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THE INSECT PEST SURVEY BULLETIN.

A monthly review of entomological conditions throughout the United States.

Volume 1.

May 1, 1921.

Number 1.

BUREAU OF ENTOMOLOGY
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INTRODUCTORY STATEMENT.

The rapid advance in entomological activity during the past ten years has necessarily been accomplished by a readjustment of this branch of scientific agriculture. Comprehensive survey has become necessary, i.e. the assembling of all data on distribution, season and regional fluctuation of insect abundance, weather data as related to insect outbreaks, entomological data and other miscellaneous information, studying the data and correlating its various factors and disseminating the results in an available form for the immediate use of alleconomic entomological workers.

The Bureau of Entomology of the United States Department of Agriculture, in cooperation with the State Entomologists, Entomologists of the Agricultural Experiment Stations, State Departments of Agriculture, Agricultural Colleges, and other entomological agencies has organized for this work an Insect Pest Survey.

The Survey hopes to issue a Monthly Bulletin on current insect conditions throughout the country. In addition to this main publication it will attempt to publish Special Reports of immediate interest on outbreaks of a more serious nature. These special reports will be sent out if possible the day following that upon which the information is received and will only be sent to the States immediately concerned in the outbreak reported. (A number of these special Reports have already been issued). The subject matter of the Special Reports will always be reviewed in the Monthly Bulletin for general information. Very serious outbreaks are to be reported by our Collaborators by wire and a Telegraphic Emergency Report will be issued when occasion demands.

Each year an annual digest of the important facts gathered during the past season will be published in the form of Insect Pest Summaries; a separate summary to cover the pests of each of the major group of crops. In the Summaries will be, when possible, maps of the distribution of outbreaks comparing these with previous recorded outbreaks, correlated weather and insect abundance graphs, tabulated statistics on losses occasioned by insects, seasonal abundance curves, etc. which will serve as a basis for approaching any economic problem with a much clearer perspective than is possible with this information scattered through the publications of the many entomological agencies or in the files of the entomological workers throughout the country.

OUTSTANDING ENTOMOLOGICAL FEATURES OF MARCH AND APRIL

1921./

The most serious situation reported during the past two months is the widespread and severe infestation by Chinch Bug in the Central Mississippi Valley Region, starting in northern Texas and extending in a northeasterly direction over Oklahoma, Kansas, and Missouri, touching Nebraska and extending across Illinois and Indiana into Michigan.

The Hessian Fly situation is reported as serious in Indiana, Ohio, and Missouri, about normal in Illinois and Nebraska and slight in Kansas/.

A serious Green Bug outbreak started early in the spring in Texas, Oklahoma, Kansas and Missouri, but parasites and adverse weather conditions reduced the infestation to such an extent that the most recent advices report the wheat out of further danger/.

A very extensive Jointworm outbreak is eminent in Missouri. If favorable conditions prevail enough Jointworm adults will emerge for the second brood to completely destroy the crop in certain sections/.

The worst infestation of alfalfa by Pea Aphid in the history of the State is reported from Oklahoma. The situation is also very serious in Kansas and is much worse than usual in Missouri and Illinois.

Clover Leaf Weevil is decidedly on the increase in destructiveness in Illinois, Indiana and Missouri and this pest in conjunction with the Lesser Clover Leaf Weevil and the Clover Root Curculio, sometimes accompanied with a fungus disease is becoming so serious in parts of Ohio that alsike and sweet clover are being substituted for red clover, it being impossible to grow the latter crop successfully.

A bad outbreak of the Fruit Tree Leaf Roller in the Bitter Root Valley of Montana; Pear Psylla reported as decidedly more serious than last year in the fruit growing sections of New York and a general increase of Grape Leaf Hopper in the Great Lakes grape growing region of Michigan are the outstanding features reported on Fruit Insect Pests.

A very severe outbreak of Seed Corn Maggot accompanied by a Fusarium rot in seed potatoes is prevalent along the south central Atlantic seaboard extending from North Carolina to the Eastern Shore of Maryland and practically covering the important early potato regions of these States.

The Mexican Bean Beetle situation which developed to such a serious extent in Alabama last year, now threatens Georgia and Tennessee. A very high percentage of the fall brood of beetles having successfully passed the winter.

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CEREAL AND FORAGE CROP INSECTS

WHEAT

CHINCH BUG (Blissus leucopterus)

- Michigan. R. H. Pettit, (March 15.). "Chinch bugs have gradually become common in the lower tier of counties next to Ohio and Indiana. The present open winter has shown them to be quite numerous on the under sides of mullen leaves and similar plants. We have been fortunate in the past in having been almost free from serious chinch bug attacks but expect to have to deal with them during the coming season."
- Illinois. Extension News Letters. Issued by the Extension Entomologists (March 30.). "Damage expected in fifty counties; severe in thirty. Wintered exceptionally well. A few bugs flew on March 19 and 20 in Southern part of State. Resistant strains of corn will be generally grown in infested area."
- W. P. Flint, (April 16). "The mild winter has been favorable to hibernating bugs. The insect is abundant over a greater area in the State than any time since 1887. Damages expected in fifty counties, severe in 30. A few bugs flew into the wheat on March 19 and 20. Moderate flights have occurred on several days since. Not more than half of the bugs are now in the wheat."
- Indiana. J. J. Davis, (April 15). "Chinch bug was not reported by correspondents to the Experiment Station in the year 1917, a number reported damage in 1918, more than twice as many in 1919, and more than four times as many in 1920. Forty-six counties in Indiana are infested, one-third of which might be considered as dangerously infested. The infestation begins at the extreme northeastern corner of the State and moves in a diagonal strip through the State several counties wide, the heaviest infested counties being in the northeastern and south-western tier of counties. The central part of the State is less heavily infested and the northwest and southeast corners are almost entirely free of bugs. There is every indication that the chinch bug will be a serious and important pest this year and more severe and widespread than for many years."
- Ohio. H. A. Gossard, (April 9), "Chinch bug is subsiding in numbers. There were not as many last year as in 1919 and we expect still fewer in 1920."
- Nebraska. Myron H. Swenk, (April 15.). "In 1920 there was some damage of a serious sort to wheat and corn in the Southern parts of Muckolls and Thayer counties. They wintered in rather larger numbers than usual in Southern Thayer County and probably west to Franklin County and in the

event of a dry spring some injury is looked for in this small area but not elsewhere.

Kansas.

Geo. A. Dean (March 29), "The mild dry winter has been very favorable for chinch bug hibernation, even those in poor winter quarters came through in good shape. From present indications the infestation will be more severe in the southeastern counties. Last Fall a large number of counties were well organized for burning campaigns, but rain and snow interfered with most of this work, however, in some counties considerable burning was done. We are expecting considerable injury over the entire eastern third of the State."

Extension News Letter, (March 30). "Bugs had left winter quarters prior to March 18, and were in the wheat. Expect heavy infestation. Wintered well."

J. W. McColloch, (April 8), "In Montgomery county chinch bug is on the increase. Migration of bugs from winter quarters have taken place and the fields are alive with them. Mating is taking place and eggs will soon be present."

Missouri.

A. F. Satterthwait (B. E. February 14). "St Louis County Farm Bureau reported that masses of living chinch bugs were being found on corn stalks in the fields and that the bugs were running over the ground to growing wheat. On investigation the matter he found chinch bugs present as reported, except not in masses. The bugs were migrating from corn fields where the corn had been shocked on the ground and had scattered to the neighboring wheat fields. Some bugs were found as much as half an inch below the surface of the soil on the wheat. Bugs were present also under the sheaths in at least one field, and were present in the pithy portions of the corn stalks remote from living vegetation."

A. F. Satterthwait, (March 28). "Chinch bugs are to be found in practically every wheat field in the river bottoms about Gumbo and Chesterfield, Mo."

L. Haseman, (April 7). "This pest passed the mild winter in great abundance in various types of shelter. In Scott County two weeks ago Mr. Burrill found chinch bugs abundant in dry sand without protection along fence rows. They have also been reported abundant in grass land. The pest is most abundant in the east central and southeastern counties of the State, though it is also threatening in the central, west central and south western parts of the State. While the pest wintered in threatening numbers the recent two days of freezing weather will undoubtedly have its effect on this and other pests. Winter burning of harboring places was handicapped by wet weather in the early part of the winter, but late in the winter very thorough burning work was carried out in the south east and west central parts of the State."

Oklahoma.

C.E. Sanborn (March 29). "This pest is likely to be more serious than for several years past. The weather condition during the winter was exceedingly favorable for hibernation. The bugs are beginning to infest the small grains at this time, although they have not much more than started to disseminate from their hibernating quarters."

HESSIAN FLY (Phytophaga destructor)

Illinois. Extension News Letter (March 30). "Moderate numbers in central part of the State in all fields, ^{Planted} seven days after advised fly-free-date of seeding. Wintered well. Emergence started in southern part of State March 19. All in pupal stage in central part of State March 22.

W. P. Flint, (April 16). "Hessian fly is present in normal numbers over the entire State where conditions were favorable to the fall brood; but unfavorable to the spring brood. Parasites are scarce. All early sown wheat was heavily infested in the fall of 1920; the majority of flies survived the winter, but the weather has been unfavorable for the spring brood. Only a small number of eggs have been laid; some maggots now in wheat; numbers of eggs still on plants in Central part of the State."

Indiana. J. J. Davis (April 4). "We began to find fly eggs in appreciable numbers on April 4 at Lafayette. There is every indication for a large spring brood and unless parasites become conspicuous there will be a big fall brood. We are advising against planting spring wheat and are not recommending the plowing under of infested wheat except in hopeless cases. Wheat generally wintered in fine condition and even where more or less heavily infested with the late wave of fly last Fall, wheat on properly fertilized ground tillered well and has outgrown the injury."

W. W. Lurrimer (April 2). "Hessian fly is coming out in numbers at Lafayette and many eggs are being laid at this time. The wheat is in excellent growing condition however and has stood out considerably, so that in spite of the fly there seems to be a much better prospect for the wheat than at this time in 1920."

Ohio. Extension News Letter (March 30). "Some fly in fields sown October 7. Wheat sown middle of October in Central part of State best. Few early sown fields, all such fields 50% to 90% infested. No pupation prior to March 17."

H. A. Gossard (April 9). "From last years observations we are expecting considerable damage by Hessian Fly this season, most of the brood being derived from flies which issued about the middle of October over all parts of the State. Because of our well organized extension efforts in the early fall, all wheat seeding was delayed until the last few days of September or the first of October in northern Ohio and until the 10th of October of towards the middle in southern Ohio. It is therefore in northern Ohio that we expect some fly damage, but the state will suffer much less than during the season of 1920."

Nebraska. Myron H. Swenk, (April 15). "Has been present in sub-normal numbers since the heavy outbreak of 1914-1915. In Fall of 1920 some increase in numbers in southern Nebraska, south of Nemaha, Lancaster and Hall counties."

Counties and West of Red Willow County. Field examinations this spring have shown sufficient numbers to possibly menace the winter wheat in the fall of 1931, if conditions between now and then remain highly favorable."

Kansas. Extension News Letter, (March 30). "...Flaxseeds contained pupae almost ready to emerge March 18. Wheat rank. Weather dry and warm: Have general light infestation over eastern two-thirds of the State."

Missouri. Lange, (April 6). "Found one female Hessian fly in flight. Found eggs few in number but in nearly every field in St Louis County."

L. Haseman (April 7). "The Hessian fly was most abundant last fall especially in the southeastern part of the State, however, it was also very abundant in north east part of the State as well as in the south-west and west central parts of the State. Some of the early seeded wheat in these regions showed 75% to 90% infestation. In the southern counties the pest was largely in pupal stage by March 15 and a few adults emerged from pupae received and placed in the insectary on March 12. Just what effect the freeze of March 27 and March 28 had on the pupal or adult stages, where emergence may already have occurred in the field, I have not yet determined. Damage from the fall brood was in many localities and fields 100%. It is still too early to ascertain the damage from the spring brood. Where the pest destroyed the crop in the fall many farmers plowed it under. Cooperation in the matter of plowing last summer's stubble early and keeping down volunteer wheat and delaying seeding was unfortunately not as thorough as it should have been."

GREEN BUG (*Homoptera graminum*)

Nebraska. Myron H. Swank (April 15). "A few fields in Butler, Dodge, and Saunders Counties were severely damaged during late October in 1920. There seems to be no evidence of damage this spring."

Kansas. S. J. Hunter (March 17). "On the 22nd of February we found green bugs present in the vicinity of Arkansas City unaccompanied at that time by parasites. We have today come upon a serious infestation in the vicinity of Coffeyville. Parasites are in limited numbers. Mr. Hoffman is in charge of observations in Cowley and Dr. Lawton in Montgomery County."

Geo. A. Dean, (March 29). "Green bug is now infesting wheat fields in Cherokee, Labette, Chautauqua, Wilson, Montgomery and Cowley Counties."

The infestation in Cowley County is very slight, practically all of the infestations are in fields where there has been volunteer oats. Lysephlebus is present practically everywhere with the aphids, but with few exceptions they are not plentiful. For the last two or three days the temperature has been too low for parasites to breed or increase, while during the last few days there has been heavy rains over the greater part of the infested area."

P. B. Lawson (March 18 to 25). "Serious damage has already been done in Montgomery and Cherokee Counties in wheat fields where there was volunteer oats. Upland fields seem to be more seriously damaged. Lysephlebus testaceipes and Hippodamia convergens were present. The temperature has been warm up to March 21 then rainy and cold."

J. W. McColloch (April 8). The green bug outbreak is decreasing, the damage varying from less than 1% in some fields to over 50%. A good rain with some hail was fatal to the green bug in many fields. Burning of the infested area and plowing under have proved successful in control of this pest. Aphidius testaceipes, Hippodamia convergens and Megilla fuscilabris have destroyed as high as 60% to 75% of the aphids in some fields.

Oklahoma. C. E. Sanborn (March 16). "Green bug not nearly as severe as during 1907. It is now being brought under subjection by its parasites. C. E. Sanborn (March 29). "Occurred in Denton County Texas perhaps earlier than December although that is the first authentic report that I have. The infestation has disseminated northward until it is at present in the southern tier of counties in Eastern Kansas. The infestation is generally present throughout Oklahoma, westward as far as Jackson County on the southwest and Grant County on the northwest. The infestation is similar to that of 1906-1907, except that during the first four weeks of March, the weather was exceedingly favorable for the development of its parasites, Aphidius testaceipes. The parasite has disseminated as far northward as Kansas. An unusually large number of lady-birds especially Megilla maculata hibernated through the winter exceptionally well in this State. These have been a great advantage in the destruction of the green bugs."

Missouri. J. R. Horton (B. E. April 7). "Personally I inspected Tulsa and Noble Counties, and went over Tulsa County with the County Agent carefully, finding many fields infested with Toxoptera. The same seems to be in Noble, Logan and Oklahoma counties. The

infestation, however, has become rather light occurring only in the leaf curls and similar locations where the bugs were sheltered from the lady-beetle larvae, although they were previously numerous enough to entirely kill out the wheat in patches. Such patches range from two yards to an acre or more in size. Patches of the latter size were rare however, having been observed in places in Noble County. Both the larvae and the adults of Coccinellids were very numerous and apparently doing efficient work. Very few adult Hymenopterous parasites were seen."

(April 14). "The green bug in western Jasper County, Mo. is in all cases at a stand still, just as it is throughout the infested areas in Kansas and Oklahoma. Judging from the number of parasites we are getting from the material collected at Independence and Columbus, this condition of affairs is largely due to parasites."

Arkansas. W. J. Baerg (March 7). "First recorded appearance at Fayetteville."

Texas. E. E. Scholl (April 18). "Conditions have apparently been ideal for the development of green bug in Texas. The latter part of the summer of 1920 was unusually cool and moist. Average temperature of the winter for 1920-21 was abnormally high, there having been very little freezing weather. Complaints regarding green bug infestation began to come in from the grain growing sections of north Texas in January. Investigation showed that practically all of these infestations started in fields of volunteer oats, from which they spread to sowed grain. By February 10th the fields of sowed grain were yellow. The heaviest infestations seemed to be in Grayson, Denton and Collins Counties, although the infestation extended both east and west from there. Parasites were present in very limited numbers as early as February 10, but these have increased in number since. Many grain fields were destroyed and these were plowed under and put into other crops. A campaign will be put on this coming summer to keep down all volunteer grain."

C. H. Gable, (March 21) "Parasites are apparently dominating the situation in volunteer fields and the earliest infested fields of the regular crop. Fields give promise of a very fair yield. It is said that a migratory flight occurred on March 13 and 14, and on inspecting Bryant County, Oklahoma, the green bug was found to be fairly well distributed over the county."

OTHER APHIDS ATTACKING WHEAT

Forda olivacea

Nebraska. M. H. Swenk, (April 15). "Was continuing injuries in March 1921, which became evident in 1920. The general condition of wheat is such that little is to be feared from these aphids from now on."

Rhopalosiphum padi L. (Aphis avenae)

Kansas. P. B. Lawson (March 18 to 25). "Is very abundant on some wheat and rye in Cherokee, Montgomery, and Wilson Counties."

Macrosiphum granaria

Kansas. P. B. Lawson (March 18 to 25). "Is very abundant and apparently causing damage in some fields in Cherokee County, Montgomery and Wilson Counties."

Macrosiphum spp.

Missouri. Leonard Haseman (April 7). "Just before the Easter freeze, March 27 and 28 and also since, the plant lice on wheat and oats have attracted much attention especially in Newton, Jasper and Vernon Counties. In that part of the state a hail storm accompanied the Easter freeze which put a decided check on the plant lice. Two fields of wheat in Newton County were reported destroyed by the lice and a number in Jasper and Vernon Counties seriously damaged. The first reports seemed to indicate that the Southern grain louse, Toxoptera graminum was responsible for the injury. However, field collection of lice and samples received at the office show that one or perhaps two species of Macrosiphum were most abundant with Siphocoryne avenae as Diuraphis second. In only a few cases did Toxoptera graminum appear in the collections."

JOINT WORM (Harmolita grande minutum)

Tennessee. Geo. G. Ainslie (B.E., April 14). "I have never seen so much Joint Worm as there is this year. Almost every field visited has an appreciable amount and in some places it is very severe. When we first found it the progeny of the minutum adults were about half grown in the little deformed tillers. They are now rapidly pupating and unless something happens to prevent their emergence and oviposition it seems certain that the next generation will be large enough to take practically every stem. The field seems generally infested too, not in patches but uniformly throughout. A great deal of wheat land was replanted to wheat last fall, and here of course no migration is necessary."

ARMY WORM (Cirphis unipuncta)

North Carolina. C. S. Brimley (March 21). "First adults of the season taken in baited moth trap. The season has been abnormally warm since March 1."

Extension News Letter (March 30) "Some damage expected."

- Illinois. W. P. Flint (April 16). "Adult male, was taken March 26 and every warm night thereafter at Urbana. First gravid female taken April 4."
- Kansas. Extension News Letter (March 30). "Much damage to wheat in southern part of the State. Poison bait is being effectively used against them."
- Texas. E. E. Scholl (April 18). "On March 14, a number of noctuid larvae were sent in from Crosby County. In northwest Texas they were reported by Mr. R. E. Karper, Superintendent of Substation No. 8, located at Lubbock as doing considerable damage to young wheat in a few places in Crosby County. In one place practically all the wheat in a ten-acre field had been eaten to the ground. On April 5 Mr. Karper reported that the outbreak had not become serious as a general proposition but that some individual farmers suffered heavy damages."

FALL ARMY WORM, *Laphygma frugiperda*.

- Kansas. S. J. Hunter (March 17). "The Fall Army Worm is doing considerable damage to wheat in Stafford County."

MISCELLANEOUS WHEAT INSECTS

Chorizandra sp.

- Kansas. G. A. Dean (March 14). "For nearly three weeks we have been receiving many reports from south central counties of Cut-worm injuring wheat and alfalfa, owing to mild weather they have appeared two or three weeks earlier this season than in past years. In some cases they were distributed over the greater parts of the fields, while in others they were more numerous along the edge of wheat fields adjoining pastures."

Cutworm undetermined.

- Oklahoma. C. E. Sanborn (March 29). "Considerable damage has been done this spring even as early as January by a worm which I took to be a granulated cutworm, damage being similar to army worm damage. The main brood is now in the pupal stage."

Nematodes

- Kansas. Geo. A. Dean (March 19). "Chase County Farm Agent has sent samples of alfalfa roots injured apparently by Nematodes. We are unable to find Nematodes present, but the roots are full of little long burrows. In 1919 Mr. McCulloch and Mr. Tanquary found large numbers of Nematodes present in Chase and Greenwood counties. Some fields have been almost completely killed."

False Wire Worm. (Eleodes opaca).

Nebraska. M. H. Swenk, (March 15). "The first report of injury received from Kimball County, A few fields having been badly killed out by this insect."

Tarnished Plant Bug. (Lygus pratensis)

Nebraska. M. H. Swenk (March 15). "Observed in very large numbers in wheat fields in Sherman County during March, apparently did no appreciable injury."

Leaf-hopper. (Agallia sanguinolenta)

Nebraska. M. H. Swenk (April 15). "Occurred in large numbers in wheat, both last fall and this spring, in a few cases apparently injuring fields appreciably."

Pegomya cerealis.

Nebraska. M. H. Swenk. (April 9). "Report of injury to wheat by this insect was brought to our notice."

ALFALFA AND CLOVER

PEA APHIS (Macrosiphum pisi L.)

Maryland. E. N. Corey, (April 14). "Much more abundant than usual at College Park but doing no appreciable damage. Potential damage to peas more serious."

Illinois. W. P. Flint, (March 23). "Much more abundant than average year in southern part of State. Few are diseased with Erpusa aphidis. Up to this date damage has been very slight."

Kansas. S. J. Hunter, (March 17). "Cowley and Montgomery Counties seriously infested. Specimens determined by Dr. C.P. Gillet and Professor J.J. Davis."

P. B. Lawson, (March 18 to 25). "Montgomery, Wilson and Cherokee counties, much more serious than average year. Young alfalfa frequently killed, old alfalfa seriously damaged. Since March 24, Erpusa aphidis has been observed attacking these aphids, a very serious infestation. The air some days filled with aphids."

Geo. A. Dean, (March 18). "During the last week we have received many reports of severe injury to alfalfa by the pea aphis. The seven or eight counties reporting the most serious injury in the

south central part of the State. This is the first time we have known this insect to seriously injure alfalfa although we have known it to injure clover in three of the eastern counties, but even here the injury was local. Some of the County Bureau men have reported fields of 20 to 40 acres badly infested and the Spring growth withering and drying up. The aphid has appeared much earlier this season than any previous spring. Over most of the States where the injury is reported the fields are very dry and the alfalfa is not making nearly the growth it would if there were moisture in the ground."

J. W. McCulloch, (April 18). "The first crop being completely held back in many fields in Montgomery County. The weather has been quite dry, with good rains a week ago. Hippodamia convergens, Metacilabrus, and a fungous disease working on this aphid, though the number of insects destroyed is low in most fields. In a few cases the fungous disease holding the aphid in check."

Geo. A. Dean (April 13). "In spite of the fact that we have been having good rains for the past 7 or 10 days, alfalfa is making very little growth. In many places the fields are just as bare as they were in winter. Of course the alfalfa was badly frozen on the 23 and 29 of March. However, the fields would now be green if they were not so badly infested with the aphid. For more than two weeks the winged or what we usually call the migratory forms have been present, but have apparently remained right in the fields of alfalfa. In fact we know that they are reproducing here. Some of the winged forms have migrated to plants belonging to the mustard family and are reproducing in many of the fields. Coccinellids are becoming very abundant, and in some places the fungous disease is present."

Missouri. L. Haseman (April 7). "Pea aphid is doing some damage to red clover, and complaints are beginning to come in."

Oklahoma. C. E. Sanborn (March 29). "Never in the history of Oklahoma has the pea aphid been so destructive to alfalfa as is the case this spring. Some specimens have been prevalent during the spring of the year in times past but it appears that the viviparous forms developed rapidly during the winter and as a result were sufficiently numerous to seriously infest all alfalfa fields, especially the low lands where they seem to have passed the winter most advantageously on account of the cover afforded by the late growing alfalfa which was killed by the frost and not removed as hay. Many fields were so badly infested that they are being destroyed. The Empusa aphidis disease has only lately begun to effect them to any extent. Rains began about the 20th of this month, until that time it appeared to be too dry for the disease to show signs of effectiveness although a little was prevalent."

Arkansas. W. J. Baerg, (March 19). "First appearance at Fayetteville."

ALFALFA WEEVIL (Phytonomus murinus)

Nevada. Extension News Letter (March 30). "Two separate infestations, both very light, both over a 100 miles from the nearest infestation."

CLOVER LEAF WEEVIL (Hyrera punctata)

Maryland. E. N. Corey (April 20). "Received specimens from County Agent in Baltimore County, apparently more numerous than usual."

West Vir-L. M. Peairs (April 7). "Reported as doing considerable damage in ginia. Wheeling."

Illinois. W. P. Flint (April 16). "A general moderate infestation of alfalfa over the entire State, much more severe than usual. Clover much more seriously infested than usual, from 5 to 10% of the crop damaged. The first pupa was noticed at Carrollton on April 7, at which time they were fairly numerous in many fields."

Indiana. J. J. Davis (April 15). "Was first reported to us this spring on March 21 from Rockport which is in the extreme south end of the State. Since then we have received reports of abundance of this insect from points as far north as Marion, Ind. in the central part of the State. We are getting in reports every day. Two reports came in today where appreciable damage had already been done."

Missouri. A. F. Satterthwait (B.E. March 28). "In Missouri River Bottoms about Gumbo and Chesterfield, Missouri, a field was observed where extreme damage had been done by the larvae of this insect. The field was seeded in February or March 1920 along side of a clover field plowed down in October of the same year, the latter field being about two years old. In the infested field some plants were entirely defoliated. The leaf weevil larvae were well developed about 20% being more than half grown."

L. Haseman (April 7). "This pest is with us every year, but in a few isolated regions, serious damage to clover and alfalfa occurred this spring. Fields in Chariton County showed serious damage just before the recent freeze. Since the freeze no further complaints have been received."

MISCELLANEOUS CLOVER AND ALFALFA INSECTS

Clover mite (Bryobia praetiosa Koch.)

Arizona. Don C. Mote (April 7). "This insect is more widely distributed than appeared at first and has probably been in the valley for several years. It has done considerable damage to alfalfa in two or three fields about Yuma, but it is difficult to estimate the damage. The leaves were injured for about a distance of a foot from the ground. Investigation would indicate that the damage will be greatly reduced as soon as hot weather

begins. Many of the mites will die while migrating from one field to another."

California. V. L. Wildermuth (April 9). "I was able to find what I think to be this mite upon bur clover and alfalfa on my ranch at Tempe, and on many isolated patches of bur clover about there."

V. L. Wildermuth (April 11). "Found this mite at Holtville, El Centro and Brawley. The same fields were infested in 1914, and I find in some cases to be infested this year. This is significant in seeming to indicate that we need not expect any widespread destruction of alfalfa crop in either the Imperial Valley or the Yuma Valley of Arizona."

Leaf-hopper (*Typhlocyba comes*)

Illinois. W. P. Fling (April 1). "Somewhat serious outbreak reported from Hillsboro. The field of alfalfa reported damaged was adjoining tract of woodland in which the sepdæes had hibernated."

Clover root curculio (*Sitona hispidula*)

Ohio. H. A. Gossard (April 9). "This insect and the lesser clover leaf weevil (*Phytonomus nigrirostris*) and a fungous disease of red clover has become more injurious every year, making it almost impossible to grow the crop successfully. There is no evidence of an abatement of the injury. Alsike and sweet clover is being substituted in many cases for red clover."

Languria mozardi

Delaware. C. O. Houghton (April 9). "Took first adult this season."

Polia renigera

Iowa. F. A. Fenton (April 14). "Two reports of extensive injury by the variegated cut worm which have been received from two counties in Iowa in the south western quarter of the State. The insect was working on red clover and only about one-quarter grown."

SUGAR CORN CANE BORER (*Diatraea saccharalis*)

Louisiana. T. H. Jones (April 5). "Larvae, some in third instar were taken from corn at Baton Rouge to-day. The winter has been very mild and the spring early with less rain fall than usual."

T. E. Holloway (April 5). "Large numbers of third instar larvae in two of three plants. Species six weeks earlier than usual."

Twelve spotted cucumber beetle (Diabotica 12-punctata).

T. H. Jones (April 13). Plantings of corn are being made here at Baton Rouge approximately every week and the plants from each planting are examined approximately two weeks after the seed is planted. The first planting made on March 2 showed little root worm damage when observations were made on March 15, though subsequent damage was done to the plants. Larvae were very numerous in the planting of March 10, when examined March 23, as many as 20 being taken from one hill, and the first pupa was taken on this date. In the planting of March 16, examined on March 29, approximately as many larvae were found as were taken on March 23, from the planting of March 10, but many stalks had been killed before reaching the surface of the soil; a fact not so generally true in the earlier planting.

North Franklin Sherman (March 17). "First adult of the season observed at Raleigh on plum blossoms. The weather has been consistently abnormally warm since March 1. The females, several of which were dissected, were found to be distended with eggs."

"WHITE GRUBS (Phyllophaga larvae)

West L. M. Peairs (April 3). "Larvae fairly abundant in plowed fields. Adults appearing in considerable numbers."

Wisconsin. S. B. Fracker (April 15). "Scattered infestation from Ane County westward. Less abundant than in 1912 and 1915."

Ohio. H. A. Gossard (April 9). "Very abundant in spots in the northeastern part of the State."

New York. E. P. Felt. (April, 15). "Adult taken on sidewalk in Albany. This insect usually appears in May, frequently the latter part of the month."

Texas. J. D. Mitchell (April 5). "Traveled a good deal over the State in March. Heard many complaints of the damage to young corn by white grubs. Adults emerged in numbers in February a month or six weeks earlier than usual, due, I suppose to the mild winter."

COTTON INSECTS.

COTTON BOLL WEEVIL (Anthonomus grandis)

- NORTH CAROLINA. Extension News Letter (March 30) "has been found 65 miles from southern border of State."
- SOUTH CAROLINA. Extension News Letter (March 30) "Winter has been very mild and the boll weevil has been more or less active throughout the winter. Main efforts at extension work this season will be poisoning of this insect."
- TEXAS. E. E. Scholl (April 18). "Mr. H. J. Rienhard of the Division of Entomology of the Experiment Station reported catching a boll weevil in flight April 15 at College Station, Texas. The past winter has been very mild and it is likely that a much larger percentage than usual came through the winter season."

FRUIT INSECTS.

APPLE

CODLING MOTH (Cydia pomonella).

- VIRGINIA. L. A. Stearns. (April 9). Development of this insect is backward this season in the northern part of the State. Only 25% of the larvae have pupated so far.
- NORTH CAROLINA. Extension News Letter (March 30). Cluster bud spray being Applied March 17.
- ILLINOIS. S. C. Chandler. (April 14). First adult emerged on this date at Carbondale, Illinois. Urbana
W. P. Flint. (April 16). Mild winter at/has been very favorable to hibernating larvae; 20% of the overwintering larvae had pupated by April 15.
Extension News Letter (March 30). Cluster bud spray being applied in southern part of State.
- ARKANSAS. W. J. Baerg. (April 12). Moths began to emerge today.
- UTAH. V. M. Tanner. (April 1). St. George, Washington County. First appearance of adults.

GREEN APPLE APHID (Aphis pomi)

NEW YORK.

P. J. Parrott. (April 4). Abundant on apple buds at Geneva. 25% of aphids present are sorbi. Two or three sorbi on a bud in many cases.

P. D. Rupert. (April 8). Not abundant so far in Wayne County.

L. C. Tyler. (April 16). Scarce in Genesee County.

D. V. Rivenburg. (April 9). Not nearly so abundant in Columbia County as previous to the cold of March 28th.

H. W. Fitch. (April 11). Ravena, New York. On 100 buds there were all green aphids present. This is probably a mixture of pomi and avenae.

N. C. Hammond. (April 16.) Orange County. Not so abundant. (April 23). Aphids still seem to be scarce in orchards mentioned.

D. C. Vann. (April 16). Monroe County. Very few can be found.

L. H. Woodard. (April 16). Chataqua County. Not abundant.

WEST VIRGINIA.

L. M. Peairs. (March 20). Green apple aphid abundant at Morgantown.

(March 23). A heavy freeze has apparently killed the green apple aphid at Morgantown.

(March 23). Green apple aphid reported abundant at Moundsville.

(April 1). Green apple aphid has been abundant in Berkeley County for several days.

A. A. Gold. (April 1). Green apple aphid 20% more abundant than average year near Raymond City in Putnam County.

ILLINOIS.

W. P. Flint. (April 16). Much less abundant than usual. Very few have been found in orchards in southern and central part of State.

UTAH.

H. J. Pack. (April 1). Observed hatching today at Logan.

EUROPEAN GRAIN APHID (Rhopalosiphum padi)

- NEW YORK. P. J. Parrott. (March 23). Newly hatched aphids appearing on apple buds at Geneva.
(April 4). Abundant on apple buds. 25% sorbi.
- A. B. Buchholz. (March 25). Weather very warm. Observed on apples at Germantown, Columbia County.
- D. B. Rivenburg. (April 9). Columbia County. Not nearly so abundant as previous to the cold of March 28.
- M. D. Leonard. (March 25). Ithaca. Observed ~~on~~ apple.
- C. R. Crosby. (March 27). Bluff Point. Observed ~~on~~ apple.
- F. H. Lacy. (March 27). (March 28). Dutchess County. Very numerous.
- H. W. Fitch. (April 8). Ravena. Scarce.
(April 11). On 100 buds there were 111 green aphids.
This is probably a mixture of pomi and avenae.
- D. D. Ward. (April 9). Onondaga County. Many present. Mature stem mothers noticed.
- M. D. Leonard. (April 15). Catskill. Not uncommon in one unsprayed orchard. Scarce in orchards about Catskill which have been regularly sprayed.
- G. E. Smith. (April 9). Orleans County. All that had hatched before March 27 were destroyed by rain and cold.
- M. C. Hammond. (April 16). Orange County. Not so abundant as usual.
(April 23). Aphids still seem to be scarce in orchards.
- P. D. Rupert. (April 8). Wayne County. Not abundant.
- L. C. Tyler. (April 16). Genesee County. Scarce.
- D. C. Vann. (April 16). Monroe County. Very few can be found.
- L. H. Woodward. (April 16). Chataqua County. Not abundant.

ROSY APPLE APHID (Anuraphis roseus Baker).

NEW YORK.

P. J. Parrott. (April 4) Geneva. Abundant on apple buds. 25% are sorbi (roseus). 2 or 3 sorbi on a bud in many cases.

P. D. Rupert. (April 16). Wayne County. Several observed. As a rule, however, one has to hunt to find one of them in the majority of well sprayed orchards.

B. D. Rivenburg. (April 9). Columbia County. Not nearly so abundant as previous to the cold of March 28.

H. W. Fitch. (April 11). Ravena. On 100 buds 13 rosy aphids were present.

L. H. Woodward. (April 16). Chataqua County. No abundant.

D. C. Vann. (April 16). Monroe County. Very few can be found.

L. C. Tyler. (April 16). Genesee County. Scarce.

M. C. Hammond. (April 16). Orange County. Not as abundant as usual.

(April 23). Aphids still seem scarce in orchards observed.

D. D. Ward. (April 23). Onondaga County. Only a few noted. Held in check by rainy and cold weather.

MISCELLANEOUS APHIDS.

Aphis mali.

NEW YORK.

D. D. Ward. (April 23). Onondaga County. Only a few noted. Held in check by rainy and cold weather.

Erisoma lanigera.

UTAH.

V. W. Tarnner. (March 15). Active since March 15th. Doing much damage at St. George, Washington County.

Aphididae.

MASSACHUSETTS.

W. L. Baker. (April 4). Hanson in Plymouth County. More abundant than usual. The season is somewhat advanced. Buds of Baldwins expanded 1/4 inch; earlier varieties 1/2 inch; unseasonably early.

CONNECTICUT.

W. E. Britton. (April 19). Milford. On March 28 aphids had hatched and nearly every bud cluster had one or more aphid. Now nearly all have disappeared. Lady beetles and weather probably responsible. The weather has been cold with heavy rain-fall.

OHIO.

H. A. Gassard. (April 3 and 4). There were fewer eggs laid last fall than for the past 3 or 4 seasons. The warm weather will

doubtless operate against the aphids. Syphid flies were also quite abundant.

FRUIT TREE LEAF ROLLER (Archips argyrospila)

- NEW YORK. L. F. Strickland. (April 19). Niagara County. First larva observed on this date.
D. D. Ward. (April 23). Onondaga County. Hatched on this date.
H. B. Leonard. (April 15). Greene County. Only one found.
(April 15). Columbia County. Only two caterpillars found.
J. D. Palmer. (April 9). Ulster County. Very scarce.
- MONTANA. Extension News Letter (April 30). Fruit tree leaf roller serious in Bitter Root Valley.

CIGAR CASE BEARER (Coleophora flaccidella Fernald)

- NEW YORK. L. C. Tyler. (April 9). Genesee County. Plentiful.
J. B. Palmer. (April 9). Ulster County. Very scarce.
P. D. Rupert. (April 16). Wayne County. Many present in some orchards.
M. D. Leonard. (April 15). Catskill. Not uncommon in one unsprayed orchard.
D. C. Vann. (April 16). Monroe County. Found in some orchards.

PISTOL CASE BEARER (Coleophora malivorella Riley)

- NEW YORK. D. D. Ward. (April 2). Onondaga County. Not so abundant as last year. Moving to the buds on April 1st.
J. B. Palmer. (April 9). Ulster County. Very scarce.
E. P. Felt. (April 9). Southern Rensselaer County. First observed on the above date.
P. D. Rupert. (April 16). Wayne County. Many present in some orchards.
D. D. Ward. (April 16). Onondaga County. Causing injury in a few orchards.
D. C. Vann. (April 16). Monroe County. Found in some orchards.

RIBBED COCOON MAKER (Baculatrix pomifoliella)

- ARKANSAS. W. J. Baerg. (March 20). Began hatching at Fayetteville on this date.

