonard (May 17). "Many large trees were so badly infested at Ithaca, as to look as if dusted with flour. Honey dew was so abundant that the trees actually dripped."

Chermes laricis Htg. -72-

New York. E. P. Felt (May 19). "Was generally abundant on the new larch leaves at Albany. Occasionally this aphid is decidedly injurious."

PINE

Ohio. Pine Bark Aphid (Pineus strobi Htg.)
H. A. Gossard. "Quite conspicuous at Wooster and has been reported from two or three other localities."

New York. M. D. Leonard (May 14). "Several pines affected at Pleasantville."

E. P. Felt (May 19). "Has apparently been an important factor in weakening white pines in Albany Parks since infested trees have been losing strength and dying for the last 10 or 12 years."

Kentucky. H. Garman (March 15). "Eggs observed on white pine at Lexington. Some trees very badly infested. April 7, the eggs are hatching."

White Pine Weevil (Pissodes strobi Peck)

New York. E. P. Felt (May 13). "Has been abundant and very injurious to white pines for a series of years near Broadalbin, Fulton County, and during the last four or five years has seriously injured a moderately large planting of white pine. There is a marked contrast between these conditions and those in northeastern Rensselaer County, where recently set pines are practically unharmed. Injury by this insect here and there on Long Island was reported on May 13."

POPLAR

Cottonwood Leaf Beetle (Lina scripta Fab.)

Ohio. H. A. Gossard (April 11). "For several years has been a serious pest in the plantations of the Mead Pulp and Paper Company at Chillicothe, Ohio, and has commenced its operation full early this season being received April 11."

ARBOR VITAE

Arbor-Vitae Leaf-Miner (Argyresthia thuiella Pack.)

Connecticut. W. E. Britton (May 19). "Since reporting this pest last month the larvae have pupated and a few adults have emerged. This leaf miner has injured many plants about New Haven."

New York. E. P. Felt (May 24). "Has been the cause of several complaints from Long Island and a shipment from Newport, Rhode Island, was badly infested as reported by P. M. Eastman."

OAK

Tent Caterpillars (Malacosoma spp.)

Oregon. A. L. Lovett (May 16). "More abundant in the fruit sections of Douglas County. Malacosoma disstria and erosa are both prevalent. The majority are on oak but tend to migrate to orchards. Malacosoma pluvialis is more generally common in the upper Willamette valley this spring than usual; the principal hosts are wild rose and alder."

ELM

The Elm Leaf Beetle (Galerucella luteola MULL.)

New York. E. P. Felt (May 17). "Adults working freely in Albany and vicinity."

Oregon. A. L. Lovett (May 10). "Adults appeared on trees to date at Portland and Corvallis. Previously reported from Multnomah County, is now found in Salem, Marion, Corvallis, and Benton Counties."

Elm Scale (Gossyparia spuria Modeer)

New York. E. P. Felt (May 19). "The elm bark louse females are nearly full grown and somewhat abundant on both European and American elms in Albany and vicinity."

Woolly Elm Aphid (Eriosoma americana Riley)

New York. E. P. Felt (May 18). "Just starting leaf rolls on American elm at Karner, Albany County."

MISCELLANEOUS FOREST AND SHADE TREES INSECTS.

Bag Worm (Thyridopteryx sp.)

Arkansas. W. J. Baerg (May 10). "Several times as numerous as usual at Fayetteville, hatching in large numbers, no parasites seem to be present, a thousand bags were collected and examined."

Missouri. L. Haseman (No date). "Much more numerous than usual in Jasper, Newton, Barton and Lawrence Counties. A special campaign has been started in Jasper County to control this pest."

Gypsy Moth (Porthetria dispar L.)

Massachusetts. H. T. Fernald (April 22). "Worcester County Farm Bureau reports very heavy infestation this year."

Fall Canker Worm (Alsophila pometaria Harris)

North Carolina. Franklin Sherman (May 11). "Has been locally epidemic in mountain forests and in western North Carolina in the years 1917 to 1920. We expect it again this year, but studies in 1920 indicate that natural enemies are on the increase. Of these an egg parasite ranks first in importance."