BUD MOTH (Epiphyas cellana)

- NEW YORK. P. J. Parrott. (April 7). Observed eating apple buds at Geneva.
M. D. Leonard. (April 15). Not uncommon in one unsprayed orchard at Catskill.

APPLE RED BUG (Heterocordylus milimus)

NEW YORK.

P. J. Parrott. (April 11). Considerable injury is one orchard at Oaks Corners to the leaves of terminal growth by second instar nymphs. This is the earliest date we have ever observed the insect and pink spray: will probably not be observed until April 19th or 20th. Judging by blossoming of different fruits on the station grounds at Geneva the season is about 33 days ahead of last year.

D. D. Ward. (April 14). Onondaga County. First nymphs observed.

(April 19). Third stage nymphs found.

J. B. Palmer. (April 19). Milton, Ulster County. Numerous in orchards along the river. Some nymphs in second stage.

(April 23). First nymphs found April 19th on several farms.

P. D. Rupert. (April 20). Wayne County. One first stage nymph found which was duly hatched.

(April 20). One second stage nymph found.

WEST VIRGINIA. A. A. Gold. (April 1). I find this insect frequently near Raymond City in Putnam County. It frequently does serious damage in apple orchards.

TARNISHED PLANT BUG (Lygus pratensis).

NEW YORK.

P. J. Parrott. (April 6). Punctured apple buds at Geneva.

M. D. Leonard. (April 16). Several observed on apple buds at Germantown.

P. D. Rupert. (April 16). Wayne County. Several observed on apple buds.

TEAL CATERPILLAR (Malacosoma americana).

DELAWARE.

C. L. Houghton. (April 19). Webs numerous on apple and cherry. Eggs were hatched during the third week in March at Newark.

NORTH CAROLINA. Franklin Sherman. (March 20). Abnormally warm since March 1st. First nest of the season observed at Raleigh today. Eggs must have hatched about March 15th.

ARKANSAS.

W. J. Baerg. (March 20). First made appearance at Fayetteville.

UTAH.

V. W. Tanner. (March 15). Very abundant this year at St. George, Washington, County.

MISCELLANEOUS APPLE INSECTS.

FALL CANKER WORM (Alsophila borealis Harris)

OHIO.

H. A. Gassard. (April 9). This insect issues in the spring over northeastern Ohio and adults were observed appearing in numbers at Worcester during the last week in February. Last year unsprayed orchards about Worcester and at many points in northeastern Ohio were severely eaten. Patches of woodland consisting of elm and linden were nearly defoliated. We expect about the same amount of damage this year as last. The eggs have not begun to hatch.

SPRING CANKER WORM (Paleacrita vernata Peck)

WEST VIRGINIA

L. M. Peairs. (April 2). Moths observed on wing at Morgantown.

LEAFHOPPERS (Empoa rosae Lin. or unicolor Fitch).

NEW YORK

G. E. Smith. (April 23). Orleans County. Nymphs found hatching in abundance in a few orchards and scattering in most orchards.

Erythroneura (Tynphlocyba) obliqua Say

OHIO

H. A. Gassard. (April 9). Unusually abundant in the orchard of H. W. Schmitkons at Lorain. Very conspicuous flying out of the trees before the spraying gun.

(April 23). These insects are very numerous in some sections of the orchard, it being easy to find from one half dozen to a dozen on a single leaf. We previously encountered this species in great numbers in an apple orchard in Galia County, southwestern Ohio, about 1912 or 1913. It did considerable damage to the Galia orchard for two or three seasons, and the proprietor reports that considerable damage was done to the orchard at Lorain last year. This leaf-hopper has definite capacity for damage and must be regarded as an economic insect of considerable importance at times.

SAN JOSE SCALE (Aspidiotus perniciosus Comstock)

NEW YORK.

F. H. Lacy. (April 7) Dutchess County. Present in nearly every orchard.

H. W. Fitch. (April 16). Pavena. More abundant than last year.

ILLINOIS.

W. P. Flint. (April 16). More abundant in the southern half of the State. Counted the scale from several different orchards which showed that over 50% of the half-grown scale survived the winter. In very severe winters about 5 or 10% usually survive.

INDIANA.

Extension News Letter. (March 30). Abundant in southern half of the State.

MISSOURI.

L. Haseman. (April 7). The San Jose scale is attracting more than usual interest due to the fact that orchards have proven profitable for the past several years in Missouri. Most of the best orchards and orchard communities where the pest is present

are being brought under control. However, in a few cases promising orchards have been neglected and in such orchards sprays have been applied this spring.

P E A R.

PEAR THRIPS (Euthrips piri)

NEW YORK.

A. D. Buchholz. (March 26.). Germantown, Columbia County. Weather very warm. Thrips swarming in full force on buds. Keiffer pear buds too far advanced for effective spraying.

D. W. Rivenburg (March 30). Columbia County. Damage to buds not nearly so heavy as that of preceding years. Many thrips are present in the buds and others are entering.

(April 16). Eggs found on blossom pedicels.

(April 23). Eggs hatched and young at work.

J. B. Palmer. (April 9). Ulster County. Very abundant in many orchards.

(April 15). One to two thrips observed per bud on grapes in several sections.

(April 16). Abundant on pears and apples. Serious damage to Sutton apples, 60 to 70% of the buds being killed on several trees in two plantings.

A. L. Sheppard. (April 15). Oswego County. A few have been observed.

PEAR PSYLLA (Psylla pyricola Foerst.)

NEW YORK.

P. D. Rupert. (March 10) Wayne County. Adults observed.

(April 8). Ovipositing in considerable numbers in practically all orchards in the county.

(April 16). The majority of the eggs were deposited by April 13. There are few flies to be found on April 16.

D. W. Rivenburg. (March 30). Columbia County. Eggs in great abundance. Egg laying continued up to April 8 at least. No new laid eggs observed on April 8th.

(April 13). Eggs hatching in great numbers.

L. C. Tyler. (April 9). Genesee County. Eggs are much more abundant than last year.

(April 23). Nymphs have been hatching all the week. Many eggs found in tops of tall trees.

Hugh Glasgow. (April 20). Geneva. Eggs began hatching.

D. C. Vann. (April 16). Monroe County. Eggs have been deposited in great numbers. Very few flies can now be found. Eggs found hatching April 15th.

L. F. Strickland. (April 16). Niagara County. First egg found on March 23. First nymphs observed on April 11. Oviposition very heavy in all parts of the county and still incomplete.

D. D. Ward. (April 9). Onondaga County. Eggs found in numbers on pear trees throughout the county.

(April 23). Many eggs laid during the past 10 days and since the cluster-bud stage.

P. J. Parrot. (April 15). Ontario County. Extensive oviposition in the county. No eggs hatched yet and only a few hibernated adults were observed. Spraying for eggs with lime sulphur 1-8 practically completed by progressive growers.

G. E. Smith. (April 9). Orleans County. Flies and eggs dangerously plentiful in all orchards.

(April 19). Psylla eggs beginning to hatch. First nymph found today. Flies have about all disappeared.

(April 23). Nymphs found in second instar. Nymphs not plentiful as yet. Very few this season.

A. L. Sheppard. (April 16). Oswego County. Eggs fairly abundant.

H. W. Fitch. (April 8). Ravena. Flies and eggs very numerous.
(April 16). Eggs found hatching.

J. D. Palmer. (April 9). Ulster County. Flies abundant and eggs beginning to be laid.

(April 11). Abundant nymphs first observed April 11.

(April 23). Nymphs abundant and their numbers indicate severe infestation.

PEE A C H

BLACK PEACH APHID (Anuraphis persicae-niger Smith).

INDIANA.

J. J. Davis. The black peach aphid has been usually abundant in orchards at Mitchell, Indiana.

UTAH.

V. W. Tanner. (April 1). Black peach aphid doing considerable damage in some trees at Saint George, Washington County.

NORTH CAROLINA.

Franklin Sherman. (March 19). Black peach aphid (Aphis prunicola). Correspondence of late March and early April indicates that this species is perhaps more prevalent than usual. The weather has been abnormally warm since March 1st. The lady bug Adalia Bipunctata was observed attacking this aphid.

PEACH BORER (Synanthedon eitisosa Say).

ILLINOIS.

W. P. Flint. (April 16). Mild winter has favored the hibernation of the larvae of this insect; is probably more abundant than the average. Para-dichlorobenzene has given very satisfactory results in controlling the borer where properly applied.

MISCELLANEOUS FRUIT INSECTS

PLUM CURCULIO (Conotrachelus penuphar Hbst.)

NORTH CAROLINA.

Franklin Sherman. (March 19). First adult of the season observed today at Raleigh. The blossoms of this plum tree had fallen about four days before the beetle was taken. The season has been abnormally warm since March 1st.

GRAPE LEAF HOPPER (Erythroneura comes Say)

MICHIGAN.

R. H. Pettit. (March 15). "Right now the vineyards down at Paw Paw and Lawton are swarming with grape leafhoppers. We have had an open winter with very little cold weather and almost no snow and the hoppers have come out from their hibernating quarters and are now showing themselves. I hope the vineyard owners will become convinced that the logical way to control the grape leafhoppers is to rake up and burn rubbish late in the season. They surely will be convinced now that the grape leafhoppers do hibernate, as has been preached to them ever since I have been in Michigan."

"The Office of Deciduous Fruit Insect Investigations, Bureau of Entomology, advises that there is evidence that the grape leafhopper is apparently approaching another period of years of unusual abundance in the Great Lakes grape growing territory.

RASPBERRY BYTURUS (Byturus unicolor Say)

NEW YORK.

J. B. Palmer. (April 22). Ulster County. The first beetle was found today. This pest is annually destructive in this section and extensive control measures should be put in operation at once.

(April 22). The beetles are coming out in considerable numbers.

CURRENT APHID (Myzus ribis L.)

NEW YORK.

P. J. Parrott. (March 21). Newly hatched nymphs common at Geneva.

IMPORTED CURRENT WORM (Pteronidea ribesi Scop.)

DELAWARE.

C. L. Houghton. (April 6). A few females ovipositing today. Males very numerous. The weather is warm and bright. Observation made at Newark.

VIRGINIA.

Rex Hunt, F.F.B. (April 17). A very mild early spring with late frost. Larvae observed in enormous numbers. Entirely stripping gooseberry bushes.

Aspidiotus nebulosus Riley

FLORIDA

J. R. Watson. (April 15). This insect is much more numerous than in previous years and seems to be on the increase at Monticello. This case-bearer has been reported as doing considerable damage all over the pecan section.

Franklinella bispinosus projectus

FLORIDA.

J. R. Watson. (April 15). These thrips caused considerable damage to citrus while in bloom. They were much more numerous this year than usual over the whole State.

COMMON WHITE FLY (Dialeurodes citri)

FLORIDA.

J. Chaffin. (March 20). Adults of the first brood noticed on March 20 at Gainesville. This is about 20 or 30 days earlier than usual. No doubt due to the warm weather.

RUST MITE. (Eriophyes oleivorus)

FLORIDA.

J. R. Watson. (April 15). This insect seems to be more abundant than usual this year, but is less abundant this month than last. It appeared 15 or 20 days earlier than normally.

TRUCK CROP INSECTS

POTATO.

SEED CORN MAGGOT (Hylemyia cilicrura formerly Pegomyia fusciceps)

NORTH
CAROLINA

Franklin Sherman (April 6) Very serious outbreak of Seed corn maggot in the eastern part of North Carolina, covering Pitt, Beaufort, Tyrell and Pamlico counties, the maggots attacking seed potatoes in the soil before they sprout. This type of damage is an entirely new thing in our experience. Damage was first reported late in March and the insects are still at work. Mr. W. Mabey, Extension Entomologist, made careful counts in infested fields and found that 85% of the seed had been destroyed, necessitating replanting or abandoning the crop. He estimated that in the infested region the crop will be reduced 50% by the depredations of this insect. The infested region lies in the low costal plain and has a generally sandy loam soil. The weather this spring has been abnormally warm especially since March 1.

VIRGINIA.

W. J. Schoene (April 18) We have had a number of reports from the Truck Experiment Station, from County Agents, and from Dr. E. P. Fromme, the Plant Pathologist at the Experiment Station, regarding the prevalence of the Seed-corn maggot in Eastern Virginia.

Dr. Fromme has just spent a number of days in eastern Virginia in going over some of the potato fields. He reports that he is of the opinion that the Seed-corn maggot is not responsible for the primary injury; that the chief difficulty is that the potatoes are affected with the Fusarium rot which is the primary cause of the trouble. Dr. Fromme tells me that this fusarium disease of potatoes requires a very high temperature for development and it appears that the high temperatures were present at the planting time in the Eastern Shore this year. He further reports that he found some potatoes which were rotting and which were not infested with maggot.

Some years ago in making some collections of the closely related species Pegomyia brassicae I very frequently took the larvae of the seed corn maggot and I was unable to find these larvae in any but decaying tissue.

Mr. M. Shapovalov, of the Bureau of Plant Industry, U.S.D.A. in a report dated April 11-14 says ; The outbreak on the Eastern Shore of Virginia is quite general. Some perfect fields are to be found in central and northern Northampton County, but 15 % of hills missing is very common, 25% to 30% is frequent, and 50% to 75% has been observed.

The destruction is apparently brought about by two agencies: the Seed corn maggot and Fusarium spp. In certain cases the animal and plant parasites act singly and independently, in others they work together, making exact determination of the cause of trouble impossible. It appears that insect injury is predominant on the mainland while fungus rot is the outstanding feature on the peninsula.

On examination of a considerable number of hills clear cases of maggot injury could be seen.

High temperatures with low rainfall at planting time, soil type and drainage, storage and handling of the seed, and method of fertilized application, also seemed to be secondary limiting factors to the extent of damage in individual cases in this region.

W.H.White (B.E. April 21) The failure of the potatoes to germinate in a normal manner in some of the fields in the vicinity of Norfolk, Virginia, was due, in the writer's opinion, to the attack of maggots in some instances and to a fungus disease in others. In cases where the potatoes germinated but made a very slow growth and produced unhealthy plants, it was due to the attack of the maggot, in many instances accompanied by rot, but in cases where the potatoes failed to germinate, fungus rot was always present.

It would be impossible to estimate the damage caused by either of these agencies, because a large percentage of the seed pieces after being attacked germinated and the plants developed, but with much less vigor than under normal conditions and it is not possible that these plants will produce a full crop.

During the warm weather of March the adult of the Seed-corn maggot was very active and the flies were attracted to the potato fields by the decaying organic matter in the form of organic fertilizers such as fish scrap, tankage and dried blood. The plowing under of kale was also an attraction for the flies, as maggots of this species were usually abundant in such fields. Where uncut potatoes were examined they did not show any indication of either fungus or maggot injury.

MARYLAND

E.N.Cory (April 23) Received specimens from Hurlock with the following communication; " Under separate cover I am sending you a few pieces of potatoes I planted several weeks ago and I find that they are full of little worms which I am sure you will notice. They were planted on land on which crimson clover was turned under and the seed is home grown. I also planted some northern seed which does not show any rot."

COLORADO POTATO BEETLE (Lectinotarsa decimlineata)

- OHIO H.A. Gossard (April 9) Winter has been very mild and the season is two or three weeks ahead of normal. Potato beetles were scarce last year over most of the State. We think they will not be conspicuous this season.
- NORTH CAROLINA C.S. Brimley (March 26) Abnormally warm since March 1. The first adult seen in flight today at Raleigh.
- LOUISIANA T.H. Jones (March 14) Winter unusually mild. Spring three or four weeks earlier than the last few years. Eggs were noticed in outdoor cages on March 7 and in the field on March 14. In 1919 eggs were first noted on March 28 in the field.

LEAF FOOTED PLANT BUG (Leptoclossus phyllopus)

- LOUISIANA T.H. Jones (March 30) Adults damaging potatoes at Hammond. They congregate, especially on the tips of the growing shoots and, through feeding on them, cause them to wilt and die.

GREEN STINK BUG (Nezara viridula)

- LOUISIANA T.H. Jones (March 19) This insect has been reported by County Agent in Point Coupee Parish as injuring the crop of potatoes. The adults congregate especially on the tips of growing shoots and through feeding on them cause them to wilt and die. A cluster of eggs were observed on above date. In 1917 eggs were first noted in the field on April 13 at Baton Rouge.

CABBAGE.

HARLEQUIN CABBAGE BUG (Murgantia histrionica)

- D. C. Office of Truck Insect Investigations, B.E. (April 1) Observations during the last week in March indicate that a very high percentage of Harlequin cabbage bugs have successfully passed the winter in the vicinity of Washington. This insect normally is confined to the region south of Norfolk, Va. but during favorable years it has extended northward in destructive numbers into New Jersey, Ohio, and has even been found as far north as New York and New England.

NORTH CAROLINA Franklin Sherman (March 13) First adults of the season observed today. The weather has been abnormally warm since March 1. They are quite abundant, gregarious and mating.

SOUTH DAKOTA H.C. Severin (April 8) Winter exceptionally mild and spring very warm. The Harlequin cabbage bug was abundant and destructive last year and is expected to be more serious this year.

ARKANSAS W.J. Baerg (March 24) First adults observed at Fayetteville.

CABBAGE APHID (Aphis brassicae)

NORTH CAROLINA Franklin Sherman (Late March & early April) Complaints indicate that the insect is quite abundant, but probably not more so than usual for this season.

CABBAGE WORM (Pontia rapae)

WEST VIRGINIA L.M. Peairs (March 25) First adult seen on the wing at Morgantown.

NORTH CAROLINA C.S. Brimley (March 15) First adult of the season seen on March 1, had become common by March 15.

MISCELLANEOUS CABBAGE INSECTS.

Cabbage maggot (Phorbia brassicae)

NEW YORK H.C. Hockett (April 16) Nassau county. Eggs first found April 12 and maggots April 14. First fly observed April 7.

Millipedes.

NEW YORK H.C. Hockett (April 16) Nassau Co. Numerous among the stumps of cabbage grown for seed.

Mole Cricket (Scapteriscus didactylus)

ALABAMA W.C. Vail (March 26) This pest is increasing in seriousness. It seems to be worse on heavy moist soils but is common on well drained uplands. Damage was serious in the fall of 1920. Is already active this March.

BEAN INSECTS

MEXICAN BEAN BEETLE (*Epilachna corrupta*)

Alabama W.E.Hinds and N.F.Howard (March 22) In Birmingham section adults were active after March 1 and wgs were found by March 21. The adults are emerging in considerable numbers from hibernating quarters. It is evident that at least 20 % of last years beetles have successfully passed the winter. In view of the fact that a 4 % successful hibernation of the Boll weevil represents a serious infestation, the probable second brood of the Bean beetle will be extensive and injurious. At the time of writing, early garden beans are coming through the soil at Birmingham and ample food will be afforded for the first brood of larvae, unless the hibernated beetles destroy the crop; if this becomes the condition a serious and widespread migration may be expected with the result that the infested area may reach well into Georgia and Tennessee, by the end of the season.

BEAN LEAF BEETLE (*Ceratoma trifurcata*)

North Carolina C.S.Brimley (March 21) First adult of the season seen on sassafras blossoms at Raleigh.

SWEET POTATOE INSECTS.

SWEET POTATO WEEVIL (*Cylas formicarius*)

Florida A.C.Brown (April 15) The infested area in Baker County reduced about 75 % through eradication work carried on by the Bureau of Entomology and the State Plant Board of Florida.

SYMPHYLID MYRIAPOD

Miss. K.L.Cockerham. Sweet potatoes were damaged more than ordinarily by these myriapods over the entire southern half of the State. This damage was often mistaken for weevil injury. Our attention was called to it on numerous occasions. No myriapods were ever found in the tubers only the damage where it had tunneled into them.

STRAWBERRY INSECTS.

STRAWBERRY WEEVIL (Anthonomus signatus)

- NEW YORK J.B. Palmer (April 14) Ulster County, found one weevil.
D.V. Rivenburg (April 21) Beginning to do damage in Columbia County.

MISCELLANEOUS STRAWBERRY INSECTS.

Otiorhynchus rugifrons

- CALIF. H.S. Smith (April 1) Single infestation in the State in Alameda County. About 20 % of the plants in the infested field have been destroyed. Now under quarantine.

Phyllophaga spp.

- NEBRASKA M.H. Swenk (April 15) At this time there are numerous reports of injury by white grubs.

Red Spider (Tetranychus telarius L.)

- LOUISIANA T.H. Jones (April 13) A good deal of injury in Tangipahoa Parish.

Paria canella

- CALIF. H.S. Smith (March 15) Much more abundant than usual at Floren, Sacramento County.

Garden slug (Agriololimax agrestis)

- NEBRASKA M.H. Swenk (April 15) Noted last year for the first time in the State. First report of injury this year on April 11.

MISCELLANEOUS TRUCK INSECTS.

Garden slug (Agriololimax agrestis)

- OHIO H.A. Gossard (April 9) This animal has been a major pest for the past two or three summers, attacking potatoes and other truck crops.

Asparagus beetle (Crioceris asparagi)

- DELAWARE C.O. Houghton (April 8) Ovipositing at Newark.

- MARYLAND J.A. Hyslop (April 24) Adults mating and many eggs being laid in Montgomery County.

Pea aphid (Macrosiphum pisi Kalt.)

LOUISIANA T.H. Jones (April 13) Very mild winter and early spring, less rain fall than usual. Causing severe damage to vegetables this spring at Baton Rouge.

Green peach aphid (Myzus persicae Sulz.)

LOUISIANA T.H. Jones (April 13) Causing severe damage to vegetables this spring.

Striped cucumber beetle (Diabrotica vittata)

FLORIDA H.C. Artis (April 5) There was a serious outbreak of this insect in the Wauchula section in May 1920. Several acres of cucumbers were completely destroyed. The outbreak was checked by spraying with arsenate of lead.

Pesudococcus maritimus

FLORIDA J.A. Cheffin (March 20) This mealy bug is recorded as attacking avacado, tomato, and sweet potato on Dry Tortugas Island. It has not been found on the mainland of Florida. Was probably introduced to the island from the West Indies.

Fall army worm (Laphygma frugiperda)

FLORIDA G.F. Burden (April 4) Practically destroyed ten acres of tomatoes in one field, few present in all tomato fields in the vicinity of Boynton. 75 % of the plants were actually destroyed. This is the first time this pest has been noticed at this place.

Cotton aphid (Aphis gossypii)

FLORIDA A.H. Boyer (April 14) Causing considerable damage in some fields of cucumbers at Gainesville.

Onion thrips (Thrips tabaci)

FLORIDA J.L. Lazonby (April 14) damaged 20 % of the onion crop at Gainesville. More abundant than usual.

FOREST AND SHADE TREE INSECT

OYSTER SHELL SCALES (Lepidosaphes spp.)

ILLINOIS. W. P. Fligt (March 16) Attacking Dogwood, Ash, Lilac and Poplar. Number of trees die after two or three years infestation.

Lepidosaphes ulmi

Extension News Letter (March 30) Damage to shade trees serious.

INDIANA. J. J. Davis (April 15) Is increasing in abundance in this state especially on shade trees and ornamentals in the northern two-thirds of the State. In orchards where regular spray practices have been in use, it is not ordinarily a pest.

OHIO. Extension News Letter (March 30) Attacking shade trees, more abundant now than for several seasons.

UTAH. H. J. Pack (March 26) Appeared on this date in Cache County.

MISCELLANEOUS FOREST AND SHADE TREE INSECTS

BROWN-TAIL MOTH (Euproctis chysorrhoea)

MASSACHUSETTS Edward R. Farrar (April 12) About the same number of nests taken off 1200 apple trees as last year at Lincoln.

GYPSY MOTH (Porthetria dispar)

MASSACHUSETTS Edward R. Farrar (April 12) Three times as numerous at Lincoln. Number judged by amount of creosote used.

NEW YORK Chermes pinicorticis

C. R. Crosby (April 22) Attacking white pine in Martinsburg.

Lepidopterous Leaf-miner

CONNECTICUT W. E. Britton (April 19) An unfamiliar lepidopterous leaf-miner which has ruined the appearance and lowered the vitality of many trees. We are studying the pest.

RED SPIDERS

OHIO

H. A. Gossard (April 9) Mites or red spiders were quite abundant last summer and evergreens especially suffered from the attacks. Some trees were killed. Eggs were laid quite abundantly in the apple orchards last fall and are now hatching.

HICKORY BORER (Cyllene pictus)

NORTH

CAROLINA

L. M. Peairs (March 25) Adults were sent me where they were reported to be very abundant.

BAG WORM (Thyridopteryx ~~cephalopoda~~ cephalopoda)

MISSOURI

L. Haseman (April 7) Attacking evergreens, orchards, and shade trees. This caterpillar has been especially troublesome for the past two years, especially in cities and in orchards. In Jasper County a special campaign has been started to clean up the pest in the orchards and in the cities of Joplin, Carthage and Webb City. In severe cases the foliage of fruit and shade trees and evergreens may be completely destroyed. Spraying with an arsenical is recommended for fruit, shade and evergreen trees.

Pseudaulonia duplex Gll

Louisiana.

T. H. Jones (April 9) The scale insect Pseudaulonia duplex Gll. has recently attracted attention because of its occurrence in New Orleans. While the scale occurs on several ornamental plants the camphor trees appear most severely injured by it. It would seem that this insect has been recently and accidentally introduced into the City.

E. R. Barber (B. E. April 5) Upon my return (to New Orleans) in the beginning of last August, I noted this scale on a few trees around my house These trees were beginning to show signs of injury, a few of the lower branches were dying and a large number of the leaves were falling off. In the past eight months the trees for blocks around have been attacked by this pest.

Xylastodoris luteolus

FLORIDA

G. F. Mozzette (B. E. April 6) This species is at the present time very serious and destructive to the royal palm here. Apparently it is a species of Hemiptera, a very interesting form. I have never seen it before until now when people here commenced to complain about serious damage to their palms. The royal palms at this place are ten years of age and the superintendent tells me that he has never experienced this trouble before or noticed this pest. It may be something new which has crept in here.



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BUREAU OF ENTOMOLOGY
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DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING.

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. Eleger, 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 McMinville 48 per cent of the plants and 30 per cent of the tillers were infested. The area at McMinville 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 ALFAIFA

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 pannonica) 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 syrphus fly (Lesiothrips pyrastris) are the principal forms. Hymenopterous parasites are, and have been in previous outbreaks, most conspicuous by their absence. The fungus, Ernia aridis, 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 fungous disease, Emusa 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 fungous disease, Emusa 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.

- Northern grass worm (Drasteria erechtea Cramer.)
- New York. 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, Eurytmus 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. Lovett (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, Beaux 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 (Cammula 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."

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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.

MISCELLANEOUS APHIDS

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. McGleay 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 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 15 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 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 CANCKER-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.)

- io. 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.
- n- B. H. Walden (May 20). Locally common nearly every year but perhaps not in
cticut. the same localities as this year. Common at New Haven and Branford.
- w York. G. E. Smith (May 18). "Bad in neglected orchards in the southern part of
Orleans County."

TENT CATERPILLARS (Malacosoma americana Fab.)

- ryland. 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."
- w T. J. Headlee (April 27). "The apple-tree tent caterpillar has hatched
rsey. quite generally over the State, but is not doing any considerable damage."
- laware. 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."
- n- John T. Ashworth (May 17). "This insect has been scarce for three or four
cticut. 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."
- assa- Edward R. Farrar (May 13). "About twice as bad as usual in Lincoln."
ussetts.
- L. C. Midgeley (April 22). "Infestation is light as considered with other years in Wooster County."
- w 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 Pippin 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 cress, 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."

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

SAN JOSE SCALE (Aspidiotus perniciosus Comstock)

w 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.)

er 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.

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

isconsin. 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.)

ew 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.)

ew 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 protencheri 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 hubalus 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. F. Flint (April 23). "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 Pest.)

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. J. 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 (Orchids) in Hood River for first time this spring, in western Oregon (Lake 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 inconspicuus 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)

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.)

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)

gon. 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 (Diclerca divaricata Say)

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

P L U M

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

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, with 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 of 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 operation to control and prevent injury."
- Illinois. W.P. Flint (May 17). "More abundant than usual in southern Illinois."

PEACH TREE BORER (Aegeria exitiosa Say)

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.

ana. 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 year on account of the scarcity of labor."

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

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.)

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

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

BLISTER BEETLE (Pomphonoa aenea Say)

rgia. 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)

as. 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.)

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

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."

aware. 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 (Lecronidea 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. Pollistes 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 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."

G R A P E

GRAPE LEAF HOPPER (Typhlocyba comae 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 oleivorus 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 (Pachmaeus 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 budded 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."

SOUTHERN FIELD CROP INSECTS.

TOBACCO

TOBACCO FLEA-BEETLE (Epitrix parvula Fab.)

- ryland. 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."
- rginia. 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."
- ntucky. 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."

-60-
SUGAR CANE

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 ~~Waller~~ 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 continued 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-

achusetts. 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 12."

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 (Gannon), 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 28; 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 where 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 (Anolis 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 Moorestown and Haddonfield."

Otiocorynus rugifrons Gyll.

New York J. B. Palmer (May 14). "Very serious injury by grubs working in 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 Cr.)

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 pseudobrassicae 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 amaraciacae 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, N. Y. 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.

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

PINE

Pine Bark Aphid (Pineus strobi Htg.)

Ohio. 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 Salen, 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."

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 rambler 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 CHAFER (Macrodactylus 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. "

MISCELLANECUS 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. "

INSECTS ATTACKING MAN AND DOMESTIC
ANIMALS .

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."

THE INSECT PEST SURVEY BULLETIN.

A monthly review of entomological conditions throughout the United States.

Volume 1.

July 1, 1921.

Number 3.

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING.

OUTSTANDING ENTOMOLOGICAL FEATURES OF JUNE 1921.

The chinch bug situation continues to loom up as the most serious entomological situation in Indiana, southern Illinois, Missouri, northwestern corner of Ohio and northern Texas.

The Hessian fly situation is not generally as serious as anticipated. However, it is still a serious problem in Indiana and Missouri, while severe damage is reported from parts of North Carolina. A very general infestation but not serious in intensity is reported from Nebraska with a slight local outbreak in Oregon.

The most serious outbreaks of cutworm in the Upper Mississippi Valley are reported from North Dakota, Nebraska and Iowa; the outbreaks being complicated by the number of species involved.

An outbreak of the fall army-worm in Alabama may be the forerunner of a series of outbreaks in the Mississippi Valley.

The greater wheat stem maggot has developed a serious outbreak in Oregon and this insect is also reported as being decidedly on the increase in destructiveness in Illinois and Nebraska.

For the first time in the history of the State Entomological Service the pea aphid is occurring in serious numbers in Colorado. It is also reported as being unusually numerous in Nebraska.

Though a heavy brood of white grub is due this year, as yet no heavy outbreaks have been reported.

Grasshoppers are very serious in southwestern Iowa, northwestern Minnesota, parts of South Dakota, southern Nebraska and parts of Oregon, while a serious outbreak in Wisconsin is reported as being the worst since 1890.

Among the fruit insects the rose chafer is reported as being much more numerous than usual in New York, Massachusetts, Connecticut, Ohio and Indiana. Damage to grapes being the most conspicuous injury reported.

Heavy infestations of vineyards by the grape leaf hopper are reported from Columbia and Orange Counties, New York. This pest is also unusually abundant in Ohio and Nebraska.

West Virginia reports the plum curculio as worse this year than ever before, while Missouri reports the worst outbreak since 1906. It is also occurring in rather unusual numbers in Massachusetts, Connecticut, parts of New York, Delaware and Indiana.

The brown plum aphid is occurring in serious numbers in Missouri, Indiana and Georgia, while the mealy plum aphid is reported as being very serious in the Sacramento Valley in California.

In some of the raspberry districts in New York State the industry is being discontinued owing to the loss occasioned by the raspberry fruit worm.

The green apple aphid has developed so serious an outbreak in central New York that some nurseries are employing large numbers of additional men to control this pest.

In the Hood River Valley, Oregon, the fruit tree leaf roller is becoming an extremely destructive pest. Reports of serious injury are also being received from New York State.

Pear psylla is so serious in parts of New York as to occasion an extra emergency spraying for its control. Pear midge is also more destructive than it has been for many years in parts of New York.

The black peach aphid is occurring in serious numbers in Nebraska for the first time as far as the Experiment Station records go. It is so serious that trees are dying from the attack of this insect. It is also appearing as a serious pest for the first time in Washington State.

The Colorado potato beetle is appearing in large numbers from Long Island southward through New Jersey and Delaware, while outbreaks much more serious than originally anticipated are reported from Ohio, Wisconsin and Nebraska. The potato flea beetle is occurring as a serious pest in New York, New Jersey and Delaware.

The most serious outbreak of cabbage maggot that has occurred in recent years is under-way in southern New York State. This insect is also appearing in destructive numbers in Massachusetts, Ohio, northern Indiana and Oregon.

The rapid increase in the area determined as infested by the Mexican bean beetle in Georgia, Kentucky and Tennessee seems to indicate that a heavy fall migration of this insect took place late last season.

A serious outbreak of the fall webworm is reported from Louisiana. Present reports indicate that the extent of the outbreak ranges from Baton Rouge to New Orleans.

Serious losses in the calf crop are being occasioned by a bad outbreak of screw-worm in parts of Texas.

INSECT PEST SURVEY BULLETIN

Vol. 1

July 1, 1921.

No. 3

CEREAL AND FORAGE CROP INSECTS

WHEAT

CHINCH BUG (Blissus leucopterus Say)

- st
rginia W. E. Rumsey (May 23). "We have received no reports concerning chinch bugs in West Virginia this year."
- orgia A. C. Lewis (June 7). "The wheat is now being cut, and to date we have not received any complaint of these insects. So far as we know they are not present in Georgia."
- io H. A. Gossard (June 15). "As far as our present records go the chinch bug is only present in serious numbers in the northwestern corner of the State, northwest of a line running diagonally from the southwestern to the north-central boundaries of Paulding County, across the center of Defiance County, thence including all of Williams County with the exception of the southeastern corner, to the north-central part of Poulton County, affecting, in all, four counties."
- H. A. Gossard (June 23). "Young chinch bugs are reported quite numerous in Paulding County and Van Wert County. I have not yet heard from Defiance and Williams Counties farther to the north."
- diana J. J. Davis (June 10). "The chinch bug continues to loom up as a pest of great importance. Wheat harvest began in the southern end of Indiana on this date. Bugs are abundant in all sections previously reported." (June 15) "Indications still are that this insect will be a serious pest this summer."
- linois W. O. Davis (June 7). "Chinch bugs are more abundant than usual in Saline County."
- W. P. Flint (June 17). "In a number of counties small areas of oats have been killed. In a few cases in the southern half of the State entire fields of 10 to 15 acres of oats have been destroyed. Young chinch bugs observed mainly in the second and third instars. Many corn-fields in the infested areas are severely damaged where volunteer wheat was plowed for corn. Creosote barriers being used generally." (June 18) Chinch bug is less abundant in the area most heavily infested last year,

and much more abundant in the area slightly infested last year. Bugs are now in the second and third instars. The old bugs are dying rapidly. Eumicrosoma benefica is abundant."

Edward L. Dillon (June 17). "Chinch bugs are now found at the base of 90 per cent of the cornstalks examined near wheat or oat fields at Waverly. Wheat harvest has begun."

Nebraska M. H. Swenk (June 15). "The chinch bug appeared during latter May in plentiful numbers in the wheat fields of the counties along the Kansas line, from Pawnee County westward, but no serious injury has been reported."

Missouri L. A. Haseman. "Mr. Burrill has made a survey of the chinch bug situation in this State and reports that about 65 to 70 per cent of the counties in the State are known to be infested this summer. The outbreak last year covered a section in the east-central part of the State, extending east of a semicircular line which started on the north in central Marion County, extended westward to the western third of Gallaway County, southward to the northern third of Iron County, and ended in the central part of Perry County. All counties have been heard from with the exception of three and only about eleven report no infestation this year."

Alabama W. E. Hinds (June 2). "We have no complaint at all of chinch bugs this season; in fact, the species has never been common enough to be sent in here, during the fourteen years that I have been in the State. I think it does occur sometimes in northern Alabama but have never heard of it in any other section of the State."

Texas M. C. Tanquary (June 18). "Reported as being very destructive in Hill County."

HESSIAN FLY (Phytophaga destructor Say)

New York G. E. Smith (June 11). "Causing some loss this year but apparently not very numerous in Orleans County." (June 18) "Mostly in the flaxseed stage, considerable injury found in several fields; wheat harvest will start about July 4 or two weeks earlier than usual."

North Carolina Franklin Sherman (May). "Crop reporters in Piedmont (west-central section) have reported this insect as destructive in several counties but only a few such reports have come direct to me. I judge it to be somewhat more destructive than usual."

A. C. Foster (letter to R. J. Haskell, Plant Disease Survey, June 23). In Buncombe County I covered a large area inspecting wheat fields. The general opinion of the growers and county agents was that the wheat crop this year was the poorest they had seen in years, due partly to unfavorable weather conditions but mostly to damage done by the leaf rust and Hessian fly. In Wilkes County also the wheat crop was very poor, being caused by the unfavorable weather, the fly, and the rust.

- Indiana J. J. Davis (June 15). "The Hessian fly is abundant as reported in last letter, and fallen wheat is being noted in all sections. Farmers in some sections are cutting as early as possible, hoping to eliminate a portion of the losses due to late fallen wheat."
- Ohio T. H. Parks. "Greatly decreased as compared with 1920; only a few fields are visibly damaged. Infestation in the central counties will be near 10 per cent of the straw; this represents what survived of the late wave, or eggs which were deposited during the middle of October."
- H. A. Gossard (June 23). In most counties Hessian fly is nominally present and in those counties where the infestation runs higher than 10 to 15 per cent the percentage of parasitism is very high, generally in the neighborhood of 80 and 90 per cent.
- Minnesota C. N. Ainslie (May 24). "Quite a number of winter wheat fields were examined carefully but I could find no trace of Hessian fly in any of them."
- Wisconsin C. L. Fluke (June 8). Hessian fly is rare in Wisconsin but is more common than usual at Richland Center.
- Nebraska Myron H. Swenk (May 15). "Hessian fly is widely distributed in for the most part small and nondestructive numbers over southeastern Nebraska. In Washington County, however, this pest is present in decidedly injurious abundance, and some injury is being done in the extreme southeastern corner of the State also."
- Missouri L. Haseman (May 12). "In central Missouri they are now largely in the flaxseed stage, with as many as 40 odd flaxseed to a single tiller in some cases. (June 15) "A State-wide survey is being made which is not yet completed. Percentage infestation in the several counties is being worked out, but this is not yet completed. Practically the entire State with the exception of a small area along the northern border and about 15 counties in the south-central part of the State is infested."
- Oregon L. P. Rockwood (June 1). "Heavy infestation of spring and winter wheat at Pleasant Hill apparently due to favorable local conditions and the practice of planting wheat on wheat. The second spring generation were on the wing about June 1. Infestation ranging from nothing to 40 per cent."
- A. L. Lovett (June 17). Generally below average in abundance. Adults active June 1.

PALE WESTERN CUTWORM (Porosagrotis orthogonia Morr.)

- North Dakota C. N. Ainslie (June 4). "Several experiments with poisoned bran have been tried out at Beach without any marked success. Possibly the fact that several species may be present prevents these trials having the value they might possess, if they were contending only with Porosagrotis orthogonia. One reliable farmer told me yesterday of finding 17 cutworms in a space of one square foot in his field. In most cornfields I found one to 5 cutworms in every hill of very young corn."

WESTERN ARMY CUTWORM (Euxoa auxiliaris Grote)

Nebraska M. H. Swenk (May 15). "The most important insect outbreak during the month covered in this report has been one of the western army cutworm. These cutworms were more or less active during early April, but reports of injury were not received until April 20. Wheat and alfalfa were the crops injured and the reports of injury were from very widely separated localities (Scottsbluff County in the extreme western part of Nebraska, Phelps County in south-central, and Madison County in northeastern Nebraska). In Phelps County the injury was principally in the winter wheat, one field of which had 25 acres completely eaten off by April 22 in Madison County the injury was chiefly in alfalfa fields and for two weeks the young alfalfa leaves were eaten as fast as they came out. Poisoned bran mash bait was used effectively in all the outbreaks. The worms matured and entered the ground for pupation by May 1." (June 15) "Following the outbreak of the western army cutworm referred to above there was a heavy flight of the moths of this species during later May and early June. The moths began to fly in small numbers about the middle of May, but the flights did not become heavy until the week beginning May 22. During the latter part of that week and all of the following week the extreme abundance of these moths caused much comment. During the week of June 5 to 11 the numbers of these moths began diminishing rapidly and at the present time they are not present in conspicuous numbers. The area covered by this heavy flight of moths was that portion of the State lying East of the 98th meridian north of the Platte River, while south of the Platte River heavy flights were noted west of the 100th meridian and beyond. The flights were heaviest in the southeastern counties."

Iowa F. A. Fenton (May 31). "Moths of this insect are appearing in western and southern counties in this State by the millions. The infested region lies west of a line running from the northwestern corner of Dickinson County to the middle of Hardin County, thence to the middle of Dallas County and south of a line extending from the north-central border of Madison County along the southern border of Mahaska and Keokuk Counties, thence in a northeasterly direction across the center of Washington County to the southern third of Clinton County. Survey reports are not yet completed, but indications are that the pest will be much more numerous than two years ago. We have received reports of this same pest from Kansas and Nebraska." (Special Report No. 14.)

FALL ARMY WORM (Laphygma frugiperda S. & A.)

Alabama W. E. Hinds (June 2). "I have complaints of the fall army worm from Hatchachubee in Russell County, where 40 per cent of the stalks are now being attacked by young worms on a 10-acre tract. I expect this species to appear quite generally from now on as they were abundant last fall and parasites were not numerous."

WHEAT-HEAD ARMY WORM (Heliophila albilinea Hübn.†)

Nebraska M. H. Swenk (June 15). "Moths of the wheat-head army worm were flying commonly during the latter part of May in southeastern Nebraska and some injury by this pest is anticipated during later June."

WESTERN WHEAT-STEM MAGGOT (Hyalopoda caryalis Gillette)

Nebraska Myron H. Swenk (May 15). "The outbreak of western wheat-stem maggot reported last month which was brought to our attention on April 9 proved to be very local, involving only a small area in Morrill County, between Bridgeport and Alliance. The maggots continued boring in the stem of the wheat in the infested fields until about April 20. On May 6 flies began emerging from puparia in our rearing cages and continued coming out for several days. These puparia have developed from maggots collected April 11. Whether these flies will start another brood of maggots on the present wheat crop is yet to be determined."

WHEAT STRAW-WORM (Harmolita grande Riley)

Missouri Leonard Haseman (June 15). "This insect is occurring in about normal numbers at Columbia. In laboratory, adults emerged May 7 to 10. One wingless form emerged May 10."

JOINTWORM (Harmolita tritici Fitch)

Indiana J. J. Davis (June 15). "The jointworm is apparently more abundant than last year but does not yet appear as a serious menace."

Ohio H. A. Gossard (June 23). There is very little jointworm, though 3 to 5 percent infestation is reported from a few counties. Practically all northeastern counties show 1 or 2 per cent of H. vaginicola in every field.

GREATER WHEAT STEM MAGGOT (Meromyza americana Fitch)

Oregon A. L. Lovett (telegram, July 1). Serious infestation of Meromyza americana on spring wheat in Union County, Oregon. Hundreds of acres with from 10 to 75 per cent infestation. Date of sowing of little importance. Volunteer wheat main source of contamination. Main brood are mature larvae or pupae. Scattering adults, eggs, and young larvae are to be found.

Illinois W. P. Flint (June 19). "Much more abundant than usual in central and northern part of State. Reports of from 5 to 7 per cent damage have been received."

Nebraska M. H. Swenk (June 15). "Scattering injury by the greater wheat-stem maggot was noticeable in eastern Nebraska during the second week in June."

GREEN BUG (Toxoptera graminum Rond.)

Missouri A. C. Burrill. "Found this insect with Macrosiphum sp. and Aphis avenae in Perry and Mississippi Counties where oats were damaged from 50 to 75 per cent in Perry County, and 100 per cent in parts of Mississippi County. The infestation has now cleared up."

Texas J. B. Watkins (May 27). "Unusually heavy infestation in Cooke, Grayson, Denton, Collin, Fannin, Hunt, Dallas, Rockwall, Ellis, Hill, Somervell,

Erath, Hamilton, Bosque, McLennan, Coryell, and Bell Counties. The parasite Lysiphlebus tritici came too late to be of much help."

CORN-LEAF BLOTCH MINER or WHEAT LEAF MINER (Agromyza parvicornis Loew)

Ohio H. A. Gossard (June 23). The wheat leaf-miner is very abundant in Wayne County. In some fields 70 per cent of the leaves are mined out.

WHEAT MIDGE (Contarinia tritici Kirby)

Ohio H. A. Gossard (June 23). Wheat midge is a serious pest in a few of the south-central counties. This insect will probably do as much or more damage this year as any other wheat insect.

T. H. Parks. "Wheat midge is very bad in some Ohio counties. Has been increasing in numbers for three years; in some fields 20 per cent of the kernels are affected."

MEADOW PLANT-BUG (Miris dolabratus L.)

Indiana H. F. Dietz (June 15). "The meadow plant-bug has been collected in large numbers from lawns, meadows, and wheat and oat fields around Indianapolis."

TARNISHED PLANT-BUG (Lygus pratensis L.)

Nebraska M. H. Swenk (May 15). "The rather unusual numbers of tarnished plant-bugs reported from wheat fields in April were in evidence in the alfalfa fields in early May, but no obvious injury was being done by them except in a few cases."

WIREWORMS (Melanotus pilosus Blatch.)

Nebraska M. H. Swenk (April 15). "In Clay County a species of wireworm has been injuriously numerous in small grain fields; oat fields planted about March 15 were in some cases killed out and had to be reseeded by April 20. In some localities wheat fields had the extreme bases of the stems badly gnawed by these worms in early May to the obvious detriment of some of the fields."

CLOVER LEAFHOPPER (Agallia sanguinolenta Prov.)

Nebraska M. H. Swenk (May 15). "The rather unusual numbers of clover leafhoppers reported from wheat fields in April were in evidence in alfalfa fields in early May but no obvious injury was being done by them except in a few cases."

ALFALFA

PEA APHIS (Illinoia pisi Kalt.)

Nebraska M. H. Swenk (May 14). "The pea aphid was reported as unusually numerous in alfalfa fields in southeastern Nebraska, from Richardson County to Gage County. Some rather serious injury by this pest is expected during this next week."

Colorado C. P. Gillette (May 27). "While we have noted the overwintering of this aphid for many years on alfalfa plants in protected places on college campus at Fort Collins we have never known it to be abundant enough to attract the attention of farmers until this spring. On May 4 a portion of an alfalfa plant having upon it a considerable number of coccinellid larvae was received from a stock farm near Westminster just north of Denver. The statement was made that many acres of alfalfa on this farm were turning brown and dying from the attacks of these "Worms". Mr. C. L. Corkins, of this office, was sent to investigate the trouble and found the damage due to the pea aphid. A few other fields, where some damage has been done, have been found, but the damage has not been extensive. On the college campus there are small patches of alfalfa on the south side of buildings that have been killed down by this louse. The unusual presence of this insect this spring is probably due to the mild winter which has permitted an abnormal number of the lice to survive the cold weather."

Oregon L. P. Rockwood (June 11). "Only one field in the vicinity of Forest Grove has been seen which was seriously injured. This was in vetch and the damage estimated at about 50 per cent of the crop. This was a field consisting of 5 acres of early fall sowing. Several coccinellids and 3 species of syrphus flies have eaten about 75 to 80 per cent of the aphids. This field is bordered throughout its entire length by an early spring sown field of the same variety of vetch which was not at all injured; patches of purple vetch stood out prominently in the injured field and these plants were not injured by the aphids."

A. L. Lovett (June 17). "This insect is generally reduced in numbers, or has disappeared from the fields at this time. Natural enemies are responsible for 80 per cent of the decrease. Five species of coccinellids and three species of syrphids are the main parasitic forms. Serious injury on vetch in Western Oregon is confined to an occasional early sown field, or volunteer field. Injury is more severe on peas and alfalfa in Umatilla County (Dean) but decreased abundance of aphids and injury is evident since the middle of May."

ALFALFA WEBWORM (Loxostege similalis Guen.)

Colorado C. P. Gillette (May 22). "Moths have been received from different localities beginning early in May and indicating that this insect will be common and possibly very abundant over much of the alfalfa growing territory from Rocky Ford in the lower Arkansas Valley to Fort Collins."

SUGAR BEET WEBWORM (Loxostege sticticalis L.)

Colorado C. P. Gillette (May 22). "Moths were flying in moderate numbers to lights in northern Colorado on May 20. Complaints of injury to new seedings of alfalfa in the Fort Collins district are also being made."

STRIPED FLEA BEETLE (Phyllotreta vittata Fab.)

Missouri S. M. Jordan, State Board of Agriculture (June 11). "This insect

is much more numerous than usual on alfalfa at Columbia and Keytesville."

PALE STRIPED FLEA-BEETLE (Systema blanda Melsh.)

Michigan L. G. Gentner (June 20). "First noted this insect two weeks ago shortly after young alfalfa plants came through. They eat young leaves and the growing centers and have damaged the crop about 10 per cent. At present the beetles are disappearing and the majority of the plants are putting out new growth. They first appeared near wooded and weedy land."

CLOVER-LEAF WEEVIL (Hypera punctata Fab.)

California H. S. Smith (June 5). "Serious damage to small fields in Shasta County. This is the first occurrence of this insect^{been} in California as a pest although it is recorded as having/collected in the San Francisco Bay Region."

NEMATODES

Nebraska M. H. Swenk (May 5). "Alfalfa roots were found bored by nematodes in a field in Madison County that was suffering from crown rot and in which the roots were tending to decay."

CLOVER

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

New York J. D. Detwiler (May 28). "The beetles are still fairly abundant and working in the axillary buds and in the heads; no pupa observed as yet."

Ohio T. H. Parks (June 10). "Damage was severe in seven western Ohio counties. Transformation to the beetles took place June 1 to 10. Some larvae were killed by fungus after the cocoons were spun."

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 increasing. The insect causing the damage is the lesser clover-leaf weevil. We found the larvae in all sizes from the very smallest to those nearly full grown. This is for central Indiana."

Illinois W. P. Flint (Jun 19). "More numerous than usual over the eastern two-thirds of the State, wherein 50 per cent of the heads are infested. One hymenopterous parasite has been observed. Nearly all of the weevils are in the adult stage."

Oregon L. P. Rockwood (June 9). "This insect is more numerous than usual at Forest Grove. The damage is decidedly more noticeable this month than last. The distribution was determined last month to extend to near Yamhill in Willamette Valley and Pacific City on the Coast."

CLOVER-SEED MIDGE (Dasyneura leguminicola Lint.)

Oregon L. P. Rockwood (telegram, June 6). "Clover-flower midge present in ~~Willamette~~ Willamette Valley in numbers sufficient to cut seed yield if weather July 1 is favorable to second generation. Advise red clover hay be off fields by June 15. Lovett advised by wire tonight. (Letter, June 11). First generation of this insect is present in sufficient numbers to eat into the seed crop seriously in the second generation if weather of the last of June and first of July furnishes sufficient moisture for a maximum second generation. The rainy fall of 1920 and spring of 1921 were probably favorable to this species."

A. L. Lovett (June 17). "Generally present in about average numbers but in excess of past three years; excessive fall and spring rains probably favorable."

CLOVER APHIS (Anuraphis bakeri Cowan)

Oregon L. P. Rockwood (June 11). "These aphids are now very thick on roadside plants and along borders of small fields about Forest Grove. They are very scattering in the clover fields but with favorable weather may cause damage to the seed crop in July and August."

A. L. Lovett (June 17). "Increasing in numbers, probably average number now present in northern Willamette Valley."

CLOVER TYCHIVUS (Tychivus picirostris Fab.)

New York J. D. Detwiler (May 28). "Beetles fairly abundant in Ithaca, destroying the anthers of flowers. They are now laying eggs."

CORN

STALK BORER (Papaipema nitela Guen.)

Nebraska M. H. Swenk (June 11). "First reports of injury to young corn by the stalk borer were received today."

CORN EARWORM (Chloridea obsoleta Fab.)

Virginia K. M. King (May 28). "Eggs found on early corn on this date. Were the first found this year, near Charlottesville. First adult captured on June 2."

Florida Jeff Chaffin (June 20). "More abundant than usual throughout the State; from 10 to 25 per cent of the crop has been damaged. During the past month many reports of serious damage have been received."

Kansas J. W. McCulloch (June 21). "Usually the first brood of corn earworm/scarcely noticed in field corn. This year, however, both eggs and larvae have been exceptionally abundant."

ARMY WORM (Cirphis unipuncta Haw.)

Illinois W. P. Flint (June 20). "Larvae have been abundant in rank wheat fields and in a few cases have migrated out to fields of corn. Poisoned bran without fruit has been very effective."

Missouri A. C. Burrill (June 3). "Usual local epidemic near Carrollton. About 50 per cent of crop damaged."

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

South Carolina S. E. McClendon (April 20). "Distribution wide in Berkeley County. Some entire crops destroyed."

S. C. Stribling (May 13). "Practically all over Cherokee County considerable damage has been done to early corn."

R. H. Lemon (May 13). "Locally destructive in Fairfield County."

WIREWORMS (Agriotes mancus Say et al.)

New York C. R. Crosby and assistants report that 25 per cent of a corn stand has been killed at Danby in Tompkins County. This field was in oats and barley in 1918 - in meadows in 1919 and 1920 - and planted to corn this spring; as many as 17 wireworms were found in some hills. An entire stand on a quarter of an acre was killed out at Courtland; three or four acres had 25 per cent of the stem injured; field was in meadow last year. In both places the wireworm concerned was Agriotes mancus.

Illinois E. L. Dillon (June 17). "Farmers at Waverly report loss of corn stand planted in sod ground. Wireworms eating out the kernels in some cases. We found this to be true after the corn had sprouted. Replanting was necessary in several cases."

North Carolina Franklin Sherman (May). "Correspondence indicates more injury than usual to corn, especially on lowlands."

MAIZE BILLBUG (Sphenophorus maidis Chitt.)

Missouri Leonard Haseman (June 3). "Messrs. Burrill and Winkler report very serious injury in Missouri River bottoms near sloughs, etc.. In Carroll County 98 per cent of the crop is infested. Every plant showing feeding perforations of these insects, sometimes combined with the work of Diabrotica 12-punctata. A large species like S. robustus in color but twice as long was also present. Also receive reports of damage from Perry County."

PALE-STRIPED FLEA-BEETLE (Systena blanda Melsh.)

Indiana J. J. Davis (June 15). "Flea-beetles appeared in unusual abundance this year, damaging corn. The insect responsible in the southwestern section, south of Terre Haute, is a small black species, while the species responsible for the damage in west-central Indiana is a pale striped flea-beetle, probably Systena blanda."

BRASSY FLEA-BEETLE (Chaetocnema pulicaria Melsh.)

Indiana E. E. Stimson, county agent, reports this insect as doing damage to corn in Orange County. Specimen sent to J. J. Davis for identification.

BROWN COLASPIS (Colaspis brunnea Fab.)

Illinois W. P. Flint (June 19). "Two fields of corn in the western part of the State, both in clover in 1920, were severely damaged. Larvae full grown by June 7."

CORN ROOT-APHIS (Anuraphis maidi-radicis Forbes)

Missouri A. C. Burrill (June 7). "Insect extremely scarce at Shelbyville. Complaints of root aphid found to be erroneous."

CORN LEAF-APHIS (Aphis maidis Fitch)

Kansas J. W. McColloch (June 21). "The corn leaf-aphid has made its appearance in corn two weeks earlier than usual and is causing considerable injury."

WHITE GRUBS (Phyllophaga spp.)

New York E. P. Felt (April 28). "June beetles were swarming in large numbers as early as the evening of April 28, according to report received from Roy Latham, Orient, Suffolk County."

L. F. Strickland (June 13). "Very rare. No beetles observed in Niagara County."

Illinois W. P. Flint (June 20). "Reported from several localities in northern part of the State, but no general outbreak."

Iowa H. E. Jaques (letter June 25 to W. R. Walton). "White grubs seem to be unusually abundant in our part (southern) of the State and considerable complaint is being made."

Wisconsin S. B. Fracker. "Fond du Lac and southwest to Grant County have more of this insect than in 1919 and 1920, but less than in 1912-15-18. About as much damage on sod land as was expected. A few reports received from northern Counties."

Missouri A. C. Burrill (May 17). "A heavy flight of this insect took place on this date, east of Fredericktown. (June 7). First reported from Shelbyville on this date. Two or three more flights of June beetles have occurred since last report."

GRASSHOPPERS (Acridiidae)

New York L. C. Tyler (June 4). "Melanoplus atlanis or M. femurrubrum appearing in great numbers at Alabama on muck land. They are all immature."

Illinois W. P. Flint (June 19). "Young grasshoppers abundant locally in a few areas over the southern two-thirds of the State. No general outbreak is expected."

Iowa F. A. Fenton. "I have just returned from the southwestern part of the State in Mills County and find that grasshoppers there are more numerous than ever before and are doing quite a bit of damage. Whether or not this is the beginning of a more or less extensive outbreak I am not certain. The species concerned is the two striped grasshopper."

Wisconsin H. F. Wilson (June 20). "Grasshoppers are appearing in great numbers throughout the northern and northeastern portions of the State. We are trying to organize our growers in a poison campaign and hoping to prevent any serious damage."

S. B. Fracker (June 24). "The worst outbreak since 1890 is under way in northern Wisconsin north of Barron, Stevens Point, and Green Bay. Blister beetle, Epicauta cinerea, becoming numerous, also a bacterial disease has been found. Poisoned bait is being used by the ton in Door, Florence, and Shawano Counties, and work is beginning in Forest, Price, and Portage Counties."

Minnesota Stewart Lockwood (May 24). "I have just returned from a trip to Minnesota. We found a large quantity of grasshopper eggs in the extreme northwestern corner, namely Kittson County. Here the grasshopper eggs range 40 to 50 pods to the square foot; in some localities egg parasites were noticed fairly abundant, but not in large enough numbers to help much for this year. Grasshoppers were first noticed hatching May 11."

South Dakota A. L. Ford (May 16). "Along White River bottoms grasshopper eggs are very numerous; these have passed the winter in sound condition; an outbreak is practically assured for this locality. Eggs are confined to the bottoms. Blister beetles are abundant."

H. C. Severin (May 23). "Grasshoppers have hatched in large numbers in Tripp County."

Nebraska M. H. Swenk (June 15). "Grasshoppers were hatching out in southern Nebraska during the last two weeks in May, and injury began to be noticed by the second week in June. Rather larger numbers than usual are reported from Otoe, Clay, and Fair Counties. The grasshoppers hatched out very irregularly in southeastern Nebraska this spring, there being very few of them in some places where they were abundant last fall, while in other places where they were no more abundant last fall they have hatched out in considerable numbers."

Oregon A. L. Lovett (June 17). "Outbreaks of Camnula pellucida are reported from Lake, Klamath, Crook, and Deschutes Counties. Eggs hatching May 5 to 20. Organized community poisoning campaign in egg beds has been successful. Lake County drive was completed by June 9."

FRUIT INSECTS

2.

APPLE

GREEN APPLE APHIS (Aphis pomi DeG.)

- New York. C. R. Crosby and assistants (June 18) report this insect as dangerously abundant in Orleans County and in much smaller numbers than usual in Ulster, Chautauqua, Albany, Onondaga, Genesee and Niagara Counties. Has appeared in considerable numbers in several young apple orchards in Columbia County.
- P. J. Parrott (June 22). "Serious outbreak on nursery stock at Geneva. One firm has forty men dipping the infested tips."
- West Virginia T. D. Gray (April 21). "Quite numerous in Tyler County, apparently being very badly infested with parasitic fungus."
- Ohio H. A. Gossard (June 23). "The green apple aphid threatened much damage a few weeks ago, but syrphus flies, lady bugs, and other natural enemies seem to have the upper hand with these insects at the present time and we do not anticipate disastrous damage anywhere."
- Indiana J. J. Davis (June 15). "The green apple aphid is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."
- Oregon A. L. Lovett (June 17). "Hood River and Willamette Valley below the average. Materially decreased lately, due to ~~Phenolidae~~ and ~~syrphids~~. At Milton (Hopson) outbreak is about average."

APPLE-GRAIN APHIS (Rhopalosiphum prunifoliae Fitch)

- New York C. R. Crosby and assistants. "Was quite numerous earlier in the season but has now left the apples in Chautauqua County. Also reported as very scarce in Genesee, Niagara and Orleans Counties."

ROSY APPLE APHIS (Anuraphis roseus Baker)

- Massachusetts R. A. Van Meter (June 17). "A severe infestation of this insect occurred last year in Plymouth County. Have not observed it this year. Very few aphids of any kind are present in the orchards."
- New York C. R. Crosby and assistants report this insect as more abundant than usual in Wayne County, where it is appearing in threatening numbers. Also seriously abundant in Genesee, Ulster, and Chautauqua Counties. Reported as doing slight damage in Onondaga, Niagara, Columbia, Albany, and Orleans Counties.
- Delaware J. F. Adams (May 19). "Much more abundant in May than in April. Ladybirds were very active in April but not so evident in May. By June 2 they became numerous enough to infest about one per cent of the tips."
- Ohio E. A. Gossard (June 23). "Rosy apple aphid has been found quite abundant in a few orchards."
- Indiana J. J. Davis (June 15). "The rosy apple aphid is one of the species most commonly brought to the attention of this office. Will probably be a serious pest this year from indications during the last half of May."
- Oregon A. L. Lovett (June 17). "Southern Oregon; Average, damage slight, most injury to fruit on interior of trees. Willamette Valley; Slightly below the average, Baldwins show particularly serious injury, mostly on the northwestern side of trees, probable damage 5 to 15 per cent. Hood River: Injury on unsprayed trees 20 per cent. Milton (Hopson): Worse than usual, injury about 10 per cent. Found aphids had practically left the apples on June 14 in all sections."

WOOLLY APPLE APHIS (Eriosoma lanigerum Hausm.)

- New York C. R. Crosby and assistants. "Occasional light infestations in Orleans, Niagara, Chautauqua, Ulster, Genesee, Albany, and Columbia Counties."
- Indiana J. J. Davis (June 15). "The woolly apple aphid is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."

- Missouri L. Haseman. "This spring for the first time this louse has attacked elm tree trunks, as a typical woolly aphis as on the apples. At present apple twigs and patches on the trunks are white with these lice, which are very abundant about Columbia, Peculiar and Kansas City."
- Oregon A. L. Lovett (June 17). "Southern Oregon: About average abundance, increasing on the branches, no serious injury. Milton (Hopson): Seriously abundant, worst outbreak since 1918."

CODLING MOTH (Carpocapsa pomonella L.)

- New York L. F. Strickland (June 11). "Eggs found early in the week of June 6 in Niagara County. This is the earliest record for this county since 1912. Only a few eggs were found, however, and no fresh ones have been observed since."
- C. R. Crosby and assistants report this insect as in normal and subnormal numbers in Columbia, Ulster, Orleans, and Chautauqua Counties. Eggs were just beginning to hatch on June 15 in Orleans County and eggs were first observed on June 7 in Chautauqua County.
- Indiana J. J. Davis (June 15). "The codling moth does not seem to be as abundant as usual. The first larvae of the second generation began spinning cocoons within the past day or so at Lafayette."
- Illinois W. P. Flint (June 20). "About 95 per cent of the fruit crop was destroyed by the late frosts. Adults of the first brood of codling moth have been very abundant. Emergence ceased in Southern Illinois about June 7. In central Illinois a few are still emerging. Larvae were under bands in southern Illinois on June 5 and in central Illinois on June 15."
- South Dakota H. C. Severin (May 24). "Moths making their first appearance at Brookings today."
- Oregon A. L. Lovett. "Hood River: Adults observed May 14 (Childs); about 33 per cent hang over as larvae. The first eggs observed May 21. Medford: First larvae observed June 1. Fungous disease present; of small importance however. Corvallis: First eggs observed May 25; about 20 per cent hang over as larvae; first eggs observed June 4; first larvae June 14. Extra cover spray probably due for the later emerging moths."

RIBBED COCOON MAKER (Bucculatrix pomifoliella Clem.)

New York

C. R. Crosby and assistants reported as occurring in very small numbers in Albany, Onondaga, Chautauqua, Genesee, and Columbia Counties.

FRUIT TREE LEAF-ROLLER (Archips argyrospila Walk.)

New York

L. F. Strickland (June 18). "Twice as abundant as usual in Niagara County."

C. R. Crosby and assistants report this insect as very abundant and destructive in a large percentage of the orchards, being unusually destructive on nearly all varieties of fruit in Orleans County, often being very plentiful in some well sprayed orchards. Larvae had practically all pupated prior to June 11 in Orleans County. Causing considerable damage in Genesee County and present in considerable numbers in Orange and Ulster Counties. The insect is more abundant than usual but doing no serious damage in Niagara County, where the moths were emerging on June 11. The insect has also been reported in about normal number in Albany, Chautauqua, and Onondaga Counties and very scarce in Columbia County.

Oregon

A. L. Lovett (June 17). "Hood River (Childs): Unusually abundant and serious in recently invaded areas. Oil spraying effective when intelligently done. Parasites very rare. First pupa observed June 4."

CIGAR CASE-BEARER (Coleophora fletcherella Fernald)

New York

C. R. Crosby and assistants report this insect as occurring in considerable numbers, especially in unsprayed orchards in Onondaga, Orleans, and Genesee Counties and as not serious, though present, in Chautauqua, Albany, and Columbia Counties.

L. F. Strickland (June 18). "Present in normal numbers but little damage being done in Niagara County."

PISTOL CASE-BEARER (Coleophora malivorella Riley)

New York

C. R. Crosby and assistants report this insect as very abundant in old orchards and in poorly sprayed orchards in Orleans County, as very abundant in Genesee County, and as rare this year in Ulster and Albany Counties. None were reported from Chautauqua County.

BUD MOTH (Tmetocera ocellana Schif.)

New York C. R. Crosby and assistants report this insect as very abundant and injurious in Albany, Genesee, and Orleans Counties and as occurring in small numbers in Onondaga, Columbia, Chautauqua, and Ulster Counties. In the last county they pupated on May 24.

L. F. Strickland (June 18). "Not as numerous as usual in Niagara County this year."

Oregon A. L. Lovett (June 17). "Generally prevalent in western Oregon. Abundance and injury average or slightly above."

GREEN FRUIT WORM (Xylina antennata Walk.)

New York C. R. Crosby and assistants report this insect as in less than normal numbers in Onondaga, Albany, Columbia, Orleans, Genesee, Ulster and Niagara Counties. Present in about normal numbers in Chautauqua County, where they had pupated by June 18. Injury quite common up to June 10 in Ulster County.

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma S&A).

New York C. R. Crosby and assistants report this insect as present in about normal numbers but not at all serious in Columbia, Ulster, Orleans, Chautauqua, and Niagara Counties.

TENT CATERPILLAR (Malacosoma americana Fab.)

New York E. P. Felt (June 1). "Mr. Roy Latham reports the apple tent caterpillar about as abundant on wild cherry and apple in Suffolk County as last year. Nearly all the nests are emptied by insectivorous birds."

C. R. Crosby and assistants report this insect as more common than last year though still scarce in Tompkins County, nearly all the larvae being killed by parasites; as quite plentiful in Onondaga County; common but not abundant in Ulster County; and a few present in Genesee, Columbia, and Chautauqua Counties."

L. F. Strickland (June 18). "No tents observed in Niagara County."

South Carolina C. L. Baxter (April). "This insect is quite widely distributed about Beaufort."

FOREST TENT CATERPILLAR (Malacosoma disstria Hübner.)

South Dakota H. C. Severin (May 22). "Larvae about one-half to three-quarters of an inch long at Brookings."

SPRING CANKERWORM (Paleacrita vernata Peck)

New York E. P. Felt. "Mr. G. F. Wheaton and J. A. Thomson report that the spring cankerworm has seriously damaged a number of unsprayed orchards in Ontario County. Most of the insects had pupated by May 31. Some poorly sprayed orchards were defoliated in the town of Penfield, Monroe County, on June 2."

C. R. Crosby and assistants report this insect as continuing its destructive work and doing more damage than last year in Genesee County; denuding the leaves in several trees in Erie County; at least a hundred trees completely defoliated in Genesee County; two outbreaks earlier in the month in Niagara County; abundant in uncared for orchards in the Southern part of Orleans County; and very scarce in Onondaga County.

Indiana J. J. Davis (June 15). "Spring cankerworms (?) have been reported from many sections of the State and reports indicate the worst infestation and the greatest damage in several years."

Wisconsin H. F. Wilson (June 4). "Nearly every tree is being stripped in Southern Wisconsin, the crop for this year being ruined. Infestations especially serious in Dane, Washington, Juneau, and Waukesha Counties."

(June 20). "Causing a tremendous amount of damage throughout the southern and western portions of the State."

S. P. Fracker (June 15). "More common than ever before. Complete defoliation of from 50 to 75 per cent of the orchards in several counties, extending from Madison to Green Bay and eastward. Damage completed by June 15."

FALL CANKERWORM (Alsophila pometaria Har.)

New York L. F. Strickland (May 24). "Cankerworms were attacking apple and pear at Rockport, Niagara County, being more abundant than last year."

North Carolina Franklin Sherman (May 29). "Fall cankerworm reported as being now evident in certain of our mountain areas. This will be the fifth consecutive year of these attacks."

Wisconsin S. B. Fracker (June 15). "Associated with the spring cankerworm in a serious outbreak, extending from Madison to Green Bay and eastward. Complete defoliation of from 50 to 75 per cent of the orchards in several counties. Damage about ended by June 15."

APPLE RED BUG (Heterocordylus malinus Reut.)

Massachusetts H. T. Fernald (June 23). "The red bug has been more abundant around Amherst this year than usual. Adults are now appearing."

R. A. Van Meter (June 17). "Present in eastern part of the State but less numerous now than last month."

New York G. R. Crosby and assistants. "This insect is becoming very scarce. Reports of occasional specimens being received from Columbia and Onondaga Counties."

FALSE APPLE RED BUG (Lyctidea mendax Reut.)

Connecticut M. P. Zappe (June 24). "Less numerous about New Haven and Milford than in 1920."

New York C. R. Crosby and assistants report this insect as causing considerable injury in orchards where they were plentiful last year and quite generally distributed throughout Orleans County, many being in the adult stage June 18. More numerous than last year in Chautauqua County, the nymphs being in the last instar on June 18. Fairly abundant in Genesee, Onondaga, Albany, Columbia, and Ulster Counties, adults first observed June 6 in the last county. Nymphs nearly mature in Wayne County on May 28. Injury beginning to show up on the fruit, and nymphs being in the fourth and fifth instars on May 30 in Ulster County.

L. F. Strickland (June 18). "About twice as numerous as usual in Niagara County."

Ohio H. A. Gossard (June 23). "False apple red bug has occasioned notable damage in orchards about Wooster even where nicotine sulphate was included in the first codling moth spray."

Indiana F. W. Wallace (May 5). "Apple red bug found at Muncie May 5. This is the second record of this insect for Indiana. The other record is that made by Baldwin at Goshen in 1916."

APPLE LEAFHOPPER (Emroasca mali LeB.)

Delaware J. F. Adams (May). "This insect is more numerous than usual about Bridgeville, where 80 per cent of the leaves were found to be infested. At Newark this insect is doing very slight damage as compared with that in the southern part of the State."

ROSE LEAFHOPPER (Empoa rosae L.)

New York C. R. Crosby and assistants. "Causing considerable foliage injury in young orchards in Orleans County. Present in considerable numbers and doing a good bit of damage in Onondaga County. First brood has been heavy and is already doing considerable damage in Niagara County. This insect seems to be on the increase."

Empoa unicolor Fitch

Pennsylvania J. R. Eyer (June 14); "Adults obtained at Gerard today."

BUFFALO TREE-HOPPER (Ceresa butylus Fitch)

New York C. R. Crosby and assistants. "Injury to some extent in most young plantings in Orleans County. Generally present but not at all serious in Albany, Genesee, Chautauque and Ulster Counties. First adult observed on June 16 in Ulster County."

SAN JOSE SCALE (Aspidiotus perniciosus Comstock)

New York E. P. Felt (June 3). "San Jose scale has been about eliminated from Highland Park by winter spraying. Plants badly affected fifteen years ago have completely recovered. It is not considered as difficult to control at Rochester as the oyster-shell scale."

Crosby and assistants. "Becoming more abundant even in orchards well taken care of in Genesee County; very prevalent in some sections of Orleans County. The young of the first brood crawling on June 18 in Niagara County, where the insect is four times as abundant as last year. On the increase in Albany County. Slight infestations in Onondaga, Chautauque, and Ulster Counties."

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

New York E. P. Felt (May 27). "R. E. Horsey reports this insect from Monroe County, where the young emerged early, and spraying is now under way."

C. R. Crosby and assistants. "Becoming more abundant even in well cared for orchards in Genesee County. Quite generally present in Ulster, Columbia, Onondaga, Albany, Orleans, and Niagara Counties."

South Dakota H. C. Severin (May 24). "Eggs are hatching at Brookings today."

SCURFY SCALE (Chiopaspis fuffura Fitch)

New York C. R. Crosby and assistants report finding a few of these insects in Orleans County.

APPLE MAGGOT (Rhagoletis pomonella Walsh)

New York C. R. Crosby and assistants report ~~that~~ this insect has never been a pest in Chautauqua County but that quite a few of the flies were observed in Albany County.

ROUNDHEADED APPLE-TREE BORER (Saperda candida Fab.)

New York C. R. Crosby and assistants. "Found this insect quite abundant in Albany and Wayne Counties; adults were observed in the latter county on June 18. Found a few in a young orchard in Orleans County."

L. F. Strickland (June 18). "A scattered, light infestation observed in Niagara County."

FLAT-HEADED APPLE-TREE BORER (Chrysobothris femorata Fab.)

New York C. R. Crosby and assistants report this insect as very abundant in Albany and Columbia Counties. Quite common in Ulster County, and a scattered light infestation in Niagara County.

APPLE FLEA-WEEVIL (Orchestes pallicornis Say.)

New York D. D. Ward (May 5). "Several adult specimens found on an apple at Onondaga."

SNOWY TREE CRICKET (Oecanthus niveus DeG.)

New York L. F. Strickland (June 18). "Just beginning to appear."

RED SPIDER (Tetranychus citri McGregor)

New York C. R. Crosby and assistants report this insect as very abundant in old orchards in Orleans County and quite scarce in Chautauqua and Ulster Counties. They appeared early in

the season in orchards on light soils in Columbia County.

L. F. Strickland (June 18). "Just beginning to appear on apple. Slight infestations appear on prune. Much below normal numbers in Niagara County."

Paratetranychus pilosus Can. & Fanz.

New York

C. R. Crosby and assistants report this insect as abundant in many orchards in Columbia County. Also found in Albany and Onondaga Counties. There is a possibility that several of the New York State notes on Tetranychus citri in reality refer to this insect.

P E A R

PEAR THRIPS (Taeniothrips inconsequens Uzel)

New York

G. E. Smith (June 18) reports this insect as being present in greater numbers than last year in Orleans County, but not plentiful and not injurious.

J. B. Palmer (June 18). "Very abundant in Ulster County. Disappeared about June 6."

L. F. Strickland (June 18). "Only one instance of foliage and blossom injury noticed in Niagara County."

E. P. Felt (May 21). "Mr. Haughey reports pear thrips are about 50 per cent more abundant in Niagara County, though only a minor percentage of the crop is damaged."

PEAR PSYLLA (Psylla pyricola Foerst.)