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GREENHOUSE AND ORNAMENTAL PLANTS

ROSE

ROSE LEAFHOPPER (Empoa rosae L.)

- New York. E. P. Felt (May 6) " Rose leafhopper young were abundant on the under side of rose leaves at Nassau, Rensselaer County. "
- R. Matheson (May 23) " Very abundant on rarbler roses at Ithaca. "
- M. D. Leonard . " Badly infested rose leaves received from Ensenore. One nymph apparently in the fourth stage. "
- Ohio. H. A. Gossard. " The rose leafhopper has appeared in numbers on rose foliage at Wooster, the nymphs now being nearly grown. They have yielded quickly to spraying with nicotine sulphate, where this has been applied. "

ROSE APHID (Macrosiphum rosae L.)

- New York. M. D. Leonard (May 20) " Rugosa roses with buds and terminal growth now considerably infested with these aphids at Ithaca. "
- Ohio. H. Osborn (May 12) " Quite numerous at Columbus, injury not especially noticeable and natural enemies are likely to control them. "

ROSE SCALE (Aulacaspis rosae Bouche.)

- New York. M. D. Leonard (May 26) " A large bed of Rugosa roses badly infested at Ithaca. "

ROSE CHAPER (Macroductylus subspinosus Fab.)

- Delaware. C. O. Houghton (May 9) " Took first adults of the season at Newark, today. "

ROSE MIDGE (Dasyneura rhodophaga Coq.)

- Indiana. H. F. Dietz (May 17) " Rose midge began to show up after the middle of March due to warm weather. "

IRIS

GARDEN SLUG (Agriolimax agrestis L.)

- New York. R. Matheson (May 15) " Leaves badly damaged by this pest in one bed at Ithaca. "

LILAC

OYSTER SHELL SCALE (Lepidosaphes ulmi L.)

- New York. P. J. Parrott (May 16) " Abundant on lilacs at Rochester. "
C. R. Crosby (May 7) " Abundant at Milton, Ulster County."

BOXWOOD

BOXWOOD LEAF-MINER (Monarthropalpus buxi Labou.)

- New York. M. D. Leonard (May 9) " Large hedge at Glen Cove, Long Island badly infested, apparently most in the larval stage, but several pupae were observed on two leaves. "

WEIGELIA

FOUR-LINED LEAF BUG (Poecilocapsus lineatus Fab.)

- New York. R. Matheson (May 23) " Is now injuring the terminal growth, but is not as abundant as last year at Ithaca."

HOLLYHOCK

HOLLYHOCK BUG (Orthotylus delicatus Uhl ??)

- Indiana. J. J. Davis (May 13) " A capsid which seems to be the same as has been referred to under above name, has appeared in destructive numbers on hollyhocks at Lafayette. "

CHRYSANTHEMUM

CHRYSANTHEMUM GALL MIDGE (Diarthronomyia hypogaea
F. Loew)

- Indiana. J. J. Davis (April 15) " According to reports which have come to us, the chrysanthemum gall midge is pretty well distributed in Indiana and is a very serious pest."

H. F. Dietz (May 17) " Chrysanthemum midge is getting widely scattered though it does not seem to be as destructive as in the past, probably our mild winter was favorable to its rapid multiplication. There is at present a decided shortage of chrysanthemum stock in Indianapolis, which means that lots of florists will have to buy plants and if they are not careful will get midges with them. "

THRIPS (Heliothrips femoralis Reut. ?)

- Indiana. H. F. Dietz (May 17) " Thrips have been very abundant on chrysanthemum and have done serious damage. These insects are practically always present on calla lilies in this State, though the actual damage to this host is slight. "

BOSTON FERN

BOSTON FERN SCALE (Hemichionaspis aspidistrae Sign.)

Indiana. H. F. Dietz (May 17) " Is a common pest on ferns, though not universally present in the greenhouses of the State. "

MISCELLANEOUS GREENHOUSE INSECTS

Greenhouse orthezia (Orthezia insignis Doug.)

Indiana. H. F. Dietz (May 17) " This insect has been found in three different greenhouses on coleus in the past month. Not serious as yet. " (Also received from Logansport, Indiana, this past winter, J. J. D.)