New York

C. R. Crosby and assistants report this insect as extremely abundant in Orleans, Genesee, Columbia, Genesee, Ulster, and Onondaga Counties. By May 28 adults were out in Columbia, Genesee, Orleans, Wayne, and Onondaga Counties. By June 11 second-brood nymphs were appearing abundantly in Ulster County and by June 18 they were numerous in Wayne, Orleans, and Genesee Counties. In the more seriously infested regions an emergency spray is being applied for the control of the second-brood nymphs.

brood

L. F. Strickland (May 28). "First/ of nymphs have for the most part become adults in Niagara County. (June 11). Second brood of nymphs beginning to appear, with a vast number of eggs still being deposited. (June 18). About three-fourths of the second-brood eggs have hatched. Severe infestation general over entire county."

PEAR-LEAF BLISTER MITE (Eriophyes pyri Pgst.)

- New York C. R. Crosby and assistants report this insect as very abundant on unsprayed trees in Nassau, Ulster, and Orleans Counties. Also reported from Chautauqua, Genesee, Onondaga, and Wayne Counties.
- Connecticut W. E. Britton (June 23). "Seemingly more abundant than average year. Localities, Guilford, Meriden, Stratford, and North Woodstock.
- Oregon A. L. Lovett (June 17). "Prevalent, slightly worse than average and more serious than earlier in season. Hood River (Childs): On apple quite general in higher altitudes."

PEAR AND CHERRY SLUG (Caliroa cerasi L.)

- New York C. R. Crosby and assistants report a single outbreak of this insect in Columbia County.
- Indiana H. F. Dietz. "Indications are at present that the pear slug will be a serious pest this coming summer."

PEAR MIDGE (Contarinia pyrivora Riley)

- New York C. R. Crosby and assistants report serious infestation on Lawrence, Bosc, and Clap varieties of pears in Genesee County. The worst infestation in years. In Ulster County 10 per cent of the fruit had been destroyed by May 30 and considerable injury was noticed at Ravenna, Albany County.

QUINCE CURCULIO (Conotrachelus crataegi Walsh)

- New York J. B. Palmer (May 12). "First beetle of the season found on this date. (May 30); beetles still present in small numbers on trees but no injury to fruit observed as yet in Ulster County."

Lycus communis Knight

- New York L. F. Strickland (June 18). "Unusually scarce in Niagara County."
- C. R. Crosby and assistants. "Destructive in a few orchard in Orleans County. Reported in small numbers from Onondaga, Genesee, and Columbia Counties."

BAKER'S NEALYBUG (Pseudococcus bakeri Essig)

- California T. D. Urbahns (May 14). Sacramento: "The presence of this species upon fruit is very objectionable."

CALIFORNIA PEAR SAWFLY (Gymnonychnus californicus Marlatt)

A. L. Lovett (June 17). "More abundant than average. Larvae mature on June 12; foliage attacked but no serious injury. Willamette Valley; eggs hatching, May 15. Larvae of fair size May 22; average abundance.

Hoplia trifasciata Say

New York C. R. Crosby and assistants. "Doing considerable damage to blossoms and leaves in one orchard." Locality, Barnards, Monroe County.

Q U I N C E

QUINCE CURCULIO (Conotrachelus crataegi Walsh)

New York L. F. Strickland (June 18). "Just starting to make feeding punctures in Niagara County."

C. R. Crosby and assistants (June 18) report that only occasional adults have been observed in Ulster County and they have not yet appeared in Chautauqua County.

FRUIT-TREE LEAF-ROLLER (Archips aeneospora Walk.)

L. F. Strickland (May 28). "Causing serious injury in a large orchard in Niagara County. (June 11) The pupae have been almost completely destroyed by the parasite Pimpla sp."

P E A C H

GREEN PEACH APHIS (Myzus persicae Salz.)

New York G. E. Smith (May 28). "Several orchards infested in Orleans County. (June 18) Seriously numerous in one orchard."

BLACK PEACH APHIS (Anuraphis persicae-niger Smith)

New York L. F. Strickland, (June 18). "Normally abundant in Niagara County."

Indiana J. J. Davis (June 15). "The black peach aphis is a common species this spring."

~~NEW YORK L. F. Strickland, (June 18). "Normally abundant in Niagara County."~~

Nebraska

M. H. Swenk (May 5). "Black peach aphid was found in excessive abundance in a peach orchard in Nuckolls County on this date, where it was killing the trees. This is the first instance of abundance and serious injury by this aphid that we have noted in this State."

Washington,
D. C.

E. J. Newcomer (May 21). "This species has not been noted before this year, but probably has been here for several years, as it is well established in several orchards in Yakima County. (May 24) This insect has destroyed nearly 100 per cent of the crop in cases where no remedial measures were applied. It is now leaving the peach trees and appearing abundantly on mustard, cabbage, tomatoes, etc."

PEACH-TREE BORER (Aegeria exitiosa Say)

New York

C. R. Crosby and assistants (May 21). "A considerable number of borers were found in one orchard in Orange County. (June 18) Very abundant in Nassau, Ulster, and Albany Counties, and also quite abundant in Orleans County. (June 24) The borers are now pupating in Wayne County."

L. F. Strickland (June 18) "Normally abundant in Niagara County."

Indiana

J. J. Davis (June 15). "The peach-tree borer is abundant everywhere in Indiana. Spring applications of paradichlorobenzene have given almost perfect control."

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

New York

C. R. Crosby and assistants report this insect as being numerous in Orleans, Wayne, and Albany Counties, especially in brown-rot cankers.

PEACH TWIG-BORER (Anarsia lineatella Zell.)

Oregon

A. L. Lovett (June 17). "Generally prevalent in western Oregon. Abundance and injury average or slightly above."

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

C. R. Crosby and assistants report finding this insect quite common in sickly trees in Wayne, and in a few cases in Columbia and Orleans Counties, where the beetles were working on trees injured by the severe winter.

L. F. Strickland (June 18). "Normally abundant in Niagara County."

SAY'S BLISTER BEETLE (Pomphopoea sayi Lec.)

New York

P. J. Parrott (May 28). "Found this insect injuring foliage and fruit at Junius, Cayuga, and Waterloo.

C. R. Crosby and assistants report that during the last week in May this insect was found doing considerable damage to young fruits at Williamson and eating leaves affected with peach leaf-curl at Covert.

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

New York

G. E. Smith (June 11). "Found in abundance in two peach orchards and one apple orchard doing serious injury to the fruit in Orleans County."

TARNISHED PLANT-BUG (Lygus pratensis L.)

New York

L. F. Strickland (June 18). "Doing some injury to peaches in Niagara County."

North
Carolina

G. H. Anderson (May 19). "Locally abundant on young peach trees in Chesterfield County."

C H E R R Y

CHERRY APHIS (Myzus cerasi Fab.)

New York

C. R. Crosby and assistants (May 20). "Some cherries badly infested at Binghamton (May 28). Abundant in Orleans County; by June 18, the Orleans County outbreak was pretty well cleaned up by the ladybird larvae. Abundant in Ulster County on May 30. Still numerous on June 18, on which date they were reported as more abundant than last year in Onondaga County. Severe outbreak in Columbia County. (June 24) Fairly common in most cherry orchards in Wayne County."

L. F. Strickland (June 18). "Three times as abundant as normal in Niagara County."

Ohio

H. A. Gossard (June 23). "The black cherry aphid has probably been more numerous than any other aphid this year although hardly a scourge anywhere."

Delaware

C. O. Houghton (June 4). "This species is still very numerous. Hundreds of larvae and pupae of Adalia bipunctata can be found upon the infested trees. Have observed as many as 13 pupae on a single leaf."

Indiana J. J. Davis (June 15). "The cherry aphid is a common species this spring."

CHERRY MAGGOT (Rhagoletis cingulata Loew)

New York C. R. Crosby and assistants report this species on June 18. Flies becoming quite numerous in Onondaga County, in small numbers in Albany, and Orleans County. First flies observed in Onondaga County on June 10 and in Columbia County on June 13."

PEAR AND CHERRY SLUG (Caliroa cerasi L.)

Indiana J. J. Davis (June 15). "Cherry slug has been unusually abundant, particularly in southern Indiana, where it was not an uncommon sight in the past few weeks to see large trees with the foliage completely browned."

H. F. Dietz (June 15). "Indications are at present that the cherry slug will be a serious pest this coming summer."

Oregon. A. L. Lovett (June 17). "Adults observed May 23. Eggs May 25. About average abundance at Corvallis."

CHERRY-TREE TORTRIX (Cacoecia cerasivorina Fitch)

New York E. D. Merrill (June 2). "Present in unusual numbers in Erie County."

Indiana H. F. Dietz (June 15). The cherry-tree tortrix was reported from Vincennes damaging mahaleb nursery stock."

ROSE-LEAF BEETLE (Nodonota puncticollis Say).

New York E. L. Chase (June 13). "Injuring black cherries in Ulster County."

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

New York P. Rupert (June 11). "Doing considerable damage on cherry and to a less extent on apples in Wayne County."

P L U M

PLUM CURCULIO (Conotrachelus nenuphar Herbst)

- Massachusetts H. T. Fernald (May 31). "Mr. L. Midgley reports that this insect is far more numerous than last year at Worcester. This month has been characterized by more rain than usual and extremes of temperature."
- Connecticut W. E. Britton (June 23). "Seemingly more numerous than usual at New Haven, Milford, Winsted, and Weathersfield."
- New York P. J. Parrott (May 28). "Beetles beginning to puncture young fruit at Geneva."
- C. R. Crosby and assistants report that the beetles were first observed in Orleans County on May 20; by June 18 they had become numerous and destructive in a few orchards in this county. Very abundant and injurious in Albany County; seriously abundant in Columbia County. In Wayne County, by June 24, 50 per cent of the fruit had been damaged on one side of an orchard at Sodus, the side ~~fruit~~ infested being nearest to Woodland. Also very numerous and destructive in Nassau, Ulster, Orange, and Genesee Counties."
- L. F. Strickland. "First adult observed on May 24 in Niagara County. By June 18, severely numerous in several orchards."
- W. H. Wellhouse (May 13). "Actively egg laying on young apricot fruit in vicinity of cherry at Ithaca."
- F. Z. Hartzell (June 18). "Adults now laying eggs, but not common in Chautauqua County."
- Delaware J. J. Adams (April 26). "From 3 to 20 per cent of the apples about Bridgeville were found to be infested. Injury more common in orchards surrounded by woodlots and more noticeable in the dusted than in the sprayed tracts."
- West Virginia D. T. Gray (April 20). "Damage to fruit of apples worse than ever observed before in Marshall and Tyler Counties."
- E. C. Sherwood (June 2). "Heavy infestation; larva stage developed on both plums and cherries. Did not have time to make counts, but I think at least 75 per cent of the fruit is damaged at Parkersburg, Wood County."
- North Carolina Franklin Sherman (May 21). "Found first adult of the season on March 19. On May 21 also found an adult (not teneral) apparently of hibernated generation. This indicates for this year a seasonal range of overwintered specimens of 64 days."

- Indiana J. J. Davis (June 15). "The plum curculio attacking apples, etc., is exceedingly abundant, partly due no doubt to the fact that some of the orchardists failed to make their regular spray applications."
- Missouri Leonard Haseman and assistants (June 15) report worst outbreaks since 1906, damage ranging from very slight to 100 per cent; larvae are now leaving the apples and entering the soil in rearing cages.
- Alabama W. E. Hinds (June 2). "Plum curculio now starting second brood attack in southern Alabama."

EUROPEAN FRUIT LECANIUM (Lecanium corni Bouché)

- New York C. R. Crosby and assistants, report this insect dangerously abundant around Medina, Orleans County, with a slight infestation in Wayne County and Genesee County, and scarce in Albany County."
- F. Z. Hartzell (June 18). "Not yet observed in Chautauqua County."

BROWN PLUM APHIS (Hysteroneura setariae Thomas)

- Indiana J. J. Davis (June 15). "The rusty brown plum aphid is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."
- Georgia O. I. Snapp (May 4). "Quite numerous on wild and cultivated plums this spring in Central Georgia, damage running to as high as 100 per cent of the foliage."
- Missouri Leonard Haseman (June 2). "Correspondence from Overland, Mound City, and Orick, indicate that this insect is so abundant as to check the growth of plum trees. The fruit has already been destroyed by freezing weather."

MEALY PLUM APHIS (Hyalopterus arundinis Fab.).

- New York L. F. Strickland (June 18). "Only one slight infestation noted in Niagara County."
- California T. D. Urbahns (May 4). "More abundant than usual in the Sacramento Valley, and extremely destructive. Young trees are also suffering by the destruction of foliage. Damage estimated from one to 50 per cent in different orchards. Natural enemies are becoming abundant."

BUD MOTH (Imetocera ocellana Schiff.)

New York G. E. Smith (May 28). "Observed injuring plums on two farms, plums being very near apple trees in Orleans County."

Paratetraneuchus pilosus Can. & Fanz.

New York L. F. Strickland (May 28). "Foliage becoming infested in Niagara County."

R A S P B E R R Y

RASPBERRY FRUIT-WORM (Byturus unicolor Say)

New York J. B. Palmer (May 30). "Eggs abundant, beetles rare in Ulster County. (June 11) larvae are beginning to be found. (June 18) Beetles still present in late blossoms, larvae common, but not as abundant as would be expected. Eggs still being laid on the green berries. First two pickings in an infested patch are discouragingly small. The berries are **crumbly**, small, misshapen and given ~~xxx~~ an exceedingly inferior appearance to the baskets. One grower pulled the bushes out instead of harvesting the fruit. (June 25) Beetles still to be found in small numbers."

H. D. Hammond (June 13). "Abundant in the northeastern part of Orange County."

RASPBERRY SAWFLY (Monophadnoides rubi Harris)

New York J. B. Palmer (June 18). "Larvae occasionally observed in Ulster County."

F. Z. Hartzell (June 18). "Common and injurious in small plantings in Chautauqua County."

Oregon A. L. Lovett (June 17). "Raspberry sawfly above the average in abundance in Western Oregon, Lane County and northward. Larvae appeared first of May. Loganberries and raspberries generally attacked."

STRIPED TREE CRICKET (Oecanthus nigricornis Walk.)

New York J. B. Palmer (June 18). "Egg punctures occasionally observed in Ulster County."

F. Z. Hartzell (June 18). "Not common in Chautauqua County. Eggs are now hatching."

TWO-SPOTTED OBEREA (Oberia bimaculata Oliv.)

New York H. W. Fitch (June 18). "A few observed on raspberries in Albany County."

RASPBERRY ROOT-GALL (Diastrophus turgidus Bass.)

New York M. D. Leonard (May 9). "Galls of this insect were received from Tully."

SPITTLE INSECTS (Cercopidae)

Oregon A. L. Lovett (June 17). "Samples of blighted loganberry tips received from Marion County. The cane above the point of attack was blighted and dead; reported as fairly prevalent over a limited area."

WHITE GRUB (Phyllophaga tristis Fab.)

New York J. B. Palmer (May 17). "Reported from Marlboro, Ulster County, as causing severe damage to the foliage by the beetles feeding during the night. As many as three to four of the beetles could be found at the base of each hill in the top inch of soil."

B L A C K B E R R Y

RED-NECKED CANE-BORER (Agilus ruficollis Fab.)

New York C. R. Crosby (May 23). "Injury to blackberries reported from Luzerne."

C U R R A N T

CURRENT APHIS (Myzus ribis L.)

New York P. J. Farrott (May 28). "I have seldom observed more conspicuous damage at Geneva."

L. F. Strickland (June 18). "Present in small numbers in Niagara County."

F. Z. Hartzell (June 18). "Rather common in Chautauque County."

C. R. Crosby and assistants report this insect as unusually abundant and injurious in Orleans, Ulster, Genesee, and Albany Counties.

Indiana J. J. Davis (June 15). "The currant aphid has been a common species this year."

IMPORTED CURRANT WORM (Pteronidea ribesi Scop.)

New York C. R. Crosby and assistants report this insect as quite abundant and destructive in Albany, Ulster, Nassau, Orleans, and Genesee Counties."

F. Z. Hartzell (June 18). "Common in Chautauqua County."

Nebraska Myron H. Svenk (May 10). "Began injuries about May 10 and promised to be quite injurious this spring."

NATIVE CURRANT WORM (Gymnomychus appendiculatus Hartig)

New York F. Z. Hartzell (June 18). "Common and destructive in some plantings in Chautauqua County."

CURRANT STEM-GIRDLER (Janus integer Norton)

New York J. B. Palmer (June 18). "Observed in small numbers in several plantings in Ulster County."

D. V. Rivenburg (June 18). "Some observed in Columbia County."

FOUR-LINED LEAF-BUG (Poecilocapsus lineatus Fab.)

New York C. R. Crosby and assistants report this insect as being fairly numerous in Orleans, Ulster, Tompkins and Wayne Counties.

F. Z. Hartzell (June 18). "Plentiful in a few plantings in Orleans County."

CURRANT BORER (Sesia tipuliformis Clerck)

New York G. E. Smith (June 18). "Plentiful in a few plantings in Orleans Co."

E L D E R B E R R Y

FOUR-LINED PLANT-BUG (Poecilocapsus lineatus Fab.)

FOUR

Indiana H. F. Dietz (June 15). "The four-lined plant-bug was found abundant in the vicinity of Bacon's Swamp doing its characteristic damage to various weeds, such as burdock and elderberry. So far no reports of its damage to currants or hardy perennials have been received by this office."

P E C A N

FALL WEBWORM (Hyphantria cunea Drury)

Louisiana J. C. Bridwell (June 20). "Pecan orchards between Baton Rouge and New Orleans were noticed as being entirely skeletonized by this insect. Similar damage also noted to Willows."

G R A P E

GRAPE PLUTE MOTH (Oxyptilus periscelidactylus Fitch)

- New York C. R. Crosby and assistants report the larvae as injuring grapes to a slight extent at Ithaca; doing considerable damage in May in many vineyards in Ulster County; present in small numbers in Columbia, Orange and Niagara Counties."
- F. Z. Hartzell. "Have not observed this insect this year in Chautauqua County."

- Delaware C. O. Houghton (June 1). "About as numerous as usual at Newark."

EIGHT-SPOTTED FORESTER (Alvnia octomaculata Fab.)

- New York E. R. Bird (May 31). "Captured a moth at Fonda."
- Delaware C. O. Houghton (June 5). "Observed this insect ovipositing at 2 p. m. in bright sunshine. Eggs were apparently laid on the vine, not on the leaves. Observation made at Newark."

GRAPE-BERRY MOTH (Polychrosis viteana Clem.)

- New York F. Z. Hartzell (June 18). "Larvae now working in the grape clusters in Chautauqua County. Usually scarce in this county."

GRAPE LEAFHOPPER (Erythroneura comes Say)

- New York C. R. Crosby and assistants (June 14) report that nymphs were first observed in Ulster County. (June 18) Heavy infestation in Columbia County in which county the adults were very numerous on May 28. Adults also numerous in Orange County on this date.
- F. Z. Hartzell (June 18). "Rather scarce in eastern part of Chautauqua County, but common in the western part. Nymphs and adults both present."
- L. F. Strickland (May 28). "Of minor importance this year in Niagara County. (June 18) About half as abundant as usual; the worst infested leaves having only from 10 to 15 hoppers on each."
- Ohio G. A. Runner (May). "Grape leafhoppers unusually abundant in all sections of the northern Ohio grape belt. The emergence from hibernation commenced during the warm weather of March. The weather was unusually mild."
- Nebraska M. H. Swenk (June 15). "Grape leafhoppers put in an appearance abundantly early in June in some localities in the State "

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

- Massachusetts H. T. Fernald (June 23). "Rose-chafers are unusually abundant and are doing some injury to young fruit trees, small fruits, grapes, and roses."
- R. A. Van Meter. "Doing considerable damage in some sections in the eastern part of the State."
- E. R. Farrar (June 14). "Abundance about as usual in South Lincoln."
- Connecticut M. P. Zappe (June 24). "Practically the entire crop of grapes ruined in a four-acre vineyard at Hamden."
- New York C. R. Crosby and assistants report this insect as serious in a few vineyards in Ulster, Nassau, Columbia, Clinton, and Onondaga, Counties, as quite scarce in Chautauqua County, and not observed in Niagara County.
- Ohio H. A. Gossard (June 23). "The rose beetle has been more abundant this season than last. We have probably received more inquiries about it this season than for six or seven years past."
- Indiana J. J. Davis (June 15). "The rose beetle has been unusually abundant and has been reported from places in the southwestern end of the State (Evansville) to the extreme northeastern end (Angola). It was reported damaging grape and corn, also a report of death of young chickens from eating these beetles."

~~GRAPE ROOTWORM~~ (Fidia viticida Walsh)

- New York D. V. Rivenburg (June 18). "Present to a slight extent in Columbia County."
- F. Z. Hartzell (June 18). "Indications are that we will have a serious infestation of this insect in Chautauqua County. Adults began to emerge June 16."

GRAPE FLEA-BEETLE (Valtica chalybea Illig.)

- New York F. Z. Hartzell (June 18). "Very scarce in Chautauqua County. Larvae are now on the leaves. No reports of injury this season."
- Indiana H. F. Dietz (June 15). "One insect which was abundant last year but which seems to be on the decline this year is the grapevine flea-beetle. Last year during the month of May a large number of calls regarding this insect were received, but this past month only a dozen inquiries have been made. Field inspections during the month have also failed to show this insect as abundant as it was last year."

FOUR-MARKED LEAF-BEETLE (Cryptocephalus 4-maculatus Say)

New York

J. B. Palmer (June 7). "One adult collected on Concord grapes at Milton."

GRAPEVINE APHIS (Macrosiphum illinoisensis Shim.)

West
Virginia

D. H. Questal (June 1). "Observed attacking grapes in Rome County."

Indiana

J. J. Davis (June 15). "The grape aphid is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."

GRAPE BLOSSOM MIDGE (Contarinia johnsoni Sling.)

New York

D. V. Rivenburg (June 18). "Scattering infestation in Columbia County."

L. F. Strickland (June 18). "Scarce in Niagara County."

F. Z. Hartzell (June 18). "A few observed; larvae have now gone into soil. Most grapes have blossomed by this time."

SNOWY TREE CRICKET (Oecanthus niveus DeG.)

New York

F. Z. Hartzell (June 18). "Eggs found occasionally on grape leaves in Chautauqua County."

C I T R U S

CITRUS MEALYBUG (Pseudococcus citri Risso).

Florida

Jeff Chaffin (June 6). "Much more abundant than usual at Orlando. 5 per cent of the mealybugs were destroyed by Laetilia coccidivora. Owing to dry spring (June 8) mealybugs are doing a large amount of damage throughout the citrus belt. Complaints are coming in every day from all over the citrus sections."

Wilmon Newell (June 20). "Much more abundant than usual at Wales; 5 per cent of the mealybugs were destroyed by Laetilia coccidivora."

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

COTTON

COTTON BOLL WEEVIL (Anthonomus grandis Boh.)

South
Carolina G. M. Anderson (May 19). " Distribution wide in the coastal
counties; specimens have been sent in from many of the other
counties."

Texas M. C. Tanquary (June 18). " Reports from various sections
of the State indicate boll weevil infestation to be very
much heavier than usual at this time of the year. A large
percentage of the earlier squares are being punctured."

CORN ROOT-APHIS (Anuraphis maidi-radiciis Forbes)

South
Carolina C. McLaurin (May 5). " Local distribution in Marion County;
injury not serious."

GARDEN SLUG (Agriolimax agrestis L.)

North
Carolina Franklin Sherman (May 16). " One complaint indicating injurious
abundance to young cotton plants in the coastal region."

WHITE GRUB (Phyllophaga lanceolata Say)

Texas M. C. Tanquary (June 18) " Adults reported as occurring in
immense numbers and doing serious damage to cotton in Williamson
County."

TOBACCO

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Florida F. L. Chamberlin (June 18) . " During the early part of June shade tobacco about Quincy was rather severely damaged by this insect."

~~BROWN~~ COTTON BUG (Emeschistus servus Say)

Florida F. L. Chamberlin (June 18) " This pentatomid was very prevalent on shade-grown tobacco at Quincy."

CUTWORMS

South
Carolina C. McLaurin (April 20). " Local distribution in Marion County; serious injury."

C O R R E C T I O N

In the last number of the Bulletin the crediting to T. C. Barber of the discovery of Aclerda sp. as attacking sugar-cane was a mistake; the discovery should have been credited to E. R. Barber.

TRUCK CROP INSECTS

POTATO AND TOMATO

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

- Maine Edith M. Patch (June 16) "Complaints farther south in the State are coming in concerning root-maggots, especially in underground stems of bean plants."
- Massachusetts H. T. Fernald (June 23) "The seed-corn maggot has not appeared in re-planted onion fields."
- New York H. C. Hockett (May 28) "Maggots have been found in a few plantings of potatoes but not in sufficient numbers to cause much loss in Nassau County. (June 18) Present in all stages."

COLORADO POTATO BEETLE (Leptinotarsa . decemlineata Say).

- Maine Edith M. Patch (June 16) "Colorado potato beetles numerous and egg-laying."
- New York C. R. Crosby and assistants (May 27) "Beetles now depositing eggs at Eden. (June 10) Eggs are now very numerous but no larvae have yet been observed. (June 11) Many eggs have now hatched in Orange County. (June 14) Eggs numerous. First observed to have hatched today. Egg laying in full sway in Wayne County, Genesee, Nassau, Albany, Onondaga, Orleans, Seneca and Suffolk Counties, causing considerable injury to early planted fields in Onondaga County. "
- New Jersey D. E. Fink (June 7) "Abundant this year and doing its usual amount of damage. "
- Delaware W. C. Newton (May 14) "Very abundant and doing much damage at Bridgeville. (May 19) "Eggs now very abundant."
- J. F. Adams (June 3) "Larvae very abundant at Bridgeville."
- West Virginia B. H. Questel (June 1) "Normal outbreak at Spencer in Roane County."
- South Carolina C. L. Baxter (April) "Widely distributed over Beaufort region."
- Ohio T. H. Parks () "Unusually abundant in many sections of Ohio."
- H. A. Gossard (June 23) "Is more numerous than we expected this season. They were comparatively scarce last year but must have hibernated in excellent condition, judging from the number that are now in sight."

- Wisconsin S. B. Fracker (June 24) "Best reporters nearly all state that potato beetles are unusually early, active and common throughout the State."
- South Dakota H. C. Severin (May 23) "Just emerging from winter quarters at Brookings."
- Nebraska M. H. Swenk (May 21) "Beginning the fourth week in May, the Colorado potato beetle has made a considerable amount of spraying of potatoes necessary."
- Missouri L. Haseman (June 15) "On June 14 adults of the second generation appeared at Columbia far less abundant than usual and doing practically no damage."

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- Massachusetts R. A. Van Meter (June 17) "Numerous throughout the State."
- New York E. P. Felt (May 25) "F. J. Rose, of Genesee County, reports that a small black flea-beetle is pretty numerous on tomato plants at South Byron."
- Roy Latham (June 1) reports this insect as more abundant on potatoes and other crops than last year at Orient. These flea-beetles first appeared on May 21 in large numbers, fields near woods suffering the most. "
- L. F. Strickland (June 11) "Injury very severe in Niagara County to early potatoes." (June 22) "I have never seen more serious injury even in late season than is being produced by these insects."
- F. Z. Hartzell (June 18) "Have not observed this insect in Chautauque County. It must be very scarce."
- C. R. Crosby and assistants (June 11) "Abundant on young plants in Orleans County. So far, the most injurious pests to potatoes this season in Nassau County. Still destructive on new foliage at Ithaca, Tompkins County. June 18, some damage but not serious to potatoes in Onondaga County; considerable damage to tomatoes in this country. Not serious in Nassau County. Numerous in Genesee, Orleans, Seneca, Ulster, Albany and Wayne Counties. "
- New Jersey D. E. Fink (June 7) "The potato flea-beetle is very abundant the present year and is doing very noticeable injury."
- Delaware J. F. Adams (May 27) "Doing considerable damage at Newark."
- Nebraska M. H. Swenk (May 21) "Reported doing its characteristic injury to potato foliage from several counties."

THREE-LINED POTATO BEETLE (Lema trilineata Oliv.)

York H. C. Hockett (June 18) "Adults observed in Nassau County."

POTATO APHIS (Macrosiphum solanifolii Ashm.)

ne E. M. Patch (June 16) "I have had this insect under observation here this spring. It is still abundant on rose. Lady beetles and syrphid maggots rather plentiful. Parasitic mites also feeding on this aphis. If I should judge, we must be a month behind the Long Island schedule. Potatoès only about 4 inches above ground and still being hilled."

necti-

M. P. Zappa (June 20) "Present in small numbers at Hamden."

York

C. R. Crosby and assistants (June 15) "H. C. Hockett reports potato aphis appearing in Nassau County (Telegraphic reports sent to New England States and Pennsylvania)."

(June 20) "Both pink and green nymphs found in Nassau County. Numbers are becoming serious but no damage done as yet."

(June 21) "A few lice found in a large field at Riverhead, L.I."

(June 25) "Becoming more noticeable daily on plants. Appeared first on blossom shoots but have notmigrated to the under sides of leaves in Nassau County."

Jersey

D. E. Fink (June 7) "The potato aphis is making its first appearance and bids fair to become injurious by the end of the month. The weather conditions have been extremely favorable for its increase during the past two weeks."

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ginia

E. C. Sherwood (May 25) "Very few found at Keyser in Mineral County."

P. W. Dayton (May 31) reports the first appearance at Thomas, Tucker County, about 4 percent of the plants being infested.

(June 4) "Very few in numbers at Fairmont, Marion County."

(June 7) P. W. Dayton reports about 25 percent of the plants are infested at Thomas, Tucker County.

(June 14) "Potatoes have been sprayed twice in this county."

(June 21) E. C. Sherwood reports heavy infestation reduced by a heavy rain at Wheeling in Ohio County."

APPLE LEAFHOPPER (Empoasca mali) LeBaron)

T. H. Parks (June 1) "Adults commenced migrating to potatoes about June 1; a few nymphs present June 17."

consin

J. E. Dudley, Jr. (June 10) "Leafhoppers have swarmed to the fields, heavily infesting all potatoes and beans at Madison, Dane County."

COMMON STALK-BORER (Trichoplusia nitens Guen.)

York

H. C. Hockett (June 25) "Serious injury reported in one patch in Nassau County."

- West
Virginia W. E. Rumsey (June 6) "Correspondent reports normal outbreak of this insect at Lumberport, Harrison County."
(June 12) "Correspondent reports serious outbreak at Cairo, Ritchie County."

CORN EARWORM (Chloridea obsoleta Fab.)

- Florida S. B. Walker (June 1) "More abundant than usual. Two percent of the crop has been damaged at Florida City."

CABBAGE

CABBAGE MAGGOT (Hylemyia brassicae Bouche)

- Massa-
chusetts W. F. Thompson (May 15) "Much more abundant than usual in the Boston district, as high as 50 eggs to a plant, retarding all growth, with a few plants lost in best gardens. Growers experimenting with tarred felt disks and nitrate of soda."
- New York P. J. Parrott (May 28) "Radishes seriously infested. Cabbages beginning to show injury during the past week at Geneva."
(June 11) "Dry weather and maggots have severely attacked cabbage seedlings. There is a marked contrast between treated and untreated plats."
- C. R. Crosby and assistants (May 28) "Exceedingly destructive at Eden. Reports from Nassau County indicate that there was a serious loss during April to plants set in the field but the cold rains and cool temperatures did more for saving the crop than any amount of treatment. In a good many places the plants are living on secondary roots which have taken the place of the tap root which was destroyed; doing considerable damage in Orleans County."
(June 15) "The growers say they have never seen the destruction by the cabbage maggot as severe as it is this year. In several of the fields one-third of the plants are already gone and the maggots are still at work. In some spots in these fields the maggots get away with over half the plants at Eden."
(June 18) "Numerous in seed beds in Wayne County. Destructive to early plantings in gardens in Orleans County, also numerous in Albany and Nassau Counties."
- F. C. Hartzell (June 18) "Not common in Chautauqua County."
- West
Virginia E. C. Sherwood (June 21) "Turnips, cabbage and radishes, about 30 percent infested at Wheeling, Ohio County. Turnips most seriously injured, maggot being followed by a soft rot."
- Ohio H. A. Gossard (June 23) "The cabbage maggot is the subject of very frequent inquiry, though early radishes about Wooster were less troubled than usual by this insect."

Indiana J. J. Davis (June 15) "The cabbage maggot has been very abundant and destructive in the northern half of Indiana. Absolute control has been obtained by two applications of kerosene sublimate solution in our tests at Ft. Wayne and Hammond. Dusts containing 1 percent kerosene sublimate were also effective."

Oregon L. P. Rockwood (June 11) "More abundant than usual at Forest Grove. Many complaints have come from home gardeners and one from a poultryman where maggots were attacking kale."

A. L. Lovett (June 17) "Injuriously abundant, possibly above the average everywhere and doing serious injury."

IMPORTED CABBAGE WORM (Pontia rapae L.)

New York C. R. Crosby and assistants (May 28) "This insect is fairly abundant at Ithaca, some larvae being newly hatched, others about one-half inch long." (June 18) "Common but not destructive; found in all stages in Nassau County; not numerous in Orleans County. A few butterflies observed in Niagara County."

CABBAGE APHIS (Brevicoryne brassicae L.)

New York P. J. Parrott (June 22) "Very abundant in seed beds at Geneva, where it is causing much damage."

H. C. Hockett (June 18) "Becoming abundant and destructive in certain fields in Nassau County. (June 25) Becoming daily more noticeable in seed beds."

G. E. Smith (June 18) "Numerous in a few garden plantings in Orleans County."

Nebraska M. H. Swenk (June 1) "Injury by the cabbage aphis began about June 1."

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

Nebraska M. H. Swenk (May 18) "Injurious activity noticed as early as May 18."

STRIPED FLEA-BEETLE (Phyllotreta vittata Fab.)

New York E. P. Felt (May 30) "A. L. Brower reports this insect as attacking crucifers more generally than other vegetables, causing an estimated damage amounting to 30 percent in Madison County."

CABBAGE SEED WEEVIL (Ceutorhynchus quadridens Panz.)

New York T. H. Vogel (June 11) "Considerable damage done this season to the cabbage seed crop at Mattituck. Larvae now pupating and a few adults have been found."

STRAWBERRY

STRAWBERRY WEEVIL (Anthonomus signatus Say)

Massachusetts

R. A. Van Meter (June 17) "Increasing in abundance in the Dighton district of Bristol County."

New York

D. B. Rivenburgh (June 18) "Serious on certain farms in Columbia County."

J. B. Palmer (June 18) "Abundant on William Belts everywhere in Ulster County. Other varieties are comparatively free."

Delaware

J. F. Adams (April 13) "Damaging 3 percent of the crop at Greenwood."

STRAWBERRY CROWN-GIRDLER (Otiiorhynchus ovatus L.)

Oregon

A. L. Lovett (June 17) "Childs reports from Hood River that this insect is spreading to new plantings. Damage is considerable, the yield having been cut out from 20 to 50 percent."

STRAWBERRY FLEA-BEETLE (Altica ignita Illig.)

New York

G. E. Smith (June 18) "Very abundant in Orleans County."

WHITE GRUBS (Phyllophaga sp.)

New York

C. R. Crosby and assistants (June 18) "Reported as doing slight amount of damage in Albany and Columbia Counties."

ABBREVIATED WIREWORM (Cryptohypnus abbreviatus Say)

New York

M. D. Leonard (June 7) "Beetles reported as eating into ripe berries at Addison."

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

New Jersey

D. E. Fink (June 7) "The rose-chaffer is now doing injury to the leaves of strawberry, and because of the fact that the crops are being harvested at the present time, it is impossible to experiment with spraying on the leaves. It has also been observed feeding on the blossoms of string beans. Very abundant this year."

STRAWBERRY LEAF-ROLLER (Ancylis sp. n. Froh.)

Nebraska

M. H. Swenk (May 21) "During the fourth week in May there was considerable injury by the strawberry leaf-roller in Douglas, Washington, York, Boyd and other Counties of eastern Nebraska."

OBSOLETE-BANDED STRAWBERRY LEAF-ROLLER (Archips obsoletana Walk.)

New York

D. B. Rivenburgh (June 18) "Not important this year in Columbia County."

F. Z. Hartzell (June 18) "A few present but not common. Larvae nearly full grown in Chautauqua County."

STRAWBERRY CROWN-MINER (_____)

Nebraska M. H. Swenk (May 15) "Another new pest found for the first time in the State this spring is the strawberry crown-miner (Anarsia lineatella of authors) which during April and early May did such damage to some strawberry beds in Saline County by boring into and hollowing out the crowns of the plants. Some patches were completely killed and had to be dug out."

Tarnished Plant-bug (Lygus pratensis L.)

New York C. R. Crosby and assistants (June 18) "Adults numerous and destructive in a few plantings in Albany and Orleans Counties."

STRAWBERRY ROOT-LOUSE (Aphis forbesi Weed)

New York D. B. Rivenburgh (June 18) "A few present in Columbia County."

EARLY STRAWBERRY SLUG (Empria fragariae Roh.)

Nebraska M. H. Swenk (May 14) "The early strawberry slug began serious injury in southern Nebraska on this date and promises to be quite injurious this spring."

GARDEN SLUG (Agriolimax agrestis L.)

Nebraska M. H. Swenk (May 21) "Reports of injury to strawberries by the slug were also received."

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

Massachusetts H. F. Thomas (May___) "More abundant than last year in the Boston district. The season earlier than usual."

Connecticut W. E. Britton (June 23) "More abundant than usual around New Haven."

New York E. P. Felt (June 6) "Asparagus beetle grubs were somewhat abundant and full-grown at Nassau."

C. R. Crosby and assistants (May 28) "Beetles abundant and egg-laying common at Ithaca. (June 2) Beetles damaging the plants much more seriously than last year at Lackawanna. (June 18) reports from several localities in Columbia County. Larvae now feeding on the leaves in Chautauqua County. Eggs, larvae and adults present in Nassau County. Present in small numbers in Wayne County. (June 25) Reported as injurious in Nassau County."

Indiana J. J. Davis (June 15) "Asparagus beetle has been quite abundant in north-western Indiana."

- Wisconsin C. L. Fluke (June 4) "Beetles appeared earlier this year than usual, injuring the earliest cuttings. Fifty percent of the crop unmarketable and nearly every stalk injured in southern Wisconsin."
- Oregon A. L. Lovett (June 17) "Introduced into the trucking sections of Multnomah County in 1919. Has spread steadily and injury has increased. Now very serious throughout the trucking sections adjacent to Portland. Eggs and beetles received from May 20 to June 6."

12-SPOTTED ASPARAGUS BEETLE (Crioceris 12-punctata L.)

- New York C. R. Crosby and assistants (June 18) "Present in small numbers in Tompkins, Ulster and Nassau Counties."

BEANS

MEXICAN BEANBEETLE (Epilachna corrupta Muls.)

- Alabama W. E. Hinds (June 2) "Second generation now starting and heavy damage in prospect. The species has been found recently in a number of localities in northwestern Georgia and at 11 miles north of Chattanooga, Tenn., beside a few other places a short distance outside of the 1920 known infestation in Alabama."
- J. E. Graf (June 19) "Have found infestation in Jackson and Morgan Counties. (June 26) Infestations found in Fayette, Marion and Winston Counties."
- Georgia J. E. Graf (June 21) "Additional area infested includes Carroll, Catoosa, Cherokee, Douglas, Gordon, Murray and Whitfield. (June 26) Infestation found in Dawson, Fannin, Lumpkin and Pickens Counties."
- Tennessee J. E. Graf (June 21) "Infestation found in Cumberland, Grundy, Marion, McMinn, Polk, Rhea and Roane Counties. (June 26) Infestation found in Hamilton, Coffee, Franklin, Lincoln, Loudon and Monroe Counties."
- Kentucky J. E. Graf (June 30) (telegraphic dispatch) "Sitton reports beetle one mile east Jellico Creek Whitfield County Kentucky."

BEAN WEEVIL (Bruchus obtectus Say)

- New York L. F. Strickland (June 18) "One case of severe infestation of seed beans observed in Niagara County."
- F. Z. Hartzell (June 18) "Common in Chautauqua County."

BEAN LEAF-BEETLE (Cerotoma trifurcata Forst.)

- Alabama W. E. Hinds (June 2) "Very abundant and generally distributed throughout the State."

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

- South Carolina A. F. Conradi (May 19) "Sent to this office from Bethune, S. C."

APPLE LEAFHOPPER (Empoasca mali LeB.)

consin J. E. Dudley, Jr. (June 10) "Apparently more abundant than usual at Madison."

PEAS

PEA APHIS (Illinoia pisi Kalt.)

sa-
etts H. F. Thompson (May ____) "In early spring the aphid seemed to be abundant on most crops that they usually attack. Their progress has been less rapid than anticipated but ladybugs are getting better control than in 1920."

York C. R. Crosby and assistants (June 11) report this insect as abundant in Nassau County. (June 18) Present in small numbers in Wayne County. (June 25) Becoming more noticeable daily in Nassau County.

F. Z. Hartzell (June 18) "Common in Chautauqua County."

GARDEN FLEAHOPPER (Halticus citri Ashm.)

York F. Z. Hartzell (June 18) "Present in very small numbers in Chautauqua County."

MYRIAPODS (Scutigera sp.)

gon A. L. Lovett (June 17) "Symphylids abundant in gardens during late May and up to the present time. Distribution is general. It may attack all kinds of sprouting seed, being particularly partial to peas and beans. Growing plants also suffer injury."

CUCUMBER

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

York C. R. Crosby and assistants (June 10) "Heavy losses reported on two farms. The entire planting was destroyed by the beetles getting under the crusts of earth and destroying the plants before they showed above ground at Eden. (June 18) Beetles have become less numerous at Eden, considerable damage being done in Columbia, Albany, Onondaga and Niagara Counties. A few observed in Wayne and Nassau Counties."

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ginia W. E. Rumsey (June 10) "Correspondents report this insect as being abundant at Roanoke."

o T. H. Parks (_____) "Very bad this year. The calcium arsenate and gypsum dusting mixture is being used successfully."

H. A. Gossard (June 23) "It seems to be quite abundant; in fact, is probably more numerous than in average years."

iana J. J. Davis (June 15) "The striped cucumber beetle has been abundant everywhere in the State and has been effectively controlled by the use of

calcium arsenate and gypsum.

- Wisconsin J. E. Dudley, Jr. (June 1) "Apparently a heavier infestation than usual. First emerged adult seen on May 5; first seen in the field on May 22 at Waupaca."
- Texas M. C. Tanquary (June 18) "Reported as being destructive to watermelons, cucumbers and cantaloupes in Franklin County."

MELONS

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- Delaware J. F. Adams (June 3) "Beetles abundant, often a dozen to a hill. Many of the plants with only the first true leaves killed. Damage estimated at 5 percent at Houston."
- Missouri L. Hazeman and assistants (June 17) "The striped beetle for the past 4 weeks has appeared in southeastern Missouri in the melon section in such numbers as to threaten the crop. Dusting with nico-dust and arsenicals has largely saved the commercial crop. At Columbia they arrived on June 2 or 3, often 50 to a hill."

12-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

- Alabama W. E. Hinds (June 2) "Very abundant in injuring melons, corn, etc."
- Missouri L. Hazeman and assistants (June 16) "Corn root-worm reported from Cooper County, also reported as serious in southeastern Missouri."

BANDED FLEA-BEETLE (Systema taeniata Say)

- Missouri L. Hazeman (June 11) "Practically ruined gardens here on wheat stubble land. Much more numerous than usual."

SQUASH LADYBIRD (Epilachna borealis Fab.)

- Arkansas W. J. Baerg (June 6) "The insect first noted on this date not very numerous. This is the first time this insect has been found attacking crops to any extent in this State."

COTTON APHIS (Aphis gossypii Glov.)

- Texas D. C. Palmer (June 24) "The Melon aphis appears to be unusually abundant and has damaged the local melon crop at Uvalde from 50 to 75 percent."

SQUASH

SQUASH-VINE BORER (Heliothis satyriniformis) Hbn.)

- North Carolina Franklin Sherman (May 10) "The first adult of the season noted on young squash plants today."

STRIPED CUCUMBER BEETLE (Diatrotica vittata Fab.)

- Wisconsin J. E. Dudley, Jr. (June 2) "Very heavy infestation. Heavy dusts of several kinds finally repelled or destroyed the majority of the beetles."
- Delaware J. F. Adams (June 3) "Considerable foliage injury at Houston."

ONION

ONION MAGGOT (Hyalemyia antiqua Meig.)

- New York C. R. Crosby and assistants (June 18) report this insect as doing rather serious injury in the northern part of Columbia County. Present in less destructive numbers in Nassau, Erie and Orange Counties."
- Oregon A. L. Lovett (June 6) "Many complaints being received from onion growers in Washington County."

ONIONTHRIPS (Thrips tabaci Lind.)

- Massachusetts H. G. Fernald (June 23) "Onion thrips is quite abundant in the Connecticut Valley."
- New York H. W. Fitch (June 18) "Quite numerous and causing some damage in Albany County."

DARK-SIDED CUTWORM (Fuxoa messoria Harr.)

- New York C. R. Crosby and assistants (June 19) report serious injury in small areas in Orange County. Has stopped working after destroying several acres at Williamson.

ZEBRA CATERPILLAR (Mamestra picta Harr.)

- New York H. C. Hockett (June 14) "About half-grown caterpillars doing some damage on small plantings."

BEETS & SPINACH

SPINACH LEAF-MINER (Pegomya hyoscyami Panz.)

- New York C. R. Crosby and assistants (May 28) report that it is rapidly putting an end to the further marketing of the crop in Nassau County. Beet leaves mined to a considerable extent in Tompkins County. (June 13) Slight damage in Oneida and Albany Counties. Plentiful in garden plantings in Orleans County. (June 20) Present in all stages in Nassau County.

RHUBARB

RHUBARB WEEVIL (Lixus concavus Say)

- New York J. D. Detwiler (May 28) "First specimen of the season found at Ithaca."

Indiana J. J. Davis (June 15) "Has been reported as damaging; reported several times from northern Indiana."

PLANTAIN FLEA-BEETLE (Dibolia borealis V.)

New York J. D. Detwiler (May 28) "Fairly numerous and leaves riddled to a slight extent at Ithaca."

WILLOW FLEA-BEETLE (Crepidodera L.)

New York J. D. Detwiler (May 20) "Damaging leaves to a slight extent at Ithaca."

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

S P R U C E

S P R U C E G A L L A P H I S (*Adelges abietis* Kalt.)

New York E. P. Felt (June 9). "Spruce cone galls were fully developed at Newark on June 8, and at Mt. Vernon on June 9. Some contained adults and numerous young."

G. W. Herrick (May 28). "A number of spruce hedges about Ithaca are infested with the galls. These are just forming and are numerous."

M A P L E

C O T T O N Y M A P L E S C A L E (*Pulvinaria vitis* L.)

Connecticut W. E. Britton (June 23). "Reported as attacking silver maple at Stanford."

New York M. D. Leonard (June 10). "Trees infested at Bezus Point."

West Virginia W. E. Rumsey (June 8). "Reported as abundant at Buckhannon, Upshur County. (June 12) Reported as serious in Martinsburg, Berkley County. (June 13) Normally abundant at Huntington, Campbell County."

Ohio H. A. Gossard (June 23). "Cottony maple scale has been more abundant than has been the case for many years."

Indiana H. F. Dietz. "Reports of maple scale have been received from Anderson, Columbia City, Newcastle, Rochester, and parts of Indianapolis."

F. N. Wallace (June 15). "Cottony maple scale is serious in cities and towns this year, practically all of the reports coming from localities north of Indianapolis."

J. J. Davis. "Cottony maple scale has been reported as exceptionally abundant from almost every county in the northern half of the State."

Wisconsin H. F. Wilson (June 20). "After a period of three or four years in which we have had very few reports on cottony maple scale it is again appearing in great abundance; so far this year injuries do not appear to be serious, probably due to the fact that we have had considerable rain. However, it is to be expected that a good many trees will suffer serious injury through the summer, as this is always the case when this insect is not held in check by parasites."

Nebraska M. H. Swenk (June 15). "The shade trees at Hastings are reported to have developed a local outbreak of the cottony maple scale during June."

WOOLLY MAPLE LEAF-SCALE (Phenacoccus acericola King)

New York E. P. Felt (June 3). "R. E. Horsey reports that maple Phenacoccus occurs on a block and one half of hard maples in Mt. Vernon.

TERRAPIN SCALE (Lecanium nigrofasciatum Perg.)

New York C. R. Crosby and assistants (May 30). "Heavily infested twigs collected at Elmira. (June 2) Trees badly infested at Middletown. (June 18) Trees badly infested in Chemung County.

West Virginia W. E. Rumsey (June 11). "Reported from Wellsburg, Brook County."

Ohio H. A. Gossard (June 23). "Maple terrapin scale has been more abundant than has been the case for many years."

MAPLE CHAITOPHORUS (Periphyllus aceris L.)

Indiana J. J. Davis (June 15). "The maple Chaitophorus is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."

SILVER MAPLE LEAF-MINER (Phyllocoptes quadripes Shim.)

New York C. R. Crosby and assistants (June 11). "Galls abundant on maple leaves at Ballston Lake. (June 23) Leaves badly infested at Watertown."

BAG-WORM (Thyridopteryx ephemeraeformis Haw.)

New York C. R. Crosby and assistants (May 23). "Eggs just hatching at Yonkers."

MAPLE BORER (Glycobius speciosus Say)

New York E. P. Felt (June 20). "Sugar-maple borer adults were abroad at Nassau on June 13, and at Saratoga on June 20. This is generally a decidedly injurious pest of sugar maples throughout the City."

ELM

ELM LEAF-BEETLE (Galerucekla luteola Mull.)

New York E. P. Felt (June 16). "R. E. Horsey reports that elm leaf-beetle grubs, about one-quarter inch in length or less, were noted in Rochester today."

North
Carolina Franklin Sherman (June 1). "First report of damage for this season received today. Serious damage by this insect is usually confined to our upper Austral Life Zone at elevation of from 400 to 1,200 feet but not in the coastal plains or in the mountains."

ELM BORER (Saperda tridentata Oliv.)

Nebraska M. H. Swenk (May 15). "Reports of injury by elm borer indicate considerable activity on the part of this destructive shade-tree pest."

ELM SCALE (Gossyparia spumaria Mod.)

New York C. R. Crosby and assistants (June 12). "Trees badly infested in Johnson City. (June 17) Bad infestation in North Tonawanda. June 20) Infestation at Cayuga."

E. P. Felt. "R. E. Horsey reports that this insect has been in Rochester for a number of years and is spreading slowly, young appeared June 12."

WOOLY ELM APHIS (Eriosoma americana Riley)

New York Charles Wille. "Trees infested at Liberty."

COCKSCOMB ELM-GALL (Colopha ulmicola Fitch)

New York M. D. Leonard (June 2). "Infested leaves received bearing numerous galls from Liberty."

ELM LEAF-MINER (Kaliotenus ulmi Sund.)

New York E. P. Felt (June 3) "R. E. Horsey reports that elm leaf-miner is fairly common at Highland Park, Rochester."

ELM BUCCULATRIX (?)

New York E. P. Felt (June 3) "R. E. Horsey reports that this species was found on elms in Highland Park, Rochester, some two years ago; so far nothing has been seen of it this year."

BOXELDER.

BOXELDER APHIS (Chaitophorus negundinis Thomas)

Indiana J. J. Davis (June 15). "Boxelder aphid is a common species this spring."

Nebraska M. H. Swenk (May 19). "On shade trees reports of injury were received beginning May 9."

OAK

PIT-MAKING OAK SCALE (Asterolecanium variolosum Ratz)

New York E. P. Felt (June 1). "R. E. Horsey reports that golden oak scale showed no life at Rochester today."

OAK FIG GALL (Biorhiza forticornis Walsh).

New York M. C. Hammond (June 2). "Galls very numerous in Orange County."

OAK SEED GALL (Andricus seminator Harris)

New York M. D. Leonard (May 31). "Specimens received from Woodstock."

GYPSY MOTH AND BROWNTAIL MOTH.

(Porthetria dispar L. and Euproctis chrysorrhoea L.)

Massachusetts L. C. Midgley (June 16). "Infestation in Worcester County much heavier than last year; spraying is now being done."

ARBOR VITAE

ARBOR VITAE LEAF-MINER (Argyresthia thuella Pack.)

Connecticut W. E. Britton (June 23). "Have never noticed an outbreak of this insect before. The adults have emerged in swarms and eggs have been laid and are now hatching at New Haven."

MITES.

Arizona Don C. Mote (May 7). Eighty trees out of 100 are infested on the Capitol grounds at Phoenix."

PINE

PINE LEAF SCALE (Chionaspis pinifoliae Fitch)

New York E. P. Felt (June 21). "R. E. Horsey reports that pine leaf scale is locally abundant in Highland Park, Rochester, on Pinus austriaca, P. peuce (P. montana mughus.) On the 21st of June young scales were hatching on P. aristata in a warm hollow."

SYCAMORE

FALL WEBSORM (Hyphantria cunea Drury)

North Carolina Franklin Sherman (May 30). "Nests becoming conspicuous at Raleigh on sycamore."

Indiana Indications at present are that the fall webworm will be a serious pest this coming summer.

Louisiana T. H. Jones (June 16). "There is an outbreak of the webworm in southern Louisiana. This is, as far as I know, the first serious outbreak since June, 1917. I do not have very definite information regarding the area covered by this infestation, but it seems to include the territory bordering on the river from Baton Rouge to a point about half way to New Orleans and extending also to the south along Bayou Plaquemine and Bayou Lafourche. The brood is not yet more than half grown and the damage not yet so noticeable as it will be in a few days. Feel certain that it is the second generation that is causing the damage at present.

West

Virginia

H. G. Stamm (May 21). Reports but little decrease in number. Treatment with black-leaf 40 killed only one fourth of the aphids owing to the curled condition of the leaves."

BOXELDER PLANT-BUG (Leptocoris trivittatus Say)

Nebraska

M. H. Swenk (June 9) "Reports of injury by the common boxelder plant bug beginning to be received on this date."

CAMPHOR

CAMPHOR SCALE (Pseudaonidia duplex Ckll.)

Louisiana

E. Baker (June 18) (Copied from Boston Transcript). "This pest now covers considerably more than a square mile in the City of New Orleans, and has been found on 97 distinct varieties of trees and shrubs. This estimate of the area covered by the scale was made by Professor Barber in April; other entomologists now believe that it has covered rather more than two square miles."

CATALPA

North

North

Carolina

CATALPA SPHINX (Ceratomia catalpae Boisd.)

Franklin Sherman (June 1). "One plant accompanied by a young larva from Central section of the State was received today."

Indiana

J. J. Davis (June 15). "The catalpa sphinx is very abundant as it is every year in southern Indiana."

HICKORY

HICKORY GALL APHIS (Phylloxera caryaecaulis Fitch)

New York

C. R. Crosby (June 11). "Galls abundant at Ithaca."

SPRING AND FALL CANKERWORMS

(Paleacrita vernata Peck and Alsophila pometaria Har)

New York

E. P. Felt (June 21). "R. E. Horsey reports that cankerworms, probably both the spring and fall species, were very bad in Seneca, and Maplewood Parks, in Rochester, stripping the hickories as well as feeding upon a number of other trees and shrubs. The pests were also reported on oaks in Genesee Valley Park."

GREENHOUSE AND ORNAMENTAL PLANTS

BOSTON FERN

HEMISPHERICAL SCALE (Saissetia hemisphaerica Targ.)

New York. M. D. Leonard (June 15). "House ferns in Buffalo badly infested and suffering considerably from the attack of this insect."

CANNA

CORN EARWORM (Caloridea obsoleta Fab.)

Florida. S. B. Walker (May 28). "Much more numerous than usual at Florida City. Fifty per cent of the crop damaged by actual count."

CARNATION

RED SPIDER (Tetranychus telarius L.)

New York H. C. Hockett (June 18) "Common in greenhouses in Nassau County."

CHRYSANTHEMUM

CHRYSANTHEMUM GALL MIDGE (Diarthronomyia hypogaea Loew)

New York C. R. Crosby (May 26). "Young plants at Dobbs Ferry infested and growth stunted."

Indiana H. F. Dietz (June 15). "Chrysanthemum midge is still an important pest in greenhouses."

LILAC

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

New York E. P. Felt (May 21). "Mr. R. E. Horsey reports that young scales appeared today. The scale was very bad this year as summer spraying had been neglected for the past three years and winter or spring treatment had little effect."

Indiana J. J. Davis (June 15). "Serious pest of shade trees and ornamentals, particularly in southern half of State. Scale on lilac began to hatch at LaFayette by May 23, at Peru on June 3, and the first one hatched at Goshen in the extreme northern end of the State June 3."

MOONED VINE

Plusiodonta compressipennis Guen.

New York W. T. H. Forbes (June 14). "Larvae injurious at Dryden."

MASTURITI

CABBAGE BUTTERFLY (Pontia rapae L.)

New York M. D. Leonard (June 19). "A small patch at Ithaca badly defoliated by the larvae; two pupated about 10 days ago and a butterfly emerged today."

BEAN APHIS (*Aphis rumicis* L.)

Indiana J. J. Davis (June 15). "The nasturtium aphid is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."

PAIM

Pseudococcus nipae Maskell.

Florida Jeff Chaffin. (June 3). "All shrubs and ornamentals along the streets of Fort Myers are covered with this mealybug. The honey dew and sooty mold have ruined the appearance of all of the plants attacked, which include guava, sapodilla, and palms. The city is now taking steps to clean the pest."

PEONY

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

New York E. P. Felt (June 4). "Rose beetle was noted at Rochester on June 4, was not numerous enough to cause much injury."

MILLIPEDES

New York W. H. Wellhouse (May 29). "Girdling peony stems at the surface of the ground at Ithaca. The plants fall over and die."

PHLOX

RED SPIDER (Tetranychus telarius L.)

New York C. R. Crosby (June 16). "Leaves badly infested at Deleran."

L. F. Strickland (June 18). "In normal numbers on phlox in Niagara County."

RHODODENDRON

RHODODENDRON TINGIS (Leptobyrsa rhododendri Horv.)

New York E. P. Felt. "R. E. Horsey reports that rhododendron lace bug was first noted in Highland Park, Rochester on this date. Some winged ones being observed on June 12."

H. C. Hockett (June 15). "Injuring plants in Nassau County."

ROSE

ROSE APHIS (Macrosiphum rosae L.)

New York G. E. Smith (May 28). "Abundant on roses in Orleans County."

E. P. Felt (May 21). "Very bad on rose bushes in Suffolk County."

Ohio

H. Osborn. "Aphids of various species on rose, spiraea, and many other plants seem to be more than usually plentiful with an abundance of natural enemies."

Indiana J. J. Davis. "The rose aphid is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."

ROSE SAWFLY (Endelomyia aethiops Fab.)

Delaware C. O. Houghton (June 1). "Doing usual amount of damage at Newark."

ROSE LEAF BEETLE (Nodonota puncticollis Say)

Delaware C. O. Houghton (June 4). "This species was first observed on May 23 at Newark. It appears to be less abundant than usual this year."

Missouri. Leonard Haseman (June 15). "I have never seen this slug so abundant or so generally injurious to rose foliage."

ROSE LEAFHOPPER (Empoa rosae L.)

New York E. P. Felt (May 27). "Mr. R. E. Horsey reports rose hoppers somewhat abundant on roses at Rochester."

J. B. Palmer (May 30). "Roses badly infested wherever observed in Ulster County."

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

New York C. R. Crosby (June 14). "Injury reported from Oakfield."

Delaware C. O. Houghton (June 1). "Very abundant and attacking a great variety of plants at Newark."

ROSE VEEVIL (Rhynchites bicolor Fab.)

New York R. Matheson (June 10). "First beetles observed on this date; numerous on rugosa roses."

OBLIQUE-BANDED LEAF-ROLLER (Archips rosaceana Harr.)

New York E. P. Felt "Mr. R. E. Horsey of Rochester reports that rose leaf-rollers were very numerous on perpetual roses."

SPIRAEA

SPIRAEA APHIS (Aphis spiraeicola Patch)

Indiana J. J. Davis (June 15). "The spiraea aphid is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."

SUNFLOWER

SUNFLOWER BEETLE (Aphis helianthi Don.)

~~Indiana~~ J. J. Davis. "The sunflower beetle is one of the species most commonly brought to the attention of this office and which will be a serious pest this year from indications during the last half of May."

MISCELLANEOUS GREENHOUSE INSECTS

CYCLAMEN MITE (Tarsonemus pallidus Banks.)

Indiana H. F. Dietz (June 15). "Reports that this is an important greenhouse pest."

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum Westw.)

Indiana H. F. Dietz (June 15), reports that this is an important greenhouse pest this year.

~~GREENHOUSE~~ LEAF-TYER (Phlyctaenia ferrugalis Hübner.)

Indiana H. F. Dietz (June 15). "Greenhouse leaf-tyer is an important pest in greenhouses this year."

INSECTS ATTACKING MAN AND DOMESTIC ANIMALS

SCREW-WORM FLY (Chrysomya macellaria Fab.)

Texas D. C. Parman (June 24). "The number of screw-worm cases has been considerably above normal and the weather conditions are very favorable for heavy losses during the remainder of the month. The loss in calf crop is at present a considerable item."

~~HORN-FLY~~ (Lyperosia irritans L.)

Texas D. C. Parman. "The hornfly was unusually abundant during the latter part of the month and the first of June, but the numbers have decreased rapidly during the last two weeks."

~~Tabanus~~ HORSE-FLY (Tabanus rubescens Bellardi)

Texas F. C. Bishopp (June 28). "During the latter part of June adults of this species were observed in numbers ranging from 2 to 20 per animal near the rivers in the vicinity of Uvalde. Mr. Parman reports this fly as being even more abundant during the latter part of May and early June. Anthrax has been reported on a few ranches in this district, and this fly is apparently rather intimately associated with the spread of this disease among live stock."

~~Tabanus~~ NEW YORK HORSE-FLY (Tabanus lasiophthalmus Macg.)
New York M. D. Leonard (June 8). "Quite common about Ithaca."

HUMAN FLEA (Pulex irritans L.)

Texas F. C. Bishopp (June 28). "The outbreak of fleas which has occurred throughout the Central states during the past two months seems to be subsiding. At least fewer reports of annoyance are coming in."

ROSE - CHAFER (Macrodactylus subspinosus Fab.)

J. B. Palmer (June 18), reports that 15 chickens were killed from eating these beetles in Ulster County.

Indiana J. J. Davis (June 15). "Reports of death of chicks from eating these beetles have been received."

WAX MOTH (Galleria mellonella L.)

New York Geo. A. Rea. (June 3). "Abundant in a badly neglected apairy. Moths and caterpillars abundant. Combs of a number of colonies completely destroyed where the bees had died out during the winter."

STINGING CATERPILLAR (Megalopyge opercularis S. & A.)

Texas F. C. Bishopp (June 28). "This stinging caterpillar which is of greater importance on account of the violent stings produced when man comes in contact with it than to its injury to foliage of shade trees, is present in considerable numbers in Dallas. At this time it is feeding largely upon hackberry trees. Last year there was a veritable scourge of this caterpillar in this and other north Texas cities."

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OUTSTANDING ENTOMOLOGICAL FEATURES OF JULY , 1921

The Hessian fly surveys in the principal wheat-producing States of the Mississippi Valley are rapidly being completed. The survey in Ohio indicates an infestation of 17 per cent of the straws. The Bureau of Crop Estimates reports a crop for this State of over 34,000,000 bushels, valued, July 1, at over \$41,600,000. The Missouri Hessian fly survey is about one-half completed. The reports so far received indicate an average infestation of 21 per cent of the straws. The fly is also present in such numbers as to be a serious menace to this fall's sowings in Indiana and Nebraska. Parasitism runs so high in Ohio as to indicate a very small fall brood emerging. Illinois, Kansas, and Oregon report the fly situation as very encouraging.

The greater wheat stem maggot outbreak, reported in the last number of the Survey Bulletin, has developed even more seriously than anticipated; a survey of the situation in two counties in Oregon showed nearly \$1,000,000 damage and the unsurveyed territory is many times this area. Another serious outbreak of this insect is reported from Nebraska.

The pale western cutworm outbreak, reported in the last number, has terminated, the larvae having gone into aestivation. Heavy flights of the western army cutworm moths are reported from Minnesota, Iowa, and Montana.

The jointworm is a very serious pest in Green County, Mo., having destroyed from 10 to 16 per cent of the straws, and the western wheat sawfly is reported as being numerous in northern North Dakota, the wheat having already started to lodge on account of this infestation.

The chinch bug is now reported as seriously infesting corn in Indiana, Illinois, and Missouri. The first serious outbreak in many years is reported from South Dakota and Mississippi. The damage has about ceased in Nebraska and is not serious in Kansas and Ohio.

The corn earworm is appearing in destructive numbers in Illinois, Kansas, and Florida, and a bad outbreak of the seed-corn beetle is reported from southeastern Nebraska.

Grasshopper outbreaks in the upper Mississippi Valley are reported as being under control in Minnesota, North Dakota, and northeastern Wisconsin. The poisoned bran method of control is being used throughout this region. Outbreaks are also reported from Missouri and the north-central part of New York State, while the most serious general outbreak in years is reported from Montana.

Much damage is being done by wireworms in the northern part of New York and in parts of Illinois, North Dakota, Kentucky, and Missouri.

The clover and alfalfa seed crop is threatened in several important seed-producing regions. An unusual amount of damage is being occasioned this year in Arizona by the clover gall midge infesting Peruvian alfalfa. The alfalfa seed crop in Montana is again infested by thrips; last year this insect destroyed the entire crop in some localities in this State. Reports from Oregon indicate that the clover seed midge has entered the ground in large numbers and a bad outbreak is anticipated.

The woolly apple aphid is appearing in unusually large numbers in Massachusetts and New York.

Reports have been received of a complete defoliation of apple orchards in New York and Minnesota, and serious damage in Indiana by the spring cankerworm.

The oriental peach moth has appeared in a number of commercial orchards in Fairfax County, Va., and serious damage is being done to some of this year's plantings.

The plum curculio is reported as damaging a very heavy percentage of the fruit crop in Ohio, northern New York, and Massachusetts and is especially abundant on apples in Indiana.

The quarantine on the Mexican bean beetle has been lifted owing to the fact that recent survey work has indicated that this pest is well established over so large a region that effective quarantine is impractical.

Flea-beetles attacking potatoes are unusually numerous this month in New York, South Dakota, and Delaware. Hopperburn caused by the potato or apple leafhopper is quite bad in New York, South Dakota, and Illinois.

White grubs are reported as being about twice as numerous as usual in Kansas, about 25 per cent to 75 per cent of the potato crop about Manhattan, Kans., having been damaged.

Blister beetles seem to be unusually abundant throughout the greater part of the United States, east of the Rocky Mountains. Reports of serious infestation have been received from New York, Indiana, Illinois, Ohio, Missouri, Mississippi, South Dakota, and Nebraska.

The cabbage aphid is present in such numbers in New York State as to occasion dipping of the plants before setting, and spraying of the crop in the fields. These insects have also been numerous in Nebraska.

The onion maggot is reported as doing very serious damage in New York, Indiana, and Oregon.

The camphor scale, reported in the last two numbers of the Bulletin, has been discovered very recently in Mississippi and every effort is being made to stamp out this outbreak.

The forest tent caterpillar has been doing a tremendous amount of damage to the hardwoods of northern and western Minnesota.

The cotton boll weevil seems to be very much more numerous than usual and indications are that it will do more damage than ever before in Florida and northern Mississippi. Very heavy infestations are also reported from Arkansas and Texas.

An unexpected outbreak of tobacco hornworms destroyed from 75 to 100 per cent of the crop about Madison, Wis.

CEREAL AND FORAGE CROP INSECTS

WHEAT

HESSIAN FLY (*Phytophaga destructor* Say)

Ohio

H. A. Gossard. "A survey of 31 counties of the State showed an average of 17 per cent of the straws infested with Hessian fly; last year the average was 44 per cent. There are nine counties in the northwestern corner of the State which average 35 per cent, but parasitism is high in these counties, running from 50 to 60 per cent. When the flaxseeds, dead through desiccation and natural causes, are added to these only 10 to 20 per cent of the flaxseeds are living. The average infestation for the remainder of the State is about 9 per cent, and parasitism in some counties ran 100 per cent according to our counts.

Indiana

J. J. Davis (July 15). "A systematic survey has not yet been made. There is a fairly heavy infestation of the spring brood, and we anticipate a heavy fall issuance."

Illinois

W. P. Flint (July 18). "Much less fallens traw at harvest than is the case in average years over the entire State."

Wisconsin

H. F. Wilson (July 11). "Previous to 1918 the Hessian fly had not been reported in this State for a number of years; now it is known to occur clear across the State in the southern tier of counties. No serious outbreaks have been reported."

Nebraska

M. H. Swenk (July 15). "Is a serious menace to the crop of winter wheat to be planted this fall over all of the eastern counties of the State, south of the Platte River and west of the 97th meridian. Especially numerous in Washington and Burt Counties. Emergence has not yet commenced in our rearing cages. Altogether this insect is the most menacing pest of Nebraska's grain crop at present."

Missouri

L. Haseman. "The Hessian fly survey which is being completed has revealed the presence of heavy infestation and danger of serious loss to the next wheat crop in various parts of the State. The average infestation of the 29 counties for which percentages have been worked out amounts to 21 per cent; the greatest infestation seems to be in a belt extending across the

central part of the State, where the average percentage of infested tillers is 36. The infestation varies from as low as 1 per cent in Green and Modaway Counties to as high as 94 per cent in Audrian County; the survey is not yet complete, and later figures may alter these percentages."

Kansas

E. G. Kelly (July 18). "Slight infestation over the eastern half of the State. Second or supplementary brood occurred in late May and early June."

Oregon

A. L. Lovett. "Generally below average in abundance. Adults active June 1st."

L. P. Rockwood (June 25). "At Pleasant Hill, Lane County, 85 per cent of the plants and 60 per cent of the tillers are infested. The second brood of flies emerging the last of May increased the infestation in this field. The second spring brood was apparently through on June 25."

GREATER WHEAT STEM MAGGOT (Meromyza americana Fitch)

Nebraska

M. H. Swenk (July 15). "During the third week in June the injury by the wheat stem maggot which began to be noticeable in eastern Nebraska during the second week in June developed with much greater intensity, and in several fields was responsible for a loss of from 1 to 8 per cent. Rye was also seriously injured in some fields. Reports from central counties of the State, notably Antelope, Blaine, Dawson, and Phelps Counties, indicate that this pest was more numerous and injurious than in any previous year."

Oregon

L. P. Rockwood (July 3, Special Report No. 15). "Professor Lovett and I covered the Grande Ronde Valley and the whole north end of Union County, Ore. very thoroughly with County Agent Avery, last week. We found the infestation of spring wheat by Meromyza americana very serious. We estimate it at from 10 to 80 per cent of the tillers, moreover, in the late-sown spring wheat where the percentage of infestation was lightest a new brood of flies were ovipositing and will increase the infestation materially. We figure a loss of at least one-half of the spring wheat crop of Union County, the principal spring wheat county of Oregon. The Bureau of Crop Estimates gave an acreage of 34,885, a crop of 697,700 bushels of a value of \$1,290,000 for spring wheat in Union County last year. It is the general opinion in the county that the acreage of spring wheat is greater this year than last. We are certain that the outbreak extends into Walla County, 19,286 acres, 347,148 bu. 1920 estimate, as we found infested fields to the north of Elgin to the county line at the highest point between the two counties. I would expect to find it all over the north central part of Oregon, eastern Washington, and central Idaho."

where the rainfall approaches 20 inches or exceeds 15 inches. However, winter wheat is the principal crop over most of this region. I will endeavor to get a line on the area covered by this outbreak when I have cleared up the routine entailed by the beginning of the fiscal year. The outbreak appears to have been due to exceptionally favorable weather conditions. There were early rains last fall which brought out a large amount of volunteer wheat, then the backward rainy spring has been favorable to repeated broods this spring. Seeding was interrupted by weather conditions and the condition of the soil so that there is a great variety in the stage of the wheat. Our observations indicate that the main source of the infestation was the volunteer wheat as there appears to be a direct relation between the amount of infestation and the amount of volunteer wheat in the fields. Oats and barley were infested to quite an extent in places; timothy was also occasionally infested. The infestation on winter wheat is light and only occasional typical white heads are seen."

WHEAT MIDGE (Contarinia tritici Kirby)

- New York L. C. T. ler (June 21). "Observed in two fields in Genesee County."
- Ohio H. A. Gossard. "Wheat midge was quite numerous over the southern and southwestern counties; it was not plentiful in the northern counties."
- Indiana J. J. Davis (July 15). "The wheat midge has been conspicuously present in many sections in Indiana, particularly in central Indiana."
- Washington M. M. Reeher (July 15). "Many adults out in large numbers and ovipositing on spring wheat. Have had many showers and few warm days."

WESTERN WHEAT STEM MAGGOT' (Hylemyia cerealis Gillette)

- Nebraska M. H. Slenk (July 15). "In Kimball and Morrill Counties there occurred injury in some fields caused by some insect working in the wheat straws just below the third or fourth joint from the head, causing a discoloration of the inner wall of the straw and a weakening of it at this point. It is believed, but not proved, that this was due to a second brood of the western wheat stem maggot, as the injury occurred in much the same localities as were infested by the first brood of that pest last April."

WESTERN ARMY CUTWORM (Euxoa auxiliaris Grote)

- Minnesota A. G. Ruggles (July 12). "Reports have been received from a great many parts of the State that there is an extreme abundance of the noctuid army cutworm. The adult moths were sent in as early as May 27."

Iowa and
North Dakota.

C. N. Ainslie (June 27). "Great flights of cutworm moths have been occurring everywhere in the Northwest. They appeared in Sioux City before I left in May; they were numerous in Fargo, N. Dak., and were a nuisance at Dickinson, and also at Mott, N. Dak., where they were said to have dimmed the street lights at one time by their numbers. The same phenomenon was noted at Elk Point some years ago, but the next year there was no undue increase in the number of cutworms in gardens."

Montana

R. A. Cooley. "Cutworm moths of various species, but with the army cutworm predominating, have made their appearance in unprecedented numbers throughout central and eastern Montana during the last two weeks of June. The height of emergence of this species usually does not come until the first week in July. Very little damage by this insect was reported during April and May, the time when the larvae are most active, while in some former years it has been the cause of a great amount of damage, especially to winter wheat."

PALE WESTERN CUTWORM (Parosagrotis orthogonia Morr.)

Montana

R. A. Cooley. "This insect has about ceased its destructiveness to grain crops, and is in the rather long quiescent period through which it passes previous to pupation about the middle of July. In a few counties in the northern part of the State more than 35 per cent of the total seeded acreage in grain crops has been destroyed, but on the whole the damage throughout the State this year has been much less than in 1920."

ARMY WORM (Cirphis unipuncta Haw.)

Nebraska

M. H. Swenk (July 15). "During the third week in June there were numerous reports of heads of wheat being stripped more or less by the first brood of the true army worm. Usually the worms merely work through the field, stripping a wide swath, but in some cases as much as 50 acres were stripped. Some heads were completely eaten off, others had the awns of the heads eaten, and the berries more or less consumed, while in some fields only the awns were eaten off. By June 20 the injury was practically over and the worms went into the ground to pupate."

SPOTTED CUTWORM (Agrotis c-nigrum L.)

New York;

W. T. M. Forbes (May 31). "Recently emerged moth taken at Ithaca."

JOINTWORM (Harmolita tritici Fitch)

Ohio

H. A. Gossard. "Jointworms average from 1 to 4 per cent infestation for most of the counties, though Henry County recorded 25 per cent."