Greenhouse white fly (Trialeurodes vaporariorum West.)

Indiana. H. F. Dietz (May 17) " Have found the greenhouse white fly to be the most universally present of all pests so far in Indiana."

Greenhouse leaf-tyer (Phlyctaenia ferrugalis Hubn.)

Indiana. H. F. Dietz (May 17) " Greenhouse leaf-tyer is bad in the northeastern part of the State (Fort Wayne and vicinity) with one outbreak at Indianapolis. "

I N S E C T S A T T A C K I N G M A N A N D D O M E S T I C

A N I M A L S .

Mosquitoes (Aedes abfitchii Felt.)

New York. Matheson and Shannon (May 10) " Large numbers of larvae and pupae found on April 21 and to-day. Females active and several taken attacking man. "

Aedes canadensis Theo.

New York. Matheson and Shannon (May 8) " Adults reared from larvae taken in a small, spring ef pool at Ithaca."

Anopheles punctipennis Say.

New York. Matheson and Shannon (April 2) " Adults just emerging from hibernation at Ithaca. "

Matheson and Shannon (May 14) " Adults obtained from larvae and pupae found in a small pool along railroad at Ithaca."

Culiseta inornatus Wil.

New York. Matheson and Shannon (April 2) " Adults just emerging from hibernation at Ithaca."

Stable fly (Stomoxys calcitrans L.)

Office of Southern Field Crop Insect Investigation: Attention must be given to the stacking of straw during threshing if the terrible outbreak of stable flies of last year is not to be repeated this season. Last year's losses are well remembered by the farmers and stockmen of Oklahoma, Kansas, Nebraska, and parts of the Dakotas. Heavy rains at threshing time combined with loose piling of the straw was responsible. Plowing was practically abandoned in some sections, and tractors were resorted to in many instances as the horses could not withstand the overwhelming hordes of flies. Cattle suffered heavily, flesh being greatly reduced and milk flow cut twenty-five to fifty per cent, in some cases. Death loss was also heavy- animals weakened through blood loss and worry fell ready prey to certain diseases and others were said to be actually made sick by the flies themselves. The field men of the Bureau of Entomology state that these blood-sucking flies were present in unusual numbers in June. With many old straw stacks still in the fields and the usual careless piling of straw at threshing time and some heavy summer rains these flies will develop into veritable hordes late in the summer.

MISCELLANEOUS INSECTS ATTACKING MAN

Chrysops niger Macq.

New York. Matheson and Shannon (May 6) " Several females taken while attempting to attack man, also several males taken on blossoms of chokecherry at Ithaca."

Simulium sp.

Matheson and Shannon (May 6) " The species pictipes locally abundant in woods at Ithaca. "

Small body hen louse (Menopon pallidum Nitz.)

New York. M. D. Leonard (April 12) " Back of a man at Accord was badly bitten by these lice, They had evidently gotten on him while working in a poultry house, as he was employed by a poultryman."

Fowl tick (Argas miniatus Koch)

Louisiana. T. H. Jones (April 11) " These mites were taken in New Orleans and were referred to Mr. F. C. Bishopp of the Bureau of Entomology for determination. I believe this to be the first authentic record of this pest in the State of Louisiana, although we have had one or two reports which were suspicious. (Special Report No.13)

Common cat and dog flea (Ctenocephalus canis Curtis)

Missouri. Leonard Haseman. " Very serious outbreaks of these insects attacking man at Atlanta, Pleasant Hill, and Hale have been reported to this office. The fleas are breeding in hog houses and have entered dwellings and other farm buildings. "

English Earwig (Forficula auricularia L.)

Oregon. A. L. Lovett (May 16) The English Earwigs passed the winter apparently with little or no mortality or loss of vitality. They are already active in Portland where approximately 16 square blocks in one of our exclusive districts are simply over run with the pest. They are a serious nuisance. Houses do not rent, property will not sell, and friends even decline invitations to call. They are transported very readily and new outbreaks are expected. They prey on ornamentals and have been found destroying raspberry blossoms."