- Missouri A. C. Burrill (July 8). "From 10 to 16 per cent of the crop was damaged in Green County; this is the most noticeable occurrence in this State east of the Ozarks."
- WESTERN WHEAT SAWFLY (Cephus cinctus Nort.)
- North Dakota Stewart Lockwood (July 18). "The grass-stem sawfly is found in large numbers this year over the northern part of the State. Marquis wheat has already started to lodge because of these insects."
- EUROPEAN WHEAT SAWFLY (Cephus pygmaeus L.)
- New York C. R. Crosby and assistants report serious infestation late in June and early in July from Genesee County, where from 5 to 10 per cent of the straws were infested. By July 13 wheat was lodging badly in Monroe County. Quite a little damage by this insect was also reported from Seneca County."
- COMMON SMUT BEETLE (Phalacrus politus Melsh.)
- Nebraska Myron H. Swenk (July 15). "Was reported in conspicuous numbers during the latter half of June, especially in the Platte Valley of Dawson, Lincoln, and Keith Counties, but of course no obvious injury."
- CRICKETS (Gryllus assimilis Fab.)
- North Dakota Stewart Lockwood (July 18). "We are expecting a large amount of damage to shocked grain this year from crickets. I have never seen them as thick as they are at the present time."
- CORN
- CHINCH BUG (Blissus leucopterus Say)
- Ohio H. A. Gossard. "Chinch bugs were found in considerable numbers over most of northwestern Ohio and in restricted localities in northeastern Ohio."
- Indiana J. J. Davis (July 15). "Chinch bug was undoubtedly the outstanding problem of the month. Heaviest infestation occurred in Sullivan, Vigo, Clay, and Green Counties in the southwestern part of the State; Wayne, Henry, and counties north to Allen inclusive along the eastern side of the State. Where creosote barrier line was used in time it was thoroughly effective. There is every indication that the second brood of bugs will be abundant and destructive and that infestation next year will be even more severe unless checked by weather conditions."
- Illinois James Muster (June 21). "Bugs are now migrating from the wheat stubble in Jackson County; 50 per cent of the corn plants are infested."

W. P. Flint (July 18). "Damage has been most severe in the south-central part of the State; many entire fields of corn have been destroyed. 75 per cent of the bugs are now adults. Eggs are being deposited for the second generation. Creosote barriers have proved very satisfactory. Oats also severely damaged; as high as 30 acres in one field being killed by these insects. In this section more bugs have been bred in oats than in wheat."

South Dakota.

H. C. Severin (July 18). "This is the first time chinch bugs have appeared in injurious numbers during my 12 years experience in Dakota. The bugs are now migrating into the corn; many of the bugs are mature."

Nebraska.

M. H. Swenk (July 15). "As was anticipated in my previous reports injury by chinch bugs developed in Thayer County during the last 7 or 8 days in June and the first week in July, when the bugs migrated from the wheat into the corn, but even heavier injury developed in Jefferson, the next county to the east in the vicinity of Erdicott, Powell, and Steele County. Chinch bug injury is practically over at the time of writing this report."

Kansas.

E. G. Kelly (July 18). "Few adults scattered throughout most corn-fields over the eastern third of State. No damage this season; adults migrating to sorghum and sudan grass."

Missouri.

L. A. Haseman (July 10). "During the month the chinch bug has been the most prominent insect in the State; less damage was done than was anticipated; due to the spring weather conditions the spring brood was late maturing and at wheat-cutting time most of the nymphs were yet in the early nymph stages. The young of the summer brood are beginning their work on the corn and if dry weather continues serious damage may be expected."

Mississippi

R. W. Harned (July 23). "Reported a number of times during June. Most of these reports came from counties in the Yazoo-Mississippi Delta in the western part of the State. A few of them came from the northeast prairie section of the State. Corn is the principal crop injured. The chinch bug is not normally a serious pest in Mississippi but the long drought this spring made conditions favorable for their rapid increase."

CORN EARWORM (Chloridea obsoleta Fab.)

New York.

L. O. Gratz (July 16). "Abundant in some fields about Eden."

E. P. Felt (July 23). "Corn earworm was found the last of June in small numbers just north of Gowanda, in Cattaraugus County, and in mid July very serious local injury was reported from Albany County."

Ohio

L. Haseman (July 10). "This insect did some damage in the tassels of young corn late in June and the second summer brood of larvae

later began on the ears of early corn. It is not as abundant as usual at this season of the year."

- Illinois W. P. Flint (July 18). "More abundant than usual over the entire State. Worms just becoming full grown."
- Kansas E. G. Kelly (July 18). "This insect has been a serious pest to sweet corn."
- Mississippi R. W. Harned (July 23). "Seems to be very scarce this year in Mississippi. This species was abundant last year and did much damage late in the season; its parasites were very numerous."
- Florida J. R. Watson (July 15). "Some fields have been completely destroyed by this insect about Sanford."
- Jeff Chaffin (July 20). "Complaints have been coming in from all over southern Florida. The insect is doing very little if any damage in northern and western Florida."

ARMY WORM (Cirphis unipuncta Haw.)

- Illinois W. P. Flint (July 19). "Adults scarce from June 1 to 28. Abundant from that date to July 9. Observed in small numbers from July 9 to 19."

FALL ARMY WORM (Leucyama frugiperda S. & A.)

- South Carolina Philip Luginbill (June 20). "A full-grown larva was taken from corn at Columbia; this is about two weeks earlier than the insect has appeared for the past 8 years at this latitude. (July 5) Although the fall army worm has appeared in this locality no serious trouble is to be expected from it this year. Present generation is scattering and in the first and second instars. Weather conditions are unfavorable and it seems doubtful whether the insect will do any great damage."
- Florida J. R. Watson (July 17). "This insect sometimes appears in this State as early as April; was first noticed this month at Bartow, Polk County."
- Jeff Chaffin (July 19). "First observed at Plant City on this date. Quite likely this insect will cause considerable damage during the next 30 days."

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

- Louisiana T. H. Jones (June 30). "Cornstalks have been sent in from St. Francisville, containing larvae and pupae."

STALK BORER (Papaipema nitela Guen.)

- Indiana J. J. Davis (July 15). "Has been repeatedly reported from all sections of the State, principal crop attacked being corn."
- Illinois W. P. Flint (July 18). "Normally abundant throughout the entire State; larvae about two-thirds grown; also attacking oats, potatoes, tomatoes and peppers."

MAIZE BILLBUG (Sphenophorus maidis Chittn.)

- Minnesota A. G. Ruggles. "We have had a few complaints from two small localities in the State; the infested cornfields were near a drained peat slough which was filled in 1917. Evidently a few of the nut grass plants and others survived sufficiently to enable this insect to go through its life cycle."

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

- Minnesota C. N. Ainslie (June 27). "Corn rootworm is doing injury about Rochester, Minn., for the first time."
- COLORADO CORN ROOTWORM (Diabrotica virgifera LeC.)
- Colorado C. P. Gillette. "Complaints of serious injury are being received and in every case from those who have planted corn following corn; plants make a stunted growth, the leaves curl and the stalks fall over. This insect is either on the increase or the farmers are becoming more familiar with its injuries."

SEED-CORN BEETLE (Azonoderus pallipes Fab.)

- Nebraska H. H. Swenk (July 15). "During July there has been a conspicuous abundance of seed-corn beetles; these have been found feeding only on the roots of the now practically fully grown corn plants but upon the leaves of tomato and pepper plants and upon the foliage of walnut trees. The area of conspicuous abundance of these beetles extends from Lancaster to Hall County and south to Fillmore County."
- Missouri A. C. Burrill. "About the middle of May there was a heavy swarm of this beetle at Kennett."

PRIONUS SP.

- Illinois W. P. Flint (July 18). "Caused serious damage to corn in several fields in northern Illinois where sod land was broken for corn."

CORN LANTERN FLY (Peregrinus maidis Ashm.)

- Florida J. R. Watson (July 15). "Beginning to appear in normal numbers all over southern Florida. First observed on this date at Sandford."

- New York G. E. Smith (July 9). "Becoming very abundant in most sections of Orleans County."
- Illinois W. P. Flint (July 18). "Abundant in only five or six counties in southwestern part of State; have not caused much damage as yet."
- Wisconsin S. B. Fracker (July 26). "Much more common in the northwestern area than was anticipated. Held under control in the northeastern counties with poisoned bran."
- Minnesota A. G. Ruggles (July 12). "Received some specimens of a grasshopper doing damage at Grand Rapids, and found that it was a species that has never been reported as doing damage here, Melanoplus bruneri. The northern counties of the State were threatened with a grasshopper outbreak early in the season; from the latest reports, however, I believe that the pest has been held in check and undoubtedly controlled."
- North Dakota Stewart Lockwood (June 27). "Grasshoppers are now doing considerable damage in several of the north-central counties. They are being poisoned extensively and much of the crop will be saved. Melanopli are most numerous. Cammula pellucida is also quite numerous. (July 18) We have eliminated grasshopper as a damaging factor with the exception of the southeastern part of Bottineau County. A great saving has been accomplished by the use of poisoned bran bait."
- Nebraska M. H. Swenk (July 15). "Severe injury to alfalfa and corn developed during July in Richardson, Pawnee, Nemaha, Johnson, and the southern parts of Otoe and Lancaster Counties. In the western counties grasshoppers are no more numerous than usual."
- Kansas E. G. Kelly (July 18). "Have not become very abundant in Kansas this season; very good control by the use of poisoned bran mash. They did damage to alfalfa and corn in the early part of July as they were leaving the wheat stubble."
- Missouri L. Haseman (July 10). "In places grasshoppers are attracting attention. Melanoplus differentialis seems to be the most abundant species though M. femarrubrum is also abundant."
- Montana A. L. Strand (July 22). "Cammula pellucida has been the most destructive hopper present in western Montana during the last three years. Melanoplus atlantis: This species is the predominating one west of the continental divide, in which region the grain crop was damaged approximately 25 per cent. It was much more abundant this year than for several years. Melanoplus bivittatus is working in conjunction with M. atlantis and is responsible for more than ordinary damage in the State this season."
- R. A. Cooley (July 1). Grasshoppers are more generally destructive over the State than ever before known. Campaigns against them have been or are being conducted in 26 counties. In 18 of these counties the campaigns have been financed by county funds. This has been done through the operation of a law passed by the last legislature which makes it possible for county commissioners, upon the advice of the State entomologist and under proper organization, to issue county warrants in payment for the necessary supplies, the money so used to be retrieved by special tax. The species of

grasshoppers most largely concerned are Gamnula pellucida and Melanoplus atlanis. Sarcophagid parasites, mostly Sarcophaga Kellyi, are appearing in large numbers in the counties east of the Continental divide and in one locality on the west side of the mountains."

WIREWORMS (Elateridae)

New York

L. E. Allen (June 18). "Many fields of corn more than 50 per cent destroyed. Considerable damage being done throughout Clinton County."

E. P. Felt (July 23). "Agriotes mancus and Melanotus communis attracted attention in Columbia and Oneida Counties because of injury to corn."

Illinois

W. P. Flint (July 18). "More numerous than usual over southern Illinois."

North Dakota

Stewart Lockwood (June 27). "Reports have been received from widely scattered areas of the State that wireworms were damaging wheat, corn, and potatoes. From the reports it would seem that the places are suffering from a heavier infestation than we have had for years past."

Kentucky

H. German (July 6). "Reports that wireworms of two species are working on the underground parts of young corn, sometimes being accompanied by the southern corn rootworm, and in some fields by one of the corn webworms. The injury is sometimes ascribed by farmers to the so-called corn budworm, the fact that there are three different insects at work on the plants having been overlooked. The wireworms involved are Melanotus sp. and Monocrepidius lividus."

Missouri

L. Haseman (July 10) "Numerous complaints have been received concerning wireworms and more particularly regarding the results of their earlier feeding at the crown of corn plants."

ALFALFA

CLOVER LEAFHOPPER (Agallia sanguinolenta Prov.)

Nebraska

M. H. Swenk (July 15). "Injury was reported from Douglas County, but aside from this injury and that of nematodes in Dickinson County, and injury by grasshoppers, the alfalfa crop of the State has not been injured by insect pests."

ALFALFA GALL MIDGE (Asphondylia websteri Felt)

Arizona

V. L. Wildermuth (July 6). "Doing a remarkably large amount of damage to Peruvian alfalfa of Zenor Ranch, Tempe, Ariz. One plant was examined in the laboratory and found to have 17.3 per cent of the pods infested. It is interesting to note that of these infested pods 95 per cent contained parasites. This is about the usual rate of parasitism of the second brood and largely accounts for the fact that this insect has never become a serious pest."

ALFALFA WEBWORM (Lexostega commixtalis Walker)

Kansas

E. G. Kelly (July 18). "This insect has begun to show up in great numbers in the southern counties of this State."

Colorado

C. P. Gillette. "This insect appeared in moderate numbers over a large portion of the alfalfa growing areas of eastern Colorado; this spring no fields have been reported as seriously injured however. "

VARIEGATED CUTWORM (Peridroma margaritosa Haw.)

Mississippi

R. W. Harned (July 23). "Has been reported as doing serious damage to alfalfa and clover in Washington and Bolivar Counties; these reports were received during April and May. Since that time no serious complaints have been received.

THRIPS (Thysanoptera)

Montana

F. W. Beier (July 1). "This insect has caused the loss of the entire alfalfa seed crop in some localities last year and a 75 per cent loss to the honey producers. It now appears to be more abundant than usual and damage is just becoming evident."

CLOVER

CLOVER SEED MIDGE (Dasyneura leguminicola Lint.)

Oregon

L. P. Rockwood (July 10). "Rains during the haying season and rains during the last week of June were favorable to the clover seed midge, allowing them to enter the ground before the hay was removed from the fields in most cases; second generation or the seed destroying brood is now ovipositing on young clover heads. Expect a considerable reduction of seed yield due to depredations of this insect."

YELLOW-BEAR CATERPILLER (Diacrisia virginica Fab.)

New York

J. J. Detwiler (July 15). "Larvae now in next to the last instar at Ithaca."

FRUIT INSECTS

APPLE

GREEN APPLE APHIS (Aphis pomi DeG.)

- New York C. R. Crosby and assistants. "Were plentiful by July 9th throughout Orleans County, also numerous early in the month in Clinton, Columbia, and Dutchess Counties."
- Ohio H. A. Gossard (June 23). "This insect threatened much damage a few weeks ago but syrphus flies, lady bugs and other natural enemies seem to have the upper hand at the present time and we do not anticipate serious damage anywhere."

ROSY APPLE APHIS (Anuraphis roseus Baker)

- New York C. R. Crosby and assistants. "Quite abundant in Tompkins County late in June. Had mostly disappeared from the apples by July 9 in Orleans, Columbia, and Dutchess Counties."
- Ohio H. A. Gossard (June 23). "Has been found quite abundant in a few orchards."

WOOLLY APPLE APHIS (Eriosoma lanigerum Hausm.)

- Massachusetts A. I. Bourne (July 20). "Seems to be appearing in rather larger numbers than is usually the case. Aside from this species, however, orchard plant-lice do not seem to be in particular evidence."
- New York C. R. Crosby and assistants. "More abundant than usual in Orleans and Columbia Counties. Slight infestations noted in Albany and Dutchess Counties. Common in neglected orchards in Nassau County."

CODLING MOTH (Carpocapsa pomonella L.)

- New York L. F. Strickland (July 9). "Codling moth began ovipositing in Niagara County on June 24. Number of eggs constantly increased until July 1 when it had reached a higher point than at any time during the past five years. First codling moth larva observed on July 1. Considerable parasitism of codling moth eggs is taking place, but has not reached the percentage attained in 1920. First larva to leave the apple for pupation was observed July 6; however, but few larvae have reached the pink stage yet. The high peak of egg laying this season occurred on July 4th."
- C. R. Crosby and assistants report first-brood larvae hatching in many orchards in Orleans County on June 25, where the outbreak is not as abundant as last year. A normal outbreak in Seneca County and less numerous than usual in Dutchess, Columbia, and Nassau Counties.
- Virginia L. A. Stearns (July 7th). "First brood worms of codling moth were leaving fruit in greatest numbers at the close of the month of June. First brood moths emerged June 24th. First section brood eggs laid June 24th and hatched June 29th. The application against the side worm will be timed about July 20th in Northern Virginia."

Ohio H. A. Gossard. "Stragglers of the first brood of codling moths kept appearing until two weeks ago at Wooster; the first moths of the second brood came a day or two ago. Since very complete samples were taken we are assured that the second brood is just now coming in northern Ohio."

Indiana J. J. Davis (July 15). "Codling moth has been common as usual."

Oregon A. L. Lovett (July 15). "Worms extremely scarce in Willamette Valley. Development retarded and generations not well defined. The hold-over from the first generation and the early second generation apparently just pupating."

FRUIT TREE LEAF-ROLLER (Archips argyrospila Walk.)

Montana A. L. Strand (July 22). "Great damage by this insect occurred in the Bitter Root Valley last year, 500 acres of orchards having been entirely defoliated as a result of the failure to control them of the miscible oil used. The brand used this year has proved more effective."

New York C. R. Crosby and assistants report this insect as doing from four to five per cent damage in the southern half of Wayne County, and not above the per cent in the northern half, and as common but not abundant in Dutchess County in late June.

BUD MOTH (Tmetocera ocellana Schif.)

New York C. R. Crosby and assistants report this insect as practically disappearing by the end of June.

GREEN FRUIT WORM (Xylina antennata Walk.)

New York C. R. Crosby and assistants report this insect as fairly common late in June in Wayne and Dutchess Counties; also common on unsprayed trees in Nassau County.

E. P. Felt (June 10). "Causing considerable damage at Skaneateles about the middle of June."

APPLE-LEAF SKELETONIZER (Canarsia hammondi Riley)

Nebraska M. H. Swenk (July 15). "During the last week in June a local outbreak of this insect developed in Washington County."

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

New York E. P. Felt (June 16). "Mr. P. L. Holstead reports that this insect is evident at Blauvelt."

APPLE DAGGER-MOTH (Apatela sp.)

Nebraska M. H. Swenk. "There was some defoliation of apple by this insect during the third week in May."

TENT CATERPILLAR (Malacosoma americana Fab.)

- Massachusetts H. T. Fernald (July 8). "Mr. F.A. Smith reports from Essex County that these insects are much more numerous than usual, being about half again as numerous as last year."
- New York C. R. Crosby and assistants report this insect as abundant in Nassau County, occasionally being observed in Ulster County, and being quite scarce in Columbia County.
- Virginia L. A. Stearns (July 7). "More abundant than usual. Practically every tree in the best cared for orchards has one or more nests."

FALL WEBWORM (Hyphantria cunea Drury).

- Ohio H. A. Gossard. "The fall webworm has been noticed rather numerously for about two weeks in some apple orchards near Wooster."
- New York C. R. Crosby and assistants report this insect as doing considerable damage to some trees in New York City on June 30, and the moths emerging in small numbers in parts of Columbia County by July 18.

SPRING CANKERWORM (Paleacrita vernata Peck)

- New York P. D. Rupert (June 24). "Southwestern part of Wayne County with fifteen or twenty orchards completely defoliated. Many other orchards considerably browned."
- Indiana J. J. Davis (July 15). "Cankerworms were unusually common during June, the usual host being apple."
- Minnesota A. G. Ruggles (July 12). "Cankerworms, both spring and fall forms, were again very numerous in certain parts of Minnesota. Four or five years ago we heard of this insect only around Lake Minnetonka district. Since that time it has spread toward the east and south along the principal automobile highways so that now in this section of the State it has become a very serious menace to orchards."

APPLE MAGGOT (Rhagoletis pomonella Walsh)

- New York C. R. Crosby and assistants report that first flies were observed in Onondaga County on July 8 and that they were quite common in Orange County on Yellow Transparents on July 14. The first flies were observed in Columbia County on July 5, and were emerging in small numbers on July 18 in this county.

FALSE APPLE RED BUG (Lygidea mendax Reut.)

- New York C. R. Crosby and assistants report that in Wayne County by June 24 some orchards had as high as fifty per cent of the fruit injured. In Dutchess County by June 27 adults were present. In Orleans County all were in the adult stage by July 9.
- Ohio H. A. Gossard (June 23). "Has occasioned noticeable damage in orchards about Wooster where nicotine sulphate was included in the first codling moth spray."

APPLE LEAPHOPPER (Empoasca mali LeB.)

New York C. R. Crosby and assistants report that this insect was observed June 18 as quite common in Clinton County. A few were observed in Dutchess County and it was becoming quite plentiful by June 25 in Genesee County; by June 9 it was abundant throughout Orleans County but more so in the northern part of the county where foliage injury was very noticeable.

BUFFALO TREE-HOPPER (Ceresa bubalus Fab.)

New York C. R. Crosby and assistants report this insect as less abundant than usual in Orleans County and Columbia County, and not uncommon in Nassau County where nymphs were observed June 18.

SAN JOSE SCALE (Aspidiotus perniciosus Comstock)

New York C. R. Crosby and assistants report this insect as locally more abundant than last year in Orleans County, on the increase in Dutchess County, and present but not common in Orange and Columbia Counties.

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

New York C. R. Crosby and assistants report this insect as fairly common in Orleans County and present in smaller numbers in Orange and Dutchess Counties but not serious anywhere.

ROUNDHEADED APPLE-TREE BORER (Saperda candida Fab.)

New York C. R. Crosby and assistants report that on June 27 one ten-year-old orchard was badly infested in Dutchess County and that the insect was present in normal numbers in Columbia county.

RED SPIDER (Tetranychus telarius L.)

Maryland E. N. Cory reports that this insect is spreading in the Havre de Grace region but is not so abundant on trees that were originally infested. This is a most unusual outbreak for this State.

EUROPEAN RED MITE (Paratetranychus pilosus Can. & Fanz.)

New York C. R. Crosby and assistants report that early in July this pest was more abundant than usual in Orleans County and that injury to the foliage was very noticeable. It was also common in Orange and Tompkins Counties.

PEAR A R

PEAR PSYLLA (Psylla pyricola Foerst.)

New York L. F. Strickland (July 9). "Many reports of bad infestations. Where two or three applications of strong lime nicotine spray have been made the growers report satisfactory results. Outbreak is about over."

C. R. Crosby and assistants report this insect as very abundant and injurious throughout Orleans County. Second-brood nymphs were just beginning to reach the "hard-shell" stage by July 9. They also report this insect as very serious in unsprayed orchards in Ulster and Albany Counties. By July 18 this insect was all in the second brood, adult stage.

PEAR LEAF BLISTER MITE (Eriophyes pyri Pgst.)

Massachusetts A. I. Bourne (July 20). "Seems to be more abundant than usual, especially in unsprayed orchards."

New York C. R. Crosby and assistants report this insect as present late in June in Onondaga County, much more abundant than usual, early in July in Orleans County, and present in noticeable numbers in Albany, Madison and Fulton Counties.

PEAR BORER (Aegeria pyri Harris)

West Virginia W. E. Rumsey (June 29). "Apple tree badly infested. Adults just recently emerged. A few stragglers still developing. The bark peppered with protruding pupal skins."

RUSTY LEAF MITE (Phyllocoptes schlectendali Nalepa)

Oregon A. L. Lovett (July 3). "Generally more serious than usual on pears in Lane County and on prunes in Marion County. The mites are clustered on the terminal growth in enormous numbers. At Corvallis in Benton County the infestation is less severe than last season."

P E A C H

BLACK PEACH APHIS (Anuraphis persicae-niger Smith)

Maryland E. N. Cory (July 1). "A new orchard of about 2,000 trees at Smithsburg is badly infested. About 25 per cent of the trees are dead or dying. An old orchard near by is entirely killed."

PEACH-TWIG BORER (Anarsia lineatella Zell.)

Delaware C. C. Houghton. "Have not observed this species here this spring where it has been very common at times during the last few years."

Oregon A. L. Lovett (June 17). "Generally prevalent in western Oregon. Slightly above average abundance."

ORIENTAL PEACH MOTH (Laspeyresia molesta Busck)

Virginia L. A. Stearns (July 7). "Has appeared in a number of commercial orchards in Fairfax County. In plantings of the current year damage done is very serious."

SAN JOSE SCALE (Aspidiotus perniciosus Comstock)

orgia O. I. Snapp (July 15). "Apparently much more numerous than usual in the Fort Valley region. Scale marks noticed in numbers in several orchards. Crawlers more numerous than for several years."

GREEN JUNE BEETLE (Cotinis nitida L.)

orth F. Sherman (July 7). "First adult of the season noted at Raleigh on
Carolina June 26. Reported on peaches at Charlotte June 29. Noted injuring peaches at Raleigh July 7."

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

w York C. R. Crosby and assistants (July 18) report this insect as injurious in a few orchards in Orleans and Columbia Counties.

PLUM CURCULIO (Conotrachelus nemophar Hbst.)

w York C. R. Crosby and assistants (July 6). "Fruit badly infested at Tottenville."

L. F. Strickland (July 2). "Early infestation has caused a small percentage of the peaches to drop during the past two weeks."

orth F. Sherman (July 1). "Began to find adults on peaches after several
Carolina weeks absence. These are evidently the progeny of the first adults noted early in the season."

orgia O. I. Snapp (July 9). "The curculio suppression campaign conducted by the Federal Bureau of Entomology has been very successful. Many orchards produced practically wormless crops this year whereas last year the damage was so severe that the late crops were not harvested. The loss from Curculio for 1920 was over \$2,000,000 while this year's crop brought the growers over \$5,000,000."

C H E R R Y

CHEERRY APHIS (Myzus cerasi Fab.)

w York C. R. Crosby. "Infestations noted late in June at Sherburne, Syracuse and New York City."

st W. E. Rumsey (June 21). "Reported as very serious on cherry trees
Virginia in Marshall County."

braska M. H. Swenk (July 15). "During the middle of June there was a local outbreak in Scottsbluff County."

CHEERRY MAGGOT (Rhagoletis cingulata Loew)

w York C. R. Crosby and assistants report that damage by this insect first appeared in Wayne County June 27 and seemed to be confined entirely to Montmorencies. By July 2 the flies were just starting to work on late Morelles. Damage to early cherries was recorded at Orleans County on

July 2 and serious damage was reported from Onondaga on July 16. On July 18 reports of injury were received from Columbia County.

Oregon

A. L. Lovett (June 28). "This insect is from 30 to 60 per cent less abundant than last year. A large number of the commercial growers are now using poison sprays of which two have already been made."

PEAR AND CHERRY SLUG (Caliroa cerasi L.)

Oregon

A. L. Lovett (July 15). "Outbreak about normal in the Willamette Valley on cherry, pear, and plum."

Nebraska

M. H. Swenk (July 15). "An unusual amount of skeletonizing of cherry leaves by the pear slug took place throughout eastern Nebraska during late June and early July."

P L U M

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Massachusetts

H. T. Fernald (July 8). "Mr. F. A. Smith reports from Essex County that these insects are working more severely than usual."

New York

C. R. Crosby and assistants report that this insect is doing considerable damage in Dutchess and Wayne Counties. In the latter county the injury seems to be confined to orchards near stone fences and woods. It is also reported as fairly injurious in Orleans and Nassau Counties.

Ohio

H. A. Gossard. "As the season progresses it becomes more evident that the curculio injury to apples and stone fruits will run very high this season."

Indiana

J. J. Davis (July 15). "The plum curculio has been especially abundant on apple."

EUROPEAN FRUIT LECANIUM (Lecanium corni Bouché)

New York

G. E. Smith (July 9). "Abundant and injurious, particularly in the western half of Orleans County. Worst on plum and cherry but fairly plentiful on apple and pear."

C U R R A N T

CURRENT APHIS (Myzus ribis L.)

New York

P. J. Parrott (July 9). "Currant bushes on the station's experiment plots have been abandoned due to the attack of the currant aphid."

C. R. Crosby and assistants report this insect as more or less serious during late June and early July in Fulton, Delaware, and Orleans Counties.

G O O S E B E R R Y

HOUGHTON'S GOOSEBERRY APHIS (Aphis houghtonensis Troop)

diana J. J. Davis (July 15). "Has been very abundant and destructive. All of our reports and observations are in the northern half of the State."

FOUR-LINED PLANT-BUG (Poecilocapsus lineatus Fab.)

ew York E. G. Brongham (July 2). "Plants observed with considerable injury in Delaware County."

GOOSEBERRY SPANWORM (Cymatophora ribearia Fitch)

braska M. H. Swenk (July 15). "During the third week in June in Scottsbluff County there was serious injury to gooseberries by this insect. This is the first time that it has been found doing serious injury in the State."

C R A N B E R R Y

CRANBERRY GIRDLER (Crambus hortuellus Hübn.)

ew York W. T. M. Forbes. "Early in June the moths of this insect were very common in meadows."

G R A P E

GRAPE LEAFHOPPER (Erythroneura comes Say)

ew York C. R. Crosby and assistants report this insect as fairly abundant on all grapes in Orleans County during the first week in July. In Niagara County the eggs had finished hatching by June 28. Infestation in this county was not as heavy as that in 1917, still somewhat serious. Generally present in Columbia County but not in destructive numbers. Light infestations also in Dutchess and Ulster Counties.

braska M. H. Swenk (July 15). "This insect put in an appearance during early June and continued its injury on the grape and woodbine throughout that month and the early part of July. At this time the discolored foliage of the grape is beginning to drop."

GRAPE ROOTWORM (Fidia viticida Walsh)

laware C. O. Houghton (June 30). "This species is not common here and apparently little injury is caused by it."

braska M. H. Swenk (July 15). "Beetle of the grape rootworm put in its appearance in eastern Nebraska on July 1."

R A S P B E R R Y

TWO-SPOTTED OBEEA (Oberea bimaculata Oliv.)

ew York H. W. Fitch (July 1). "Some injury observed in Albany County."

laware C. O. Houghton (July 11). "Comparatively little injury is caused by this species about Newark."

RASPBERRY FRUIT-WORM (Byturus unicolor Say)

New York J. B. Palmer (July 2). "Raspberries are selling at an extremely low price in Ulster County due to the crumbly, misshapen berries and the damp condition. The crumbly berries are due in part to the work of this beetle."

RASPBERRY SAWFLY (Monophadnoides rubi Harris)

Wisconsin S. B. Fracker (July 10). "More common than usual about Oshkosh."

Oregon A. L. Lovett (June 20). "More plentiful than usual in the lower Willamette Valley where from two to five per cent of the loganberries are damaged. Spraying commercial plantings with arsenate of lead is being generally practised for the first time."

B L A C K B E R R Y

GREEN JUNE BEETLE (Cotinis nitida L.)

Missouri Leonard Haseman (July 10). "Blackberries in central Missouri have been seriously affected by this beetle."

P E C A N

PECAN PHYLLOXERA (Phylloxera devastatrix Perg.)

Mississippi R. W. Harned (July 23). "This spring more complaints were received in regard to this insect than during any of the past 15 years. These complaints came from about twenty different towns in all parts of the State."

F I G

CITRUS MEALYBUG (Pseudococcus citri Risso)

Mississippi R. W. Harned (July 23). "The citrus mealybug has been especially numerous on figs in the southern half of the State."

SOUTH FIELD - CROP INSECTS

COTTON

COTTON BOLL WEEVIL (Anthonomus grandis Boh.)

North

Carolina Franklin Sherman (July 8). "Some punctured squares and a larva were sent in from Anson County today. These are the first reports of activities that we have received this year."

Florida C. A. Bass (July 18). "More abundant than usual in Bradford County; 75 per cent of the squares are infested."

Jeff Chaffin (July 20). "Reports indicate that boll weevil is doing more damage this year than ever before in the cotton growing section."

Arkansas

W. J. Baerg (July 11). "Very severe infestation; if weather favors the weevil a very poor crop is expected. This insect has also appeared for the first time in Cleburne County. The line of infestation in the State according to Dr. J. A. Elliott, Plant Pathologist, and Mr. H. K. Thatcher extends over the entire southern part of the State, south of a line starting from the west-central border of Polk County, in a northeasterly direction to the center of Cleburne County, and thence eastward to the east-central border of Mississippi County. Mr. C. S. Bouten, State Crop Reporter, places the weevil-infested area south of a line extending from the southwestern corner of Polk County to the south-central border of Van Buren County, and thence in a south-easterly direction to the east-central border of Phillips County."

Mississippi

R. W. Harned (July 23). "More abundant in the northern part of the State this year than during any previous year; several observations indicate that the boll weevil parasites are unusually abundant in certain areas this year; one field examined recently showed that 65 per cent of the weevil larvae were parasitized; on the other hand, in some fields no parasites could be found."

Texas

M. C. Tanquary. "Infestation very general and very heavy, but dry weather in July has greatly reduced the rate of increase."

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

North

Carolina Franklin Sherman. "Reports of damage from eastern North Carolina not serious."

BROWN COLASPIS (Colaspis brunnea Fab.)

Mississippi R. W. Harned (July 23). "Has been reported quite frequently this season as damaging cotton and beans."

SNOWY TREE CRICKET (Oecanthus nivens DeG.)

Arkansas W. J. Baerg (July 11). "Three to five per cent of the plants were killed by the egg punctures of this insect in Scotts County."

COTTON RED SPIDER (Tetranychus spp)*

~~North~~

Carolina Franklin Sherman (July 7). "Wake and Craven Counties report this insect as being very abundant, but as yet not epidemic, though weather to date has been favorable; recent rains may have checked it."

TOBACCO

TOBACCO SPILTWORM (Phthorimæa operculella Zell.)

Florida F. S. Chamberlin (July 23). "This insect, while not present in sufficient numbers to do much damage, has been observed to be more abundant than usual this season."

NORTHERN TOBACCO HORNWORM (Phlegethontius quinque maculatus Ha

New York D. D. Ward (July 16). "Growers in Onondaga County report considerable injury."

Wisconsin J. E. Dudley. "An unexpected outbreak has developed around Madison, Dane, and Rock City; from 75 to 100 per cent of the crop has been damaged. The northern tobacco hornworm is most abundant and its larvae are nearly full grown. The southern tobacco hornworm is much later, many of its larvae are in the first and second stages.

S. B. Fracker (July 26). "Heavy loss in Rock County; outbreaks were unexpected and damage was done before the farmers could secure a supply of spray materials."

SUGAR CANE

SUGAR-CANE BORER (Diatraea saccharalis Fab.)*

Louisiana T. E. Holloway. "The moths appeared early in the season after a very mild winter; the egg parasite Trichogramma minutum Riley has already been very active in parasitizing the eggs of this insect. These borers are also reported as playing havoc with cane in Thibodaux.

SUGAR-CANE BEETLE (Eutheola rugiceps LeC.)

Mississippi R. W. Harned (July 23). "Has been reported quite frequently this season as damaging corn and sugar cane, although these insects have been received from 15 or 20 different localities throughout the State; the reports in regard to their damage have come largely from the central part of Mississippi."

RICE

RICE WATER WEEVIL (Lissorhoptrus simplex Say)

Louisiana T. E. Holloway (July 23). "The rice water weevil is numerous at Crawley, La."

RICE STALK-BORER (Chilo plejadellus Zinck.)

Louisiana T. E. Holloway (July 23). "The rice stalk-borer is showing up in heading rice at Crawley, with a planting of late varieties having large stalks; the damage from this pest is increasing."

F. H. Chittenden. The Federal quarantine on the Mexican Bean Beetle has been lifted at the suggestion of the Office of Truck Crop Insect Investigations of the Bureau of Entomology owing to the fact that recent scouting has discovered this insect well established at such distant points from the original outbreak in Alabama as Southern Alabama, eastern Tennessee, and eastern Kentucky, so that practical quarantine measures are impossible.

TRUCK - CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Lentiginosa decemlineata Say)

New York "C. R. Crosby and assistants report this insect as very abundant in Erie, Genesee, Orleans, Steuben, Wyoming, Seneca, and Clinton Counties; not very abundant in the southeastern part of the State including Columbia, Dutchess, and Orange Counties. In the western part of the State the outbreak was much more serious on the early planted potatoes, the later plantings not suffering severely."

Montana A. L. Strand (July 22). "Whereas potato beetles were very scarce last season, the present season has seen them in exceptional numbers."

POTATO FLEA-BEETLE (Eutrix cucumeris Harr.)

Maine E. M. Patch (July 12). "The first generation (overwintering) of the flea beetles disappeared for the most part about the last of June; very few are present now about Presque Isle."

New York C. R. Crosby and assistants report severe injury during the early part of the month in Erie, Genesee, Orleans, Steuben, Columbia, and Orange Counties; by the middle of July the beetles had mostly disappeared in the northwestern counties. A report dated July 8 indicated that the beetles were again becoming numerous in Nassau County on Long Island.

South Dakota H. C. Severin (July 15). "More abundant than usual this year and on the increase during July."

New York E. P. Felt (July 23). "Flea-beetles were scarcer than usual early in the season, though since July 1 they have multiplied very rapidly and are ruining tomatoes and beans in Madison County."

Delaware C. O. Houghton (July 9). "This species is still with us in full force and causing much damage to tomatoes and potatoes."

Kentucky H. Garman (July 6). "Eutrix fuscula and Eutrix parvula are reported as occasioning exceptional injury to potatoes in Kentucky, the fields are sometimes being very badly infested and the plants, turning brown, sometimes are practically ruined."

POTATO APHIS (Macrosiphum solanifolii Ashm.)

Maine E. M. Patch (July 12). "Is still very rare in potato fields about Presque Isle. The few winged and mature apterous individuals represent the second generation since the rose migration and are starting their dispersal colonies. Nowhere abundant. A two-hour search in one field recently located two winged individuals."

Massachusetts H. T. Fernald (July 14) "Mr. E. R. Farrar reports that 10 per cent of the crop has been damaged about Lincoln. Heavy rains and spraying with nicotine sulphate appeared to be checking the outbreak."

A. I. Bourne (July 20). "Reports that this insect has not made its appearance to any great extent over the major part of the State. One or two complaints have been received from the eastern part of the State."

New York C. R. Crosby and assistants report that up to July 14 only occasional specimens had been observed in the western part of the State in Steuben County; In Columbia County only one field was noted as being infested up to July 18. On Long Island the outbreak started early in July; on July 2 a report was received from Nassau County, stating that the fields were quite generally infested. The heavy rains had washed off a few of these aphids, but sufficient numbers were left to cause a serious outbreak. Injury to the vines reached a stage, in a few isolated cases, where the younger leaves were commencing to curl. By July 9 in Suffolk County the situation was becoming quite serious in many fields. Cauliflower seed beds were quite generally infested and many growers were spraying them."

West Virginia P. W. Dayton (July 5). "Potatoes have been sprayed three times with arsenate of lead and Bordeaux mixture in Tucker County. The crop is almost made and damage by the aphid is about 1 per cent."

APPLE LEAFHOPPER (Empoasca mali LeB.)

New York C. R. Crosby and assistants report the adults as becoming abundant in Erie County during the first week in July. Hopperburn was severe in one-half acre patch at Spring Brook in Genesee County, where young leafhoppers were found in the potato fields on July 1. In Steuben County this insect was very severe on all early potatoes. Contact dust treatment at the rate of 100 pounds to the acre applied by hand dusters was found to have destroyed many leafhoppers, but enough remained to do considerable damage. Late potatoes did not seem to be seriously infested. In Wayne County this insect was starting to work on potatoes on July 11, and was becoming serious in Onondaga County on July 16.

Illinois W. P. Flint (July 18) "Normally abundant throughout the entire State. First brood caused serious loss to potatoes where they were not protected by Bordeaux spray."

South Dakota H. S. Severin (July 18). "Much more abundant than usual in Brookings County; many potato fields are now practically dead from hopperburn."

TARNISHED PLANT-BUG (Lycus pratensis L.)

Maine E. M. Patch (July 12). "Tarnished plant-bugs are rampaging in the vicinity of Presque Isle in potato fields; also feeding on corn to the extent of threatening the pollen supply."

New York M. C. Hammond (July 14). "Present in considerable numbers in Steuben County; wilted tips of plants common."

STALK BORER (Papaipema litela Guen.)

Massachusetts A. I. Bourne (July 20). "The corn and potato stalk-borer is reported as doing about its normal amount of injury and seems to be as abundant as ever. One case was reported in which this insect was infesting stalks of rhubarb; this is our first record of this insect infesting rhubarb."

New York M. D. Leonard (July 4). "Found infesting potatoes in Sullivan County."

" E. P. Felt (July 23). "Stalk-borer larvae one-third to one-half grown were received from Eagle Bridge where they are reported as causing considerable injury."

Nebraska M. H. Swenk (July 15). "The stalk borer continued moderate injuries during the month of June; it was reported as doing serious injury in potato fields in Douglas and Butler Counties."

THREE-LINED POTATO BEETLE (Lema trilineata Oliv.)

New York C. R. Crosby and assistants report that this insect was found quite common but not serious in Steuben and Orange Counties.

WHEAT WIREWORM (Agriotes nanus Say)

New York C. R. Crosby (June 30). "Very bad attack on seed pieces at Carsville, 30 to 40 worms per piece."

WHITE GRUBS (Phyllorhaga spp.)

Kansas J. W. McColloch (July 21). "About twice as numerous as usual, about 25 to 75 per cent of the crop being damaged about Manhattan. These are second-year grubs and in many cases nearly every tuber has been damaged."

BLISTER BEETLES (Meloidae)

New York C. R. Crosby (July 7). "A few beetles of Macrobasis unicolor were found attacking potatoes in Franklin County."

Ohio H. A. Gossard. "Potatoes have suffered more than in average seasons from a combination of blister beetles, flea-beetles, plan bugs and leafhoppers."

- Indiana J. J. Davis (July 15). "The striped blister beetle (Epicauta vittata), the margined blister beetle (E. marginata), and the gray blister beetle (E. cinerea) were reported as being abundant during the past few weeks, especially on tomatoes and potatoes, although many other garden crops, such as beans, beets, chard, etc., are commonly reported as being damaged."
- Illinois Paul Arndt (June 23). "The steel-gray blister beetle is much more numerous than usual at Ava, the entire foliage having been removed from some fields in one afternoon. The beetles seem to come from clover fields, but as the crop is practically made the damage is not very serious."
- W. P. Flint (July 18) "Epicauta sp. has been troublesome in gardens throughout the southern end of the State."
- South Dakota C. N. Ainslie (June 27). "Exceedingly abundant in the dry region west of the Missouri River; not only did field potatoes suffer, but many ornamental shrubs were stripped almost over night. At least two species are responsible for this injury."
- Nebraska H. H. Swenk (July 15). "Epicauta lemniscata was reported as injuring potatoes, tomatoes, and beets during the last week in June, and the first week in July in several localities in the State, notably in Saunders, Fillmore, and Thayer Counties."
- Missouri L. Haseman (July 10). "Two species, E. vittata and E. marginata, have become unusually abundant and have seriously injured garden crops and alfalfa fields."
- Montana A. L. Strand. "There has been a great increase in the number of Epicauta maculata accompanying the grasshopper outbreaks."
- Mississippi R. W. Harned (July 23). "E. marginata and E. lemniscata have been received from Lee County, where they are reported to be causing serious damage."

HORNCWORMS (Phlegethontia spp.)

- New York C. R. Crosby and assistants report the northern tobacco hornworm as being quite common in Orange and Nassau Counties; small larvae were observed on July 8 in the latter county; the larvae were about full grown on July 14 in the former county.
- Wisconsin J. E. Dudley (July 15). "More abundant than usual at Madison and Dane City, working on tomatoes."

CORN EARWORM (Chloridea obsoleta Fab.)

- Illinois Ward O. Davis (July 2). "Fifty per cent of the tomato crop has been destroyed by these worms at Eldorado in Saline County."
- Ohio H. A. Gossard. "Has been reported from Jamestown and Jackson, doing very serious injury to tomatoes, burrowing into the stalks and ears."

New York L. C. Tyler (July 6). "Have had practically no trouble with this insect this year in Genesee County."

CABBAGE

CABBAGE MAGGOT (Hylemyia brassicae Bouche.)

Oregon L. P. Rockwood. "Many reports of damage to cabbage and kale plants are being received from local gardens about Forest Grove."

IMPORTED CABBAGE WORM (Pontia rapae L.)

New York P. J. Parrott (July 9). "Abundant and destructive in Ontario County; growers are now applying arsenicals to protect cabbage plantings; some of the caterpillars are nearly mature."

" C. R. Crosby and assistants report this insect as being very abundant in Erie County during the first week in July; mostly in the adult stage. Larvae were present in the fields July 14 in Orange County."

Delaware C. C. Houghton (July 2). "This species appears to be less numerous than usual, but it still is doing much damage."

South Dakota H. C. Severin (July 15). "Much more abundant than usual in the southern half of the State."

Kansas E. G. Kelly (July 18). "Has been unusually abundant, but has been readily controlled by spraying with arsenate of lead."

CABBAGE APHIS (Brevicoryne brassicae L.)

New York P. J. Parrott (July 9). "Present in destructive numbers in most cabbage plantings in Orleans County; more growers than ever are adopting measures to protect plantings."

" C. R. Crosby and assistants report that this insect was very abundant during the first week of July in Erie County but disappearing by July 16; abundant by July 2 in Wayne County; damage is so severe in Ontario County that growers are spraying crops; in Orleans and Genesee Counties growers are dipping plants before setting in the field.

Nebraska M. H. Swenk (July 15). "Has been active on cabbages and radishes."

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

Missouri L. Haseman (July 10). "This insect is continuing its northward migration; it has recently appeared in Pike County in the north-eastern part of the State, and also in southeastern, west-central, and southwestern parts of the State."

STRIPED FLEA-BEETLE (Phyllotreta vittata Fab.)

New York D. D. Ward (July 16). "Causing serious injury on some late planted fields in Onondaga County."

STRAWBERRY

STRAWBERRY LEAF-ROLLER (Ancylis comptana Fröehl.)

Nebraska M. H. Swenk (July 15). "In Douglas County the second brood was doing local injury during the second week in July, where the first brood had been injurious during the fourth week in May."

WHITE GRUB (Phyllophaga implicita Horn)

Nebraska M. H. Swenk (July 15). "Many complaints of the killing out of strawberry beds either wholly or in part by white grubs have come to notice from all over eastern Nebraska during July."

STRAWBERRY CROWN-GIRDLER (Otiorynchus ovatus L.)

Oregon A. L. Lovett. "Appears to be widely distributed in Marion County which was formerly supposed to be free from this pest. Damage as yet is slight."

ASPARAGUS

ASPARAGUS BEETLE (Crucianus asparagi L.)

New York C. R. Crosby and assistants report this insect as being quite common in Orange County and present in small numbers on Long Island on July 14.

Delaware C. O. Houghton (July 4). "Both adults and larvae are quite common and doing considerable damage at Newark. Observed Polistes sp. and Podisus spinosus attacking these insects."

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

Mississippi R. W. Harned (July 23). "Has not so far been found in Mississippi although careful search has been made for it near the Alabama line."

Colorado C. P. Gillette. "Arrived in Fort Collins District on schedule time in more than normal numbers. We have not learned of any marked spread in the territory covered in this State."

PALE-STRIPED FLEA-BEETLE (Systema blanda Melsh.)

New York C. R. Crosby and Assistants (July 10). Report this insect as badly infesting fields in Yates County and doing slight damage in Livingston and Wayne Counties.

BANDED FLEA-BEETLE (Systema taeniata Say)

New York G. E. Smith (June 9). "Very abundant in the western half of Orleans County, but doing damage throughout the whole county. Serious in one 4-acre field at Holley."

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Louisiana T. H. Jones. "Received egg clusters and nymphs from Martin Stansbary of Perry, with a note that they caused the young lima beans and flowers to fall from the stalks."

APPLE LEAFHOPPER (Emmasca mali LeB.)

New York C.R. Crosby and assistants (July 10.) "Nymphs and adults common in Erie County; present in small numbers in the southeastern part of Wayne County."

PEAS

PEA APHIS (Illinoia pisi Kalt.)

Massachusetts H. T. Fernald (July 8). "Mr. F. A. Smith reports this insect as very abundant in Essex County, and Mr. L. B. Boston reports that 25 per cent of the crop has been damaged in Barnstable County."

New York C. R. Crosby and assistants report this insect as somewhat more abundant than usual in Columbia County and present in small numbers in Steuben County."

" E. P. Felt. "Mr. A. L. Brower of Madison County reports that the pea aphid has ruined a sowing made about April 20, and severely damaged one of May 12. There was little injury of plantings made previous to these dates."

Ohio H. A. Gossard. "The pea aphid was noticed to be very numerous in a field of vetch at Canton."

CUCUMBERS

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

Massachusetts A. I. Bourne (July 20). "Reported as unusually abundant during the early part of the month."

New York C. R. Crosby and assistants report this insect as present in very small numbers in Erie County; normally abundant in Columbia County and Nassau County; and very destructive in Orleans County, where 25 per cent of the plants have been destroyed.

Kansas E. G. Kelly (July 18). "Very abundant over the entire State, and has done considerable damage especially in larval stage. Adults have transmitted wilt in many fields."

Nebraska M. H. Swenk (July 15). "Began a month of very serious injury to cucurbits of all kinds during the middle of June."

MELONS

COTTON APHIS (*Aphis gossypii* Glov.)

- Kansas E. G. Kelly (July 18). "Has not been so abundant this season as last. Very good control has been effected by the use of scapy sprays."
- Nebraska M. H. Swenk (July 15). "Beginning about June 15, many reports of injury to cucumbers and melons by the melon aphid have been received."

SQUASH

SQUASH-VINE BORER (*Melittia saburiniiformis* Huebn.)

- New York D. D. Ward (July 16). "Causing considerable injury in gardens particularly on late squash in Onondaga County."
- Illinois W. P. Flint (July 18). "Full-grown larvae taken July 5. Cocoons same date."
- Nebraska M. H. Swenk (July 15). "Since the latter part of June there have been frequent reports of injury to pumpkins by this insect."

SQUASH BUG (*Anasa tristis* DeG.)

- New York J. D. Detwiler (July 15). "Eggs and nymphs; the latter mostly in the third instar, moderately abundant, adults very scarce, recently some damage becoming noticeable about Ithaca."
- Indiana J. J. Davis (July 15). "The squash bug is quite common and we have received numerous reports within the past week or two."
- Nebraska M. H. Swenk (July 15). "Since the latter part of June there have been frequent reports of injury to squashes by the squash bug."

SQUASH LADYBIRD (*Epilachna borealis* Fab.)

- Delaware C. O. Houghton (July 7). "About as numerous as usual about Newark"

ONIONS

ONION THRIPS (*Thrips tabaci* Lind)

- New York C. R. Crosby and assistants report that early in the month this insect was causing considerable damage to onions in Wayne County, and that by July 1 they had destroyed 50 per cent of the tops in Albany County, and were doing very serious damage by July 14 in Orange County.
- Indiana J. J. Davis (July 15). "The onion thrips was also very abundant and destructive."

ONION MAGGOT (Hylemyia antiqua Meig.)

- New York C. R. Crosby and assistants report that this insect is doing very serious damage in one field in Wayne County; abundant and still doing serious damage in Orange County.
- Indiana J. J. Davis (July 15). "The onion maggot was very abundant and destructive this year."
- Oregon A. L. Lovett. "More abundant than usual in the lower Willamette Valley, destroying from 12 to 20 per cent of the crop."
- New York YELLOW BEAR CATERPILLAR (Diacrisia virginica Fab.)
M. D. Leonard (June 29). "Young caterpillars were doing considerable injury in one field of onions in Genesee County."

CELERY

CELERY BUTTERFLY (Papilio polyxenes Fab.)

- New York M. C. Hammond (July 14) "Not uncommon in Orange County; larvae now working and butterflies numerous."

BEETS AND SPINACH

SPINACH LEAF-MINER (Pegomya hyoscyami Panz.)

- New York C. R. Crosby and assistants report that this insect is fairly abundant and injurious in Orleans County.

STRIPED BLISTER BEETLE (Ericauta vittata Fab.)

- Pennsylvania N. E. Garber (July 19). "A half-acre field in Bucks County was attacked, apparently from several small centers of infestation; the plants attacked were considerably defoliated."

FOREST AND SHADE - TREE INSECTS

GENERAL FEEDERS

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma S. & A.)

- New York E. P. Felt (July 23). "This insect is generally present upon young trees in the vicinity of New York City, though as a rule it does not cause severe injury; very abundant in Buffalo area, partially stripping the trees."
- C. R. Crosby and assistants report that this insect is quite common on Long Island and present in small numbers in Wayne County."
- Indiana J. J. Davis (July 15). "The tussock moth seems to be normally abundant."
- Illinois W. P. Flint (July 18). "Increasingly abundant in all cities and larger towns in northern Illinois."
- Iowa C. N. Ainslie (June 27). "Unusually abundant in Sioux City, and is doing much damage to shade trees and to rose bushes."
- Nebraska M. H. Swenk (July 15). "Developed caterpillars in such numbers as to more or less defoliate many shade trees in towns and villages of eastern Nebraska. Serious injury and annoyance is anticipated next month because of second brood."
- South
Dakota H. C. Severin (July 18). "Much more abundant in Davis, Turner, Clay, and Union Counties; ordinarily this pest is single brooded, this year it is double."

FALL WEEWORM (Hyphantria cunea Drury)

- North
Carolina Franklin Sherman. "More prevalent than normal about Raleigh, particularly on sycamore and Liquidambar."
- Mississippi R. W. Harned (July 23). "This insect has been reported as rather serious in several isolated places in southern part of State."
- Louisiana T. H. Jones. "First report of injury was received from Iberville Parish, June 13; within the next few days many complaints were received. Plants most severely attacked were pecan, willow, gum, pear, mulberry, persimmon, elderberry, and peach. On May 22 a flight of moths was noted at Baton Rouge; moths from June brood began to appear July 5. A survey was conducted to ascertain the extent of this outbreak, the result of which indicates that it was severe in the southeastern part of the State, over an area

covering the northern half of St. Bernard, Plaquemines, Jefferson, Lafourche, Terrebonne, St. Mary, Iberia, the eastern half of Lafayette and St. Landry Parishes, and the southern half of Pointe Coupee, East Baton Rouge, Livingston, Tangipahoa and St. Tammany, and all of Orleans, St. Charles, St. John, St. James, Ascension, Iberville, St. Martin, and West Baton Rouge Parishes."

FOREST TENT CATERPILLAR (Malacosoma disstria Hübner.)

Minnesota A. G. Ruggles (July 12). "Did a tremendous amount of damage to hardwood in the north and western part of the State. They were particularly abundant around many of the lake resorts; basswood was first attacked, as oviposition took place on these trees. This is the third year of great abundance of this species."

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

Indiana J. J. Davis (July 15). "Reported as abundant on shade trees and ornamentals as usual in the northern end of the State."

Missouri A. C. Burrill. "Quite abundant in Carthage, necessitating spraying of the shade trees."

FALL CANKERWORM (Alsophila pometaria Harris)

North Carolina Franklin Sherman. "Reports have been received from Avery County, also Watanga County, both in the mountain districts of the State, where the worms have been working for the past four years. Outbreaks seem to be less serious than usual."

MAPLE

GREEN-STRIPED MAPLE WORM (Anisota rubicunda Fab.)

Missouri L. Haseman (July 10). "Green maple worms have seriously damaged foliage of a grove of maples in Clinton County; adults emerged from pupae between July 1 and July 10."

GREEN MAPLE WORM (Xylina sp.)

New York E. P. Felt (July 23). "H. Notman reports from Silver Beach, Oneida County, that these worms were so abundant on June 14 that the ground between the trees was thickly strewn with pieces of leaves."

MAPLE SESIAN (Sesia acerni Clem.)

New York E. P. Felt (July 23). "This insect is generally distributed and seriously injurious to soft maples at Kenmore, Erie County."

Alder Blight (Procinhilus tessellatus Fitch)

Massachusetts H. T. Fernald (June 28). "Franklin County Farm Bureau reports that this insect has considerably disfigured soft maples in Greenfield and Gill."

New York M. D. Leonard (July 12) reports that infested trees were observed at Catskill.

West

Virginia W. E. Rumsey (June 25) reports that maple trees in Barbour County are being covered with small insects similar to those assembled on beech.

Maple Leaf Stem-Borer (Caulacampus acericaulis MacG.)

Massachusetts A. I. Bourne (July 20) reports that this insect has been the cause of complaint from several sources this year.

Elm

Elm Leaf-Beetle (Galerucella luteola Mull.)

New York E. P. Felt (July 8). "Mr. R. E. Horsey reports that about 20 blocks in the southern portion of the City of Rochester are quite badly infested; began to pupate on this date."

Oregon A. L. Lovett (July 19). "More abundant than usual in Benton County, less so in Marion and Multnomah Counties; larvae now about mature; first recently emerged adults observed yesterday."

Elm Borer (Saperda tridentata Oliv.)

New York E. P. Felt (July 23) reports that this insect is somewhat abundant and injurious on western Long Island.

Elm Spanworm (Annomos subsignarius Hübner.)

New York E. P. Felt (June 26) reports that heavy flight of moths was noticed at Rochester.

L. F. Strickland (June 28). "Unusually large flight of moths in Niagara County."

L. C. Tyler (June 30). "Woodland trees badly defoliated over considerable area in South Byron; pupae are numerous."

G. E. Smith (July 9). "An enormous flight of moths took place for about four days, beginning June 25, in Orleans County. Woodland trees are now badly defoliated in several parts of the County."

WHITE ELM SCALE (Chionaspis americana John.)

New York E. P. Felt (July 23). "Decidedly abundant and injurious on young elms on western Long Island, causing the dying of branches."

EUROPEAN ELM CASE-BEARER (Coleophora limosipennella Dup.)

New York E. P. Felt (July 23). "Abundant in the vicinity of Oyster Bay; so serious that a considerable proportion of the leaves will fall."

ELM SCALE (Gossyparia spuria Mod.)

New York E. P. Felt (July 23). "Somewhat more abundant on Scotch and English elms in the vicinity of New York City, and occurs in small numbers on American elms in Hudson and Mohawk Valleys."

Idaho J. C. Evenden (June 25). "Nearly every tree in Coeur d'Alene is very heavily attacked by the elm bark-louse."

WOOLLY ELM APHIS (Eriosoma americana Riley.)

New York E. P. Felt (June 25). "Reported as causing some injury at Oneonta."

Missouri L. Haseman (July 10). "Especially abundant on elms. The form causing elm curl has reappeared recently in the central part of the State."

POPLAR

COTTONWOOD LEAF-BEETLE (Lina scripta Fab.)

Nebraska M. H. Swenk (July 15). "More than normally abundant in the latter part of June."

POPLAR BORER (Saperda calcarata Say)

Nebraska M. H. Swenk (July 15). "This insect continues to be the subject of many complaints of injury."

ASH

CARPENTER WORM (Prionoxystus robiniae Peck.)

Nebraska M. H. Swenk (July 15). "Carpenter worm on ash and maple trees continues to be the subject of many complaints of injury."

TULIP

TULIP-TREE SCALE (Toumeyella liriiodendri Gmel.)

New York M. D. Leonard (June 27). "Trees badly infested at Pocantico Hills."

West
Virginia

W. E. Rumsey (June 29). "Bad on trees in Marion County."

BIRCH

BRONZE BIRCH BORER (Agrilus anxius Gory)

Idaho J. C. Evenden (July 1) ~~1914~~ "Several shade trees attacked at
Coeur d'Alene."

WALNUT CATERPILLAR (Datana integrissima G. & R.)

Nebraska M. H. Swenk (July 15). "Trees in eastern Nebraska were badly
defoliated in many places during the last week in June and the
first ten days in July; by July 10 most of the caterpillars
had pupated."

Kansas E. G. Kelly (July 18). "Has been very injurious to walnut
trees throughout the State."

OAK

WHITE OAK BLOTCH LEAF-MINER (Lithocolletes hamadryella Clem.)

New York E. P. Felt (July 23). "R. E. Horsey reports that this insect
is common in Highland Park, Rochester, and disfigures foliage
badly."

Maryland E. N. Cory (July 8) "Correspondents have sent leaves from
Baltimore where this insect is exceedingly abundant; they have
been so completely mined that the entire upper surface is brown."

LOCUST LEAF-MINER (Chalepus dorsalis Thunb.)

Maryland E. N. Cory (July 8). "Very abundant in the Potomac River
Valley; this pest seems to be increasing and threatens to de-
stroy most of the first leaves."

CATALPA

CATALPA SPHINX (Ceratonia catalpae Boisd.)

Ohio H. A. Gossard. "A catalpa grove of 6 acres at Troy was com-
pletely defoliated in late June."

Indiana J. J. Davis (July 15) reports that this insect is abundant in
the southern end of the State.

Florida F. S. Chamberlin. "This insect, which is usually abundant
about Quincy, can only rarely be found this season."

PINE

PINE BARK APHIS (Pineus strobi Hartig)

New York E. P. Felt (July 23). "Mr. R. E. Horsey reports that this insect is very injurious to young pines in Rochester, having stunted them badly."

PINE LEAF SCALE (Chionaspis pinifoliae Fitch)

New York E. P. Felt (July 23) reports that this insect is somewhat abundant at Schenectady.

SOUTHERN PINE BEETLE (Dendroctonus frontalis Zimm.)

North
Carolina Franklin Sherman (June 29). "Report of outbreak from Swain County; may possibly presage an epidemic, but I think not."

CAMPHOR

CAMPHOR SCALE (Pseudaonidia duplex Ckll.)

Louisiana Extract from New Orleans Item (July 17): "The big fight to destroy the camphor scale in New Orleans has only just begun. Survey of entire City of New Orleans under way; 115 infestations of the scale outside of the main infested area have been located; 126 host plants have been listed. Of the outside infestations that have been located, 72 have been completely eradicated."

Mississippi R. W. Harned (July 23). "The Japanese camphor scale was discovered for the first time in Mississippi on July 18 at Hattiesburg. All infested plants were immediately burned. Because of the seriousness of these insects in New Orleans we are endeavoring to inspect all plants that have been shipped from New Orleans to Mississippi during the past two years."

G R E E N H O U S E A N D O R N A M E N T A L P L A N T S

SNAPDRAGON

Cosmopepla bimaculata Thomas

New York E. P. Felt (July 23). "Mr. J. F. Rose reports that these bugs were swarming in the blossoms of snapdragons on July 15."

RHODODENDRON

RHODODENDRON TINGIS (Leptobyrsa rhododendri Horv.)

New York E. P. Felt (July 23) reports that this insect has caused considerable injury to young trees; was successfully controlled by spraying with soap and nicotine sulphate.

MAGNOLIA

MAGNOLIA SCALE (Neolecanium cornuparvum Thro.)

Ohio H. A. Gossard reports that he has recently received several complaints of the magnolia scale.

ROSE (MAGNOLIA) SCALE (MAGNOLIA SCALE)

ROSE-CHAFER (Macrodactylus subspinosus Fab.)

Nebraska M. H. Swenk (July 15) reports that heavy flights of this beetle were reported from Holt, Garfield, and Dawes Counties, during the third and fourth weeks in June, this pest causing much injury to roses and the foliage of fruit trees.

Megastigmus nigrovariegatus Ashm.

New York C. R. Crosby (June 30). "Females abundant, ovipositing in fruit of rugosa roses."

WOODBINE

MEALY FLATA (Ormenis pruinosa Say)

Nebraska M. H. Swenk (July 15). "Reports of injury were received from several localities in the State during the last week in June and the first week in July, the insect being numerous on other plants also."

BOXWOOD

BOXWOOD-LEAF-MINER (Monarthropsalus stuxi Labou.)

New York C. R. Crosby (June 25). "Hedges badly infested at Pocantico Hills."

M. D. Leonard (July 13) "Large hedges badly infested at Mineola on Long Island."

LILAC

LILAC BORER (Podosesia syringae Harris)

New York E. P. Felt (July 23) "Mr. C. E. Fairman reports that this insect is causing some injury to lilacs at Londonville."

INSECTS ATTACKING MAN AND DOMESTIC ANIMALS

FLEAS (Ctenocephalus canis Curtis et al.)

- New York E. P. Felt (July 23). "Cat and dog fleas were locally abundant the last of July at Yonkers, Westchester County."
- Missouri L. Haseman (July 10). "The common flea has been troublesome in some places, especially on stock farms. Some complaints have also come from cities where cats and dogs were not kept free from fleas."

CHIGGERS (Trombidium sp.)

- Missouri L. Haseman (July 10). "A plague of chiggers seems to have hit the State the latter part of June; they were so bad in some places that those who were susceptible to these attacks were not even safe on their lawns. Reports came from all over the State."
- Maryland J. A. Hyslop. (July 30). "Chiggers have been unusually abundant in Montgomery County this year."

AMERICAN DOG TICK (Dermacentor variabilis Say)

- Delaware C. O. Houghton. "This tick is very common here this year and is causing an unusual amount of annoyance."

ANTS (Formicidae)

- Indiana J. J. Davis (July 15). "Ants in houses, especially the little red ants, have been repeatedly reported as troublesome and apparently more so than in former years."

HORSE FLY (Tabanus costalis Weid.)

- New York H. C. Hockett. (July 10). "Present in large numbers and are very annoying at several of the bathing beaches along the shore in Nassau County."

WAX MOTH (Galleria mellonella L.)

- New York G. H. Rea (July 12). "Old comb in cellars/badly infested at Ithaca."

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BUREAU OF ENTOMOLOGY
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AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING.

OUTSTANDING ENTOMOLOGICAL FEATURES OF AUGUST, 1921

The most important insect development of the month has been the terrific outbreak of the boll weevil throughout the cotton belt. Estimates have been made of a loss of \$1,116,000 bales in the prospective production since last month's crop forecast, and the smallest yield per acre in 56 years is now anticipated, the crop being less than one-half the normal.

The New York Hessian fly survey, which has just been received, shows an average infestation for the State of 5.24 per cent, ranging from 0.44 per cent in Monroe County to 10.6 per cent in Orleans County.

The jointworm field-observation stations of the Bureau of Entomology report a decided decrease in infestation as compared with last year in Indiana and about the same infestation as last year in Illinois.

The coulee cricket has appeared in threatening numbers in parts of Montana and the Mormon cricket has been reported as occurring in destructive numbers in Colorado.

The Governor of Colorado has authorized the expenditure of \$10,000 to combat a very serious outbreak of the long-winged grasshopper in Pueblo, El Paso, Crowley, and Lincoln Counties.

Seven new townships in Pennsylvania and two townships and six islands in Lake Erie, in Ohio, are now known to be infested by the European corn borer.

The alfalfa caterpillar is worse than it has been during the past five years in parts of California, and about one-fourth of the third and fourth cuttings has been destroyed.

An outbreak of the velvet bean caterpillar in Florida has been reported, but the seriousness of the outbreak is not yet evident.

The codling moth is reported as being seriously abundant in parts of New York State on apple, and pears in Genesee County are 100 per cent infested. This pest is less numerous than usual in Illinois and Idaho.

The apple and thorn skeletonizer, which was discovered in Connecticut last year, is spreading rapidly.

The Colorado potato beetle is reported as being very serious in Wisconsin and parts of New York and the apple leafhopper is appearing for the first time in Wisconsin as a limiting factor in potato production. This pest is also very destructive in Minnesota and parts of New York.

Massachusetts, New York, and Wisconsin report the onion crop as decidedly damaged by onion thrips this year.

The fall webworm is more numerous than usual this year in Massachusetts, Connecticut, Delaware, Indiana, Maryland, Nebraska, and Wisconsin.

An unusually serious outbreak of the bagworm is reported from Kansas. This pest is more numerous than usual in Arkansas and locally destructive in New York and Pennsylvania.

A heavy flight of the gipsy moth is reported from Auburn, Maine.

The infestation of households by fleas in the Middle West has apparently abated, but a new series of outbreaks is now being reported from New England.

The nose fly is reported from New York, Texas, and California and the sucking goat louse is very seriously affecting the kid crop in Texas.

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CEREAL AND FORAGE CROP INSECTS

WHEAT

New HESSIAN FLY (Phytophaga destructor Say)

New York C. R. Crosby (survey for 1921). "Hessian fly survey was carried on in 15 counties in New York State, 13 in the western part of the State, and 2 in the southeastern part of the State. The average infestation for the 15 counties was 5.24 per cent. The county infestation was as follows:

Per cent		Per cent		Per cent	
Niagara	8.80	Wyoming	4.0	Seneca	9.66
Erie	5.10	Monroe	.44	Cayuga	5.60
Orleans	10.60	Wayne	8.70	Tompkins	9.30
Livingston	2.60	Ontario	2.50	Ulster	6.00
Genesee	4.11	Yates	1.0	Columbia	9.30

Indiana J. J. Davis (August 16). "The Hessian fly is sufficiently abundant in all parts of Indiana to call for special efforts on the part of the entomologists to secure universal cooperation in sowing wheat after the fly-free date. A poster is being issued and sufficient publicity will be given through newspapers and county agents to insure a maximum of cooperation. In this campaign the entomologists of the State are having the assistance and cooperation of the Federal entomologists located in the territory."

Illinois W. P. Flint (August 18). "Throughout the greater part of the State puparia are scarce in the wheat stubble. There are a few of the western counties along the Mississippi River where flies are abundant."

Oregon L. P. Rockwood (August 13). "There has been more lodging of wheat in the Willamette Valley in fields moderately infested by Hessian fly than usual. This is attributed to the prevalence of strong northwesterly winds during July. One farmer reports as much as one-third of his crop lodged."

WHEAT MIDGE (Contarinia tritici Kirby)

New York G. E. Smith (July 16). "This insect is quite plentiful in Orleans County."

Indiana

J. J. Davis (August 16). "The small wheat midge maggots have been unusually abundant in threshed grain but from all observations to date the maggots with the threshed grain die before reaching maturity."

Washington

L. P. Rockwood (August 13). "The spring-wheat-infesting brood was practically over by the last week in July at Lynden, Wash."

COULEE CRICKET (Peranebrus scabricollis Thom.)

Montana

A. L. Strand (August 10). "The appearance of ~~this~~ insect in considerable numbers in Toole and Teton Counties has been the cause of some conjecture among the farmers as to the damage which might occur next season. We have no record of this insect's occurrence in these localities before. It was reported by the farmers that the crickets came in from the northwest. This is a common insect in the mountains and valleys in some parts of Montana, but has never been observed so far east of the mountainous section before."

MORMON CRICKET (Anabrus simplex Hald.)

Colorado

C. P. Gillette. "On August 6 Mr. C. L. Corkins was sent to western Routt County to investigate a reported outbreak of the so-called Mormon cricket, and try out the poisoned-bran mash as a remedy. The only modification made by Mr. Corkins in the regular Kansas formula was that of doubling the proportion of strychnine in the mixture. The results obtained were excellent. Apparently less than 10 per cent of the crickets escaped being poisoned on the treated areas."

PALE WESTERN CUTWORM (Parosagrotis orthogonia Morr.)

Montana

A. L. Strand (July 22.) "This insect, although of general distribution in that part of Montana east of the Continental Divide, was not so generally destructive throughout that entire section this season as in 1920, but in the old stamping ground of the insect (central northern Montana) it was more destructive than in any previous year. Sixth and seventh instar larvae were collected as late as July 7, although most of the damage was done prior to June 20. This cutworm has done much damage to young corn in eastern Montana, but has been so mixed up with other species that it is impossible to estimate the damage done by it with any degree of accuracy. In a few instances 25 per cent of the stand and in one instance 50 per cent has been destroyed. This season in the five northern counties where last year the loss in seeded acreage due to this species ranged from 25.1 to 47.1 per cent the damage in 1921 has been fully as great and in two of the counties greater."

JOINTWORM (Harmolita tritici Fitch)

Indiana

The jointworm experimental plot records have just been received. Mr. W. P. Cartwright reports from Princeton, under date of June 10, that 18 per cent of the crop was infested, while last year

at this point 26.5 per cent of the crop was infested. Under date of June 15 Mr. W. H. Larrimer reports from Salem that 3 per cent of the crop is infested this year as compared with 23 per cent infestation last year, and under date of June 25 he reports from Logansport that 14 per cent of the crop is infested as compared with 53 per cent last year."

Illinois W. P. Cartwright (June 13, Grand Chain). "Fifty-five per cent of culms infested as compared with 53.5 per cent infested last year. At Sparta 23 per cent of the culms were infested as compared with 24 per cent infestation last year. (June 17); at Centralia, 0.3 per cent infestation as compared with no infestation last year."

W. P. Flint (August 13). "Several local areas of heavy infestation in the south and south-central parts of the State. The insect seems to be about 50 per cent parasitized."

New York C. R. Crosby (survey for 1921). "Jointworm survey was carried on in 15 counties in New York State, 13 in the western part of the State, and 2 in the southeastern part of the State. The average infestation for the 15 counties was 2.89 per cent. The percentage infestation in the several counties was as follows:

Per cent		Per cent		Per cent	
Cayuga - - -	4.80	Monroe - - -	6.40	Tompkins - - -	0.00
Columbia - - -	4.40	Niagara - - -	2.20	Ulster - - -	.66
Erie - - - -	.57	Ontario - - -	2.70	Wayne - - -	5.80
Genesee - - -	5.80	Orleans - - -	2.60	Wyoming - - -	.46
Livingston -	4.05	Seneca - - -	2.00	Yates - - -	1.00

WHEAT-SHEATH GALL JOINTWORM (*Harmolita vaginicola*)

New York C. R. Crosby (survey for 1921). "In connection with the Hessian fly and jointworm survey this insect was found in 5 counties. The average infestation of these counties was 0.79 per cent. The percentage infestation in the several counties was as follows:

Per cent		Per cent		Per cent	
Cayuga - - -	2.4	Monroe - - -	0.44	Ulster - -	0.66
Livingston -	.13			Wayne - -	.36

CORN

EUROPEAN CORN BORER (*Pyrausta nubilalis* Hübn.)

New York L. O. Gratz (July 30). "Easily found in any field at Eden in Erie County. Many ears have been discarded from the marketable lot. Last year a few larvae were reported, but this year apparently marks the beginning of a serious infestation."

F. Z. Hartzell (August 13, Chautauqua County). "Present in the northern part which is under quarantine; numbers not great, however."

- Pennsylvania W. R. Walton (August 26). "During August the following towns in the extreme northwestern part of Pennsylvania bordering Lake Erie from the New York State line to the Ohio State line have been found infested: Harbor Creek, Greene, Mill Creek, Summit, McKean, Fairview and Springfield. The township of Girard had been found infested two years ago and is still included in the infested area."
- Ohio W. R. Walton (August 30). "Infestations of the corn borer were discovered during the month of August in the following localities in Ohio: North Bass Island, Middle Bass Island, South Bass Island, Kellys Island, Catawba Islands and the towns of Danbury, Portage, Huron and Avon Lake. These islands extend at least half way across the lake toward the international border at the western end of Lake Erie just north of Sandusky. Infestations have also been discovered in the northeastern corner of Ohio, bordering Lake Erie in the townships of Ashtabula and Saybrook and continuously along the lake as far west as Willoughby."

CORN EARWORM (*Chloridea obsoleta* Fab.)

- New York F. Z. Hartzell (August 13). "Some injury at present in Chautauqua County."
- C. R. Crosby and assistants report finding this insect in some fields in Erie County on July 22, a second infestation being noted in the same county on August 20 in late sweet corn. In the middle of July it was doing considerable damage to early sweet corn in Nassau County, being only occasionally found on the later corn in the middle of August. Early in July it also did a slight amount of damage in Columbia County."
- Illinois W. P. Flint (August 18). "Much more abundant in both field and sweet corn than during an average year. Seventy-five per cent of the sweet corn ears being infested. Moths of the third brood are just starting to appear."
- Missouri L. Haseman (August 29). "The corn earworm is increasing in number and has been reported from various sections of the State."

- Texas O. G. Babcock (July 29). "About as abundant as usual in this State."

FALL ARMY WORM (*Laphygma frugiperda* S. & A.)

- Illinois W. P. Flint (August 18). "Moths have been taken commonly in bait traps for the past three weeks in Central Illinois."
- Florida J. R. Watson (August 16). "Quite numerous throughout the State but confining their work mostly to the grass crops."
- Missouri L. Haseman (August 29). "Just recently the fall army worm has begun to attract attention, and in central Missouri the larvae of the present brood are now half grown. They are damaging sweet corn and other garden crops, but as yet have not been reported on alfalfa or other legumes."

Louisiana

T. H. Jones (August 9). "An outbreak noted on the grounds of the Experiment Station attacking grass and low-growing crops in grassy fields at Baton Rouge."

SUGAR-CANE BORER (Diatraea saccharalis Fab.)

Louisiana

T. H. Jones (August 16). "Mr. W. R. Dodson estimates that in about 200 acres of late corn planted during the last week in April and the first week in May the loss will be about 5,000 bushels of corn because of the severe infestation of this insect. The stalks and ears are very badly attacked and in the case of the ears secondary causes, such as other insects, fungi, and bacteria, will make them largely unfit for feeding purposes."

CHINCH BUG (Blissus leucopterus Say)

Indiana

J. J. Davis (August 16). "Immature chinch bugs have been present in abundance in corn, although heavy rains for the past week may have reduced their numbers somewhat."

Illinois

W. P. Flint (August 18). "Heavy general rains have greatly reduced the number of bugs in most of the counties infested early in the year. In only a few counties will corn be seriously damaged. The parasite Eumicrosoma benificia has destroyed from 30 to 40 per cent of these insects."

Michigan

R. G. Carr (August 10) "A slightly larger infestation than usual occurred this year at Adrian, where about 10 per cent of the crop was damaged. The use of furrows and barriers was quite successful, many bushels of the insects being thus killed."

Nebraska

M. H. Swenk (August 15). "Shortly after the middle of July an outbreak of the chinch bug developed in Knox County in northeastern Nebraska, after injury in the infested area along the southern border of the State had ceased. The bugs were first noted in the barley fields and when these were harvested they migrated to the corn and did a considerable amount of damage in some fields."

Florida

Jeff Chaffin (August 21). "Reports from all over the State indicate that this insect is doing considerable damage to lawns, especially St. Augustine grass, which they seem to prefer."

Missouri

L. Haseman (August 29). "Some complaints continue to come in regarding the damage from summer broods of chinch bugs, but the abundant rainfall of the past few weeks seems to help materially."

WHITE GRUBS (Phyllophaga spp.)

Illinois

W. P. Flint (August 16). "Severe damage to corn reported from 10 or 15 counties in the northern half of the State, mainly corn on sod or small grain stubble. Blue grass pastures also severely damaged."

Wisconsin S. B. Fracker (August 25). "Damage is not as severe as in other white grub years. Crows are reported as attacking the grubs in large numbers at Platteville."

ALFALFA AND CLOVER

BLISTER BEETLE (Epicauta lemniscata Fab.)

Nebraska Myron H. Swenk (August 15). "The striped blister beetle continued injury during latter July on alfalfa and potatoes, especially in Thayer and Adams Counties."

CLOVER APHIS (Anuraphis bakeri Cowen)

Idaho R. H. Smith (August 15). "This insect is less abundant than usual this year. Unusual rainfall during May and June probably prevented this pest from becoming seriously destructive."

CLOVER ROOT-BORER (Hylastinus obscurus Marsh.)

Oregon D. P. Rockwood (August 13). "Damage by this pest is more severe than for the past two years in many first-crop clover fields. Dry weather has retarded growth of clover roots and high temperatures have accelerated the development of root borers. Fields on poorer soils most seriously damaged."

CLOVER SEED CHALCIS (Bruchophagus funebris How.)

New York L. P. Wehrle (August 16). "Adults now present and fairly common about Ithaca."

ALFALFA CATERPILLAR (Eurymus eurytheme Bdv.)

California H. G. Smith (August 20). "Mr. Fred C. Brossius reports having the worst infestation of this pest that they have had in the past five years, the insects destroying about 25 per cent of the third and fourth cuttings."

CLOVER SEED CATERPILLAR (Enarmonia interstinctana Clem.)

New York L. P. Wehrle (August 16). "Second-brood moths have been on the wing for about 2 weeks and eggs are now being deposited. The insect is fairly abundant about Ithaca."

CLOVER-SEED MIDGE (Dasyneura leguminicola Lint.)

New York L. P. Wehrle (August 16). "Second-brood larvae are now beginning to appear. Adults in flight and ovipositing. Judging from the abundance this season this insect will probably do considerable damage. It is the most important clover seed pest in the vicinity of Ithaca."

LESSER CLOVER-LEAF WEEVIL (Phytonomus nigrirostris Fab.)

New York J. D. Detwiler (July 25). "This insect is very scarce about Ithaca this year, due probably to heavy parasitism early in the season."

COWPEAS

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

Mississippi R. W. Harned (August 29). "Cowpea-pod weevil seems to be more abundant than usual. Reports of serious damage to cowpeas have been received from Adams, Itawamba, Lafayette, Lauderdale, Pontotoc, and Wayne Counties."

Louisiana T. H. Jones (July 11). "Mr. T. H. Casonova, county agent of Vermillion Parish, reports that this insect is doing some damage in his parish."

BEAN LEAF-BEETLE (Cerotoma trifurcata Foerst.)

Louisiana T. H. Jones (July 12). "Serious damage to the foliage of cowpeas growing in corn fields noted in Lafourche Parish."

T. H. Jones. "Mr. C. B. Gouaux, engaged in extension work in agriculture for Louisiana State University, reports that while on a recent trip he found this insect causing severe damage to cowpeas in cornfields in the Paincourtville, Napoleonville, and Franklin sections."

SOUTHERN GREEN PLANT-BUG (Nezara viridula L.)

Louisiana T. H. Jones. "Mr. C. B. Gouaux reports that he found all stages of this insect very numerous on cowpeas in the cornfields in the Paincourtville, Napoleonville, and Franklin districts."

VELVET BEAN

VELVET BEAN CATERPILLAR (Anticarsia gemmatilis Hübner.)

Florida (Special Report No. 16). "Reports have just been received from Mr. J. R. Watson and Mr. Jeff Chaffin that the velvet bean caterpillar has just appeared in central and northern Florida. Adults were first observed at Cocoa in Brevard County on August 15 and at Gainesville in Alachua County on August 16. From previous observations this insect should be expected to reach southern Georgia by September 1 and southern South Carolina by September 10. This insect is a serious pest to the velvet bean throughout Florida and southern Georgia and, though the moths in their annual flight have been recorded as extending as far north as southern New York, it is not recorded as a serious pest of any other forage crop."

MISCELLANEOUS CEREAL AND FORAGE INSECTS

GRASSHOPPERS (Acridiidae)

New York G. E. Smith (July 23). "As early as July 16, grasshoppers were becoming very abundant in most sections of Orleans County and doing considerable damage to oats at Barre; about 50 per cent of the oats were destroyed in one field and corn and bean fields were being badly damaged."

- Delaware C. O. Houghton (July 21). "Much less abundant than usual about Newark."
- Illinois W. P. Flint (August 18). "Damage is being done in only a few localities in the southwestern part of the State. Aside from clover, young orchards and alfalfa have been slightly injured."
- Nebraska M. H. Swenk (August 15). "During late July and early August grasshoppers were the most prominent insect pests on the cereal and forage crops of Nebraska; in addition to the southeastern counties mentioned in the last report, grasshoppers were reported as seriously injurious at places in Knox, Custer, and Saline Counties."
- Wisconsin S. B. Fracker (August 25). "The worst outbreak ever recorded occurred in the northern third of the State this year. General application of control measures helped to reduce the losses."
- Montana R. A. Cooley (August 23). "Considerable late damage from grasshoppers has occurred, especially where control programs were not carried out earlier in the season. The spraying of the leaves has caused a decided decrease in the yield of wheat. Oats and barley have been very seriously injured by the hoppers eating off the entire heads."
- Oregon L. P. Rockwood (August 13). "Melanoplus saltator, M. femurrubrum, and M. atlanis are more than usually abundant in clover fields and waste places. Will cause damage to late second-crop clover, corn, and gardens."

LONG-WINGED LOCUST (Dissosteira longipennis Thom.)

- Colorado C. P. Gillette. "A severe outbreak of this insect over a practically continuous area of nearly 40 miles in extent, covering portions of Pueblo, El Paso, Crowley, and Lincoln Counties was sufficiently alarming to cause Governor Oliver H. Shoup to call together the commissioners and the county agents of these counties and representatives of the office of State entomologist for a conference on the situation on July 1. A somewhat hasty survey of the territory infested had been made by Mr. C. L. Corkins, of the office of State entomologist, and Mr. W. H. Sawhill, county agent for Pueblo County, and an estimate made that a campaign could be put on for the control of the outbreak at an expense of, not to exceed, \$10,000. This fund was promptly raised by the counties and the State, through the promise of the Governor, and the campaign turned over to Mr. Corkins to put through. The work was quickly organized and inside of ten days the grasshoppers were practically annihilated. Not more than 10 per cent, it is estimated, escaped being poisoned. These grasshoppers had migrated in the nymph stage from 2 to 10 miles from their hatching grounds. At the time the campaign of destruction was inaugurated, winged individuals were just beginning to appear. The area covered was devoted to grazing and dry-farming for the most part. Many crops were completely ruined while others were passed by without very serious damage. The poisoned bait used was arsenic bran-mash."

FRUIT INSECTS

APPLE

GREEN APPLE APHIS (Aphis pomi DeG.)

New York P. J. Parrott (July 16). "Terminal growth of apple tree heavily infested in Ontario County. One nurseryman near Geneva has just completed the fourth treatment of apple plantings."

L. F. Strickland (August 15). "Almost entirely absent in Niagara County."

F. Z. Hartzell (August 13). "Much less numerous than usual in Chautauqua County."

C. R. Crosby and assistants report this insect as fairly common during the middle of July in Nassau County. At that time it was not very abundant in Albany County, but by July 22 terminal growth of some young trees was noticed to be heavily infested. By August 15 no serious outbreak had developed, however. In Ulster County the insect was very abundant on occasional trees about the middle of July; they were disappearing rapidly by July 23, and had practically disappeared from the apple tree by July 30; however, belated individuals were still to be found on young trees by August 17, and the infestation was noticed to have stunted the growth to a considerable extent. This insect was not abundant enough in Clinton County to attract much attention.

Illinois W. P. Flint (August 18). "Reported as doing some damage in 2 and 3 year old apple orchards in southern part of State."

Idaho R. H. Smith (August 15). "This insect was becoming apparent in younger orchards about July 1, and has continued to increase with great rapidity. Natural enemies are getting in effective work at present. Control measures are being used in many orchards."

WOOLLY APPLE APHIS (Eriosoma lanigerum Hausm.)

New York C. R. Crosby and assistants report this insect as being only occasionally observed in Ulster County on August 17; quite numerous about that time in Albany County, and occasionally observed in Nassau County.

F. Z. Hartzell (August 13). "Occasionally observed in Chautauqua County."

L. F. Strickland (August 15). "The infestation at least 50 per cent less than that of 1920 in Niagara County."

Delaware C. O. Houghton (July 25). "About normally abundant at Newark."

Wisconsin R. A. Irwin (August 17). "Unusual in Wisconsin, but doing serious injury this year."

Idaho

R. H. Smith (August 15). "More abundant than usual about Twin Falls; young orchards especially are seriously affected. Nicotine sulphate when used with arsenate of lead and a spreader for codling moth has given satisfactory control for this pest."

CODLING MOTH (Carpocapsa pomonella L.)

New York

C. R. Crosby and assistants report about 5 per cent of side worm injury observed in Wayne County on July 16. On same date a larva was observed which was apparently ready to pupate; the majority of the larvae, however, were not more than about two-thirds grown. In Orleans County side worms were rather abundant in most orchards by July 23, especially those which received no June spray; five orchards inspected during the third week in July which received a thorough spray between June 15 and 25 showed but very small percentage of damage; larvae in most cases were then about half grown; by July 30 most of the larvae were full grown in this county and many had begun to pupate, and by August 6 a majority of the larvae had pupated. On August 8 moths of the second brood were seen, but no eggs were found up to August 12. On August 13 eggs and the first larvae of the second brood were observed and larvae were found working into the apples on August 19. In Genesee County, widespread injury, especially on pears, was reported July 16; by July 22 the infestation had developed to a very serious extent and by July 30 practically all of the fruit was infested. In some orchards by August 15 side injury by late-emerging caterpillars of the first brood was showing up prominently. This insect is also reported as being very abundant in Albany and Nassau Counties, and the infestation in Niagara County is considerably greater than last year.

F. Z. Hartzell (August 13). "Insect about as numerous as usual, but percentage of the crop infested much heavier on account of light crop in Chautauqua County."

Illinois

W. P. Flint (August 18). "Less abundant than during the last three years in the southern two-thirds of the State. Indications are that the third brood will not be as destructive as usual."

Montana

R. A. Cooley (August 15). "The codling moth is becoming more and more general in its distribution in the Bitter Root Valley and is causing very serious losses."

Idaho

R. H. Smith (August 15). "Less numerous than usual about Twin Falls; first moth of the second brood trapped on July 21; first-brood worms have been coming down constantly since July 8."

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

Connecticut

W. E. Britton (July 29). "Apparently this insect, which was discovered in the State late in 1920, has spread rapidly and is now found at Wallingford, Hampden, New Haven, Stamford, New Canaan, Danbury and Greenwich."

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

- Missouri L. Haseman (August 29). "Of late one of the foliage-feeding caterpillars on apple, apparently the leaf-roller, has been attracting attention in various parts of the State."
- Minnesota R. A. Cooley (August 15). "The apple-tree leaf-roller continues to be a very serious pest in the upper part of the Bitter Root Valley. Un-sprayed orchards are heavily infested and no fruit set this year on trees defoliated in 1920."

RED HUMPED APPLE CATERPILLAR (Schizura concinna S. & A.)

- New York F. Z. Hartzell (August 13). "Less numerous than usual in Chautauqua County."
- C. R. Crosby and assistants report this insect as now working in Orleans, Ulster, Columbia, and Tompkins Counties, but decidedly less numerous than usual, and doing but little damage.

YELLOW-NECKED CATERPILLAR (Datana ministra Drury)

- Maine E. M. Patch (August 19). "Specimens were received from Livermore Falls on August 12. It has been several years since this insect has been present in injurious numbers in this State."
- New York E. P. Felt (August 1). "Yellow-necked apple-tree caterpillars occurred at Shushan in Washington County."
- F. Z. Hartzell (August 13). "Very scarce in Chautauqua County."
- J. D. Detwiler (August 25). "One colony observed at Ithaca, less abundant than during the past several years, larvae in about the third instar."

APPLE MAGGOT (Rhagoletis pomonella Walsh)

- New York C. R. Crosby and assistants report this insect as having been common in unsprayed orchards in Nassau County about the middle of July; present but not numerous about that time in Ulster County. By August 7 slight damage was occasioned in Ulster County. In Albany County this insect was much more serious than usual about July 26, a special spray was applied for the flies, but egg laying had been in progress for some time previous to this treatment and by August 15 very serious damage had been done to early apples. In Columbia County the flies were much less numerous than for the past several years. Very slight damage was also done in Clinton County.
- Minnesota A. G. Ruggles (August 19). "The apple maggot has been taken in unusual numbers on apple trees this year by our inspectors."

APPLE LEAPHOPPER (Empoasca mali LeB.)

- New York P. J. Parrott (July 16). "Very abundant on young apple trees, causing noticeable curling of the leaves, in Ontario County."
- L. F. Strickland (August 15). "Very severe on young apple trees in many places in Niagara County."
- F. Z. Hartzell (August 13). "Rather common in Chautauqua County."
- C. R. Crosby and assistants report this insect as becoming quite numerous by the end of July, in Genesee County, and present in small numbers in Ulster and Nassau Counties.
- Montana R. A. Cooley (August 15). "This insect is more numerous than usual in the Bitter Root Valley where much first-class fruit has changed to third class on account of these stings."

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

- New York C. R. Crosby and assistants report this insect as badly infesting young trees in Tioga and Cortland Counties, and about normally abundant in Chautauqua County; also, that it has been observed to some extent in Nassau County.
- Minnesota A. G. Ruggles (August 19). "Oyster-shell scale is very abundant in the southeastern portion of the State, becoming more and more so."
- Nebraska M. H. Swenk (August 15). "The scale insect most frequently reported has been the oyster-shell scale."

FLAT-HEADED APPLE-TREE BORER (Chrysobothris femorata Fab.)

- New York J. B. Palmer (August 17). "Larvae of the new brood observed today. Damage serious in one young neglected orchard. The insect is quite abundant in several young orchards in Ulster County."

RED SPIDER (Tetranychus telarius L.)

- Idaho R. H. Smith (August 1). "This insect is much less abundant than usual; the unusual heavy rainfall during May and June greatly retarded the development of this pest."

EUROPEAN RED MITE (Paratetranychus pilosus Can. & Fanz.)

- Massachusetts E. R. Farrar (August 14). "Not as abundant as last year at Lincoln; heavy rains reduced the outbreak."
- Connecticut Philip Garman (August 1). "Not as abundant as last year at Hampden and Middletown."
- New York L. F. Strickland (August 15). "Abundant in scattered instances on apple; on plum much more severe than last year. Prune orchards not sprayed in mid July are suffering from the results of this mite's work."

R. H. Smith (August 15). "This pest was discovered in Idaho in the spring of 1920. During the summer of this year it became exceedingly abundant and more destructive in some orchards near Twin Falls. Great numbers of mites hatched this spring, but these were largely destroyed during May by frequent heavy showers. The mites are generally present in small numbers in orchards at present."

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

J. J. Davis (August 16). "The shot-hole borer is very abundant this year, especially attacking apple and cherry."

CLOVER MITE (Bryobia praetiosa Koch)

R. H. Smith (August 15). "About as abundant as usual in southwestern Idaho. Control measures have been necessary in some orchards."

PEAR

PEAR PSYLLA (Psylla pyricola Foerst.)

C. R. Crosby and assistants report flies of the second brood beginning to hatch in Orleans County July 16, the foliage and fruit in many orchards smeared with honeydew. By July 23 most of the nymphs of the second brood had reached adult stage; flies of this brood were depositing eggs on July 30. By August 6 the third-brood nymphs were beginning to hatch. By August 20 it was evident that the Bartlett pears would be harvested before psylla damaged them in Orleans County. This insect was also very destructive in Genesee and Ulster Counties. In Albany County a special spray was applied on July 13, by which time most of the insects had reached the fly stage.

F. Z. Hartzell (July 16). "Very scarce throughout Chautauqua County. Adults now present."

L. F. Strickland (August 15). "A very heavy third brood of nymphs hatching in Niagara County."

PEAR LEAF BLISTER MITE (Eriophyes pyri Pgst.)

C. R. Crosby and assistants report this insect as very abundant in Dutchess, Genesee, Chemung, Ontario, Otsego, Monroe, Albany, and Ulster Counties.

R. A. Cooley (August 15). "Except where the trees were sprayed with lime-sulphur or miscible oil, there are very severe infestations of pear-leaf blister mite in the apple orchards of the Bitter Root Valley."

PEAR AND CHERRY SLUG (Caliroa cerasi L.)

W. E. Britton (July 6). "Mr. H. M. Rogers reports that this insect is more abundant than usual at Southington, several young trees being entirely skeletonized."

- New York C. R. Crosby and assistants report this insect as having been quite serious in Chautauqua County about the middle of July, and in small numbers in Niagara, Albany, and Nassau Counties.
- Indiana J. J. Davis (August 16). "This insect still continues to be the subject of many inquiries."
- Montana R. A. Cooley (August 15). "This insect is unusually prevalent in the Bitter Root Valley this season."

PEACH

PEACH-TREE BORER (Aegeria exitiosa Say)

- Connecticut M. P. Zappe (August 1). "More abundant than last year at Hampden."
- New York C. R. Crosby and assistants report this insect as ruining a number of trees in Genesee and Albany Counties, and being quite common in uncared-for orchards in Nassau County.
- Indiana J. J. Davis (August 16). "The peach-tree borer is abundant throughout the State. Almost every mail brings in one or more inquiries regarding the paradichlorobenzene treatment."

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

- New York G. E. Smith (July 30). "Found abundant in one orchard in Orleans County."

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

- New York F. Z. Hartzell (August 13). "Doing some damage in Chautauqua County, but less abundant than usual."

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

- New York C. R. Crosby and assistants report this insect as abundant in Genesee County, where it is causing considerable damage. It has also caused a great deal of fruit to fall prematurely in Albany County. It is about as numerous as usual in Chautauqua County, but the fruit is much more seriously infested than usual owing to light crop.
- Illinois W. P. Flint (August 18). "The plum curculio has caused severe damage in the few apple orchards having a crop this season. Maiden's blush reported very severely damaged."

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

- California O. E. Bremner (Santa Rosa). "A sporadic outbreak of this insect in several localities about the middle of June. The insects entirely defoliating peach and prune trees and completely destroying the apricot and cherry crops. The beetles appeared in countless numbers."

RASPBERRY

RASPBERRY FRUITWORM (Byturus unicolor Say)

New York J. B. Palmer (August 6). "This insect has now disappeared from the plants, but on account of the destructive work early in the season, combined with mosaic or yellows, many plantings are being pulled out in Ulster County."

CURRANT

CURRANT APHIS (Myzus ribis L.)

New York C. R. Crosby and assistants report this insect as having been present early in the season in Steuben, Genesee, Otsego, and Ulster Counties. Aphids have now left the currant bushes.

PECAN

FALL WEBWORM (Hyphantria cunea Drury)

Florida F. M. O'Byrne (August 15). "This insect is beginning to make its appearance all over the pecan-growing sections of the State. This is quite a bit earlier than usual and from all appearances it is going to do more damage than usual."

PECAN SHUCKWORM (Laspeyresia caryana Fitch)

Louisiana T. H. Jones (July 24). "Infested nuts received from a correspondent in Monroe."

GRAPE

GRAPE LEAPHOPPER (Erythroneura comes Say)

New York J. B. Palmer (August 17). "This insect was fairly abundant early in the season. By July 7 most of the insects had reached the adult stage. The infestation was not serious anywhere in Ulster County. This insect was also observed infesting grapes in Nassau County."

F. Z. Hartzell (August 13). "More numerous in Chautauqua County than for a number of years."

GRAPE ROOTWORM (Fidia viticida Walsh)

New York F. Z. Hartzell (August 13). "More numerous than any year since 1914."

GRAPE-BERRY MOTH (Polychrosis viteana Clem.)

New York F. Z. Hartzell (August 13). "Not very numerous this season in Chautauqua County."

Delaware C. O. Houghton (July 29). "This insect does a moderate amount of injury every year in this State."

EIGHT-SPOTTED FORESTER (Alypia octomaculata Fab.)

New York F. Z. Hartzell (August 13). "The larvae of this insect were more common than last season about the middle of July but not sufficiently numerous to require control measures. They are now very scarce."

GRAPE CURCULIO (Graponius inaequalis Say)

Arkansas W. J. Baerg (July 27). "Adults began emerging on this date. The pest is increasing in this State according to our limited observations."

CITRUS AND SUBTROPICAL FRUIT INSECTS

PINEAPPLE SCALE (Pseudococcus bromeliae Bouche)

Florida C. P. Sheffield (August 9). "Doing more damage this year than ever before at Pahokee."

COMMON WHITE FLY (Dialeurodes citri Ashm.)

Louisiana T. H. Jones. "Infested leaves sent to the Experiment Station from Rosedale August 9."

SOFT BROWN SCALE (Coccus hesperidum L.)

Louisiana T. H. Jones. "Specimens sent in from Addias July 12."

CITRUS MEALYBUG (Pseudococcus citri Risso)

Mississippi R. W. Harned (August 29). "The citrus mealybug is very abundant in the southern half of the State."

TRUCK CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

New York F. Z. Hartzell (August 13). "Present in about normal numbers in Chautauqua County."

C. R. Crosby and assistants report this insect as the worst insect pest in Clinton County during the latter part of July. Growers were spraying as often as twice a week in attempts to control this pest. This insect was also serious in Washington County. In Wayne County it was more numerous than last year but not seriously abundant; also present in small numbers in Erie, Onondaga, Steuben, Ulster, and Albany Counties. Very scarce in Nassau and Suffolk Counties.

Maryland J. A. Hyslop (August 30). "Very scarce in the eastern part of Montgomery County this year."

Wisconsin S. B. Fracker (July 20). "More than usually abundant throughout the State." (Aug. 25) "Still doing much damage."

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

Maine E. M. Patch (August 19). "Excessively numerous in many Aroostook localities, the fall brood being in evidence the first two weeks in August."

New York F. Z. Hartzell (August 13). "Not as common as last season. Present in practically all fields, however."

C. R. Crosby and assistants. "Late in July unsprayed fields throughout the southern part of Erie County were seriously infested, about 15 per cent of the foliage being destroyed. Very few were present by the middle of August. During the middle of July this insect was very abundant and doing considerable damage in Wayne County. In Orleans County flea-beetles had apparently finished their work by the middle of July; very few were present in the fields by August 5. In Genesee County this insect was very numerous the latter half of July, doing much damage during the dry weather; by July 22 a noticeable reduction in the damage of this pest was observed, probably due to rains. On July 30 the worst outbreak of the year was observed at Bergen in this county and the pest was still active and destructive on August 15. Quite numerous and injurious in Steuben County. Numerous in some sections of Onondaga County. Abundant and injurious in Cayuga County. The new brood of beetles were just beginning to appear by August 1 in Washington County. Injurious to some extent in several small fields in Ulster County during the middle of July. Exceptionally destructive in Albany County. Adults present in large numbers and doing serious damage to potato and cucumbers in Nassau County on August 15. Quite scarce in Suffolk County during late July."

Kentucky Mr. Valleau. "Flea-beetles have been particularly severe about Lexington this season, causing in many cases a complete defoliation of the early crop Cobblers. Controlled by early spray of Bordeaux and arsenate of lead but Bordeaux alone applied three times had no repellent effect."

Minnesota A. G. Ruggles (August 19). "The potato flea-beetle is quite numerous this year."

SEED-CORN MAGGOT (Hylemyia cilicrura Rond.)

New York H. C. Hockett (July 16). "Adults common especially in potato fields in Nassau County."

POTATO APHIS (Macrosiphum solanifolii Ashm.)

Maine E. M. Patch (August 19). "Did not become abundant on potatoes in the vicinity of Presque Isle and northern Aroostock this summer. Their chances were handicapped by fungus and insect enemies on the rose this spring. The lady-beetles had the potato colonies under control early in August and by August 11 were roaming about as if in danger of famine. The return migration to rose had begun by that date. Lady-beetles were also present on the rose, being held over by a large infestation of Myzus rosae which they had about demolished by that time; so I assume they will have an appetite whetted for what fall colonies of the potato aphid develop there. In the vicinity of Houlton on August 10 this species had colonized the terminal shoots in large numbers. Specimens attacked by fungus were common, however, and if conditions favorable to the spread of that develop, last season's experience of the potato aphid in the northern part of the county seems likely to be repeated throughout the southern part this year."

New York F. Z. Hartzell (August 13). "Very scarce on potatoes; none now present on tomatoes in Chautauqua County."

C. R. Crosby and assistants. "During late July these insects were causing many leaves to wilt in the southern part of Erie County. The insect was very scarce over the rest of the State. The outbreaks on Long Island were practically eliminated during the middle of July by the heavy rains."

APPLE LEAFHOPPER (Empoasca mali LeB.)

New York F. Z. Hartzell (August 13). "About the middle of July several patches of early potatoes were observed to be severely infested. This insect is now more common than usual, some of the early plantings being severely injured."

P. J. Parrott (July 16). "Tipburn may be observed, due to the work of this insect in potato plantings in Ontario County."

C. R. Crosby and assistants report this insect as being quite numerous in Erie County the middle of August. In Wayne County some fields were damaged to the extent of 40 to 50 per cent by the middle of July, and by the end of July practically all of the leaves were tip-burned in Wayne County. Rather plentiful and destructive in Orleans, Steuben, Genesee, Onondaga, Cayuga, Ulster, and Washington Counties. Present in small numbers in Nassau County. Dusting with 2 per cent nicotine dust and Bordeaux has proved of little value in repelling this pest."

onsin S. B. Fracker (July 26). "About as numerous as during the season of 1919 and 1920 throughout the State." (August 25). "The leafhopper became a serious limiting factor in the commercial growing of potatoes in the northern counties for the first time this year."

esota A. G. Ruggles (August 19). "Perhaps one of the most abundant and destructive insects of this summer has been the apple leafhopper on potatoes. It has done a tremendous amount of damage throughout the potato growing area."

TARNISHED PLANT-BUG (Lygus pratensis L.)

le E. M. Patch (August 19). "Has been unusually prominent this year. Eggs were deposited in potato leaves and stalks and the young developed in large numbers."

York C. R. Crosby and assistants (August 15). "Adults observed in large numbers in Nassau and Steuben Counties and about in normal numbers in Albany County."

THREE-LINED POTATO BEETLE (Lema trilineata Oliv.)

York C. R. Crosby and assistants report this insect as being present in small numbers this year in Wayne, Steuben, and Chautauqua Counties.

NORTHERN TOBACCO HORNWORM (Phlegethontius quinquemaculata Haw.)

York C. R. Crosby and assistants (August 15). "Present in small numbers in Erie County; were quite numerous during the latter part of July. Larvae found in destructive numbers in several fields in Genesee County, first two weeks in August, in many cases stripping the foliage of at least 10 per cent of the plants, also unusually common on tomatoes. More numerous than usual in Orleans County. Causing considerable injury in one 6-acre field in Onondaga County. Present in about normal numbers in Chautauqua and Ulster Counties. This pest is also doing considerable damage in Nassau County on Long Island."

onsin S. B. Fracker (July 26). "A very sudden and unusually serious outbreak of this insect occurred during the last week of July in Fond du Lac and Lincoln Counties. This outbreak attracted much newspaper attention. Many growers are now spraying and dusting."

WHITE FLY (Species unknown)

Arkansas W. J. Baerg (July 23). "A very serious local infestation of white flies attacking tomatoes has developed at Fayetteville. The entire planting are now practically killed out."

CABBAGE

CABBAGE MAGGOT (Hydomyia brassicae Bouché)

New York C. R. Crosby and assistants (August 15). "Adults and pupae present in Nassau County. The pest is no longer injurious, however."

IMPORTED CABBAGE WORM (Pontia rapae L.)

Maine E. M. Patch (August 19). "This insect seems to be generally abundant in the State this year."

New York F. Z. Hartzell (July 30). "This insect is very common in Chautauqua County."

C. R. Crosby and assistants report this insect to be on the decrease in Erie County. In Wayne County from 8 to 10 per cent of the plants were destroyed by the middle of July. In Orleans County this insect was so numerous by the end of July that spraying was necessary. Present in small numbers in Genesee County by the middle of July. The second-brood larvae were pupating in Ontario County on August 4. In Tompkins County parasites had this insect well under control by July 25, especially Apanteles glomeratus. Some injury being done in Cortland, Albany and Ulster Counties, not serious in Nassau County.

Montana R. A. Cooley (August 23). "There is a very noticeable increase in the abundance of this insect during the present season."

CABBAGE APHIS (Brevicoryne brassicae L.)

New York P. J. Parrott (July 16). "Causing considerable apprehension in Ontario County. A very large percentage of the growers are treating their plants in efforts to combat this aphis."

C. R. Crosby and assistants report this insect as present in small numbers in Erie, Wayne, Orleans, Genesee, Chautauqua, Onondaga, and Tompkins Counties. The pest was much more serious earlier in the month, but parasites and ladybirds have practically controlled the outbreak.

Maryland J. A. Hyslop (August 30). "Early this month the cabbage aphis was present in large numbers in the eastern part of Montgomery County. Parasites have practically wiped out the outbreak by this time."

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn)

Missouri L. Haseman (August 29). "The harlequin cabbage bug continues to come in for its share of notoriety, doing serious damage to cabbage and other related crops."

Texas O. G. Hancock (July 15). "The harlequin cabbage bug is present but not in excessive numbers this year."

Mississippi R. W. Harned (Aug. 29). "The harlequin cabbage bug has been reported as abundant at several places."

DIAMOND-BACK MOTH (Plutella maculipennis Curtis)

New York H. C. Hockett (August 16). "Adults are generally present throughout Nassau County. This insect is not injurious, however, this year."

CABBAGE LOOPER (Autographa brassicae Riley)

New York H. C. Hockett (August 15). "The larvae are present on isolated plants in large numbers. This pest is not generally injurious, however."

CABBAGE WEBWORM (Hellula undalis Fab.)

Mississippi R. W. Harned (August 29). "J. G. Hester reports the imported cabbage webworm as very abundant on young cabbage and rape at Agricultural College."

GREEN PEACH APHIS (Myzus persicae Sulz.)

New York H. C. Hockett (August 1). "During the middle of July seed beds and later plantings were quite generally infested by this aphid."

STRAWBERRY

WHITE GRUBS (Phyllophaga sp.)

New York C. R. Crosby and assistants report many plantings seriously infested by white grubs, an acre patch being nearly ruined in Ulster County. This was planted on sod land this spring.

Indiana J. J. Davis (August 16). "White grubs have been the subject of repeated inquiries the past few weeks. Injury to corn is often reported, but injuries to strawberries have been more often the subject of complaint. White grubs are more abundant in Indiana at present, apparently, than at any time since the writer has followed the insect problems in the State; that is, since 1911."

Nebraska M. H. Swenk (August 15). "The greatest number of complaints of injury by insect pests during the month ending August 15 were in relation to the attack on strawberry beds, blue-grass lawns, and flowering plants by white grubs. A Dodge County nursery suffered serious injury to seedlings through these pests and some reports of injury to grain fields were received."

STRAWBERRY LEAF-ROLLER (Ancyliis comptana Froehl.)

New York F. Z. Hartzell (August 13). "This insect is present in about normal numbers in Chautauqua County."

STRAWBERRY CROWN-MINER (Species undetermined)

Wisconsin S. B. Fracker (July 12). "Lepidopterous larvae which answer the descriptions given under the above popular name were collected in strawberry beds for the first time in Wisconsin. We are now rearing these larvae."

OBSOLETE-BANDED STRAWBERRY LEAF-ROLLER (Archips obsoletana Walk.)

New York F. Z. Hartzell (July 16). "Larvae of this insect were occasionally seen in Chautauqua County."

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

New York F. Z. Hartzell (July 16). "Common but not especially injurious in Chautauqua County."

L. C. Tyler (July 30). "Unusually common this year and very numerous on all plantings in Genesee County."

Indiana J. J. Davis (August 16). "Asparagus beetle is common this year in northern Indiana."

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

Alabama W. E. Hinds (August 26). "The Mexican bean beetle continues to spread slowly westward and has reached the northwestern corner of the State. Its spread south and southeastward has not been marked during the past two months but further spread is anticipated before frost. In the infested area table beans have been very seriously damaged and the attack upon cowpeas and soy beans is now beginning. The beetles have taken on additional food plants, the principal ones of economic importance being alfalfa, Melilotus, velvet beans, and a few others of lesser value."

BROWN COLASPIS (Colaspis brunnea Fab.)

New York P. D. Rupert (June 18). "Causing considerable damage to bean foliage in Wayne County."

BANDED FLEA-BEETLE (Systema taeniata Say)

New York G. E. Smith. "Causing considerable trouble to bean growers in Orleans County."

Indiana H. F. Dietz (August). "One report of serious injury to lima beans by the pale flea-beetle was received on June 25 from Greenwood."

RED SPIDER (Tetranychus telarius L.)

Indiana J. J. Davis (August 16). "The red spider has recently been reported from various sections as damaging beans."

CUCUMBER

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- Massachusetts A. I. Bourne (August 18). "More abundant than usual in Hampshire County. Much wilting of squashes and cucumbers."
- York F. Z. Hartzell (July 16). "Present in about average numbers."
- C. R. Crosby and assistants report this insect as more numerous than usual during the middle of July in Genesee County. Present in small numbers in Chautauqua, Ulster, Albany, and Nassau Counties.
- Minnesota A. G. Ruggles (August 19). "The striped cucumber beetle is extremely abundant this year, working on all cucurbits."
- Mississippi R. W. Harned (July 23). "Was very numerous during the early spring, but during the past month has been very scarce."
- Nebraska M. C. Tanquary. "Mr. V. L. Cory reports serious infestation on cucumbers and cantaloupes at Pecos during the past week of August."

SQUASHES AND MELONS

SQUASH-VINE BORER (Melittia satyriniformis Hübner.)

- Massachusetts E. R. Farrar (August 13). "About three times as numerous as usual in Middlesex County, about 50 per cent of the crop being damaged."
- H. F. Thompson (August 12). "In Essex County from 30 to 40 per cent of the crop was damaged by this insect."
- Connecticut I. W. Davis (August 20). "Occurring in noticeable numbers at Danielson."
- Delaware C. O. Houghton (July 25). "About as numerous as usual about Newark."
- York C. R. Crosby and assistants report this insect as doing serious damage in Wayne, Dutchess, Albany, Tompkins, and Nassau Counties.
- Missouri L. Haseman (August 29). "This insect has continued to damage melons and other cucurbits during the month and has attracted considerable attention in Missouri this year."

PICKLE WORM (Diaphania nitidalis Cram.)

- Mississippi R. W. Harned (August 15). "This insect is almost always a serious pest in Mississippi."

COTTON APHIS (Aphis gossypii Glov.)

- Missouri L. Haseman (August 29). "Some serious damage has been done recently by melon louse on cucumbers, late melons, and cantaloupes."
- Texas M. C. Tanquary (August 22). "Reported by Mr. V. L. Cory as attacking melons at Pecos. Melon growers are spraying with nicotine sulphate."

SQUASH BUG (Anasa tristis DeG.)

- New York E. P. Felt (July 23). "Mr. A. L. Brower reports that the squash bug was very destructive in Madison County on June 28. (August 23). This insect is reported as very numerous throughout Valley Falls."
- New York F. Z. Hartzell (August 19). "This insect is now quite numerous in dens in Onondaga and Chautauqua Counties."
- C. R. Crosby and assistants report this insect in small numbers and doing a small amount of damage in Nassau, Wayne, Albany, Genesee, and Ulster Counties."
- Indiana J. J. Davis (August 16). "The squash bug is quite common this year and the subject of frequent inquiries."
- Nebraska M. H. Swenk (August 15). "The squash bug was frequently the subject of inquiry."

STRIPED CUCUMBER BEETLE (Diabrotica vittata Fab.)

- Delaware C. O. Houghton (July 26). "This insect is not as abundant as usual. Very few have been seen up to date."
- Texas O. G. Babcock (July 29). "Very injurious in early spring to squash and pumpkins, destroying the cotyledons. Still present but no serious damage being done."

ONIONS

ONION THRIPS (Thrips tabaci Lind.)

- Massachusetts H. T. Fernald (August 20). "Onions have been quite seriously attacked by thrips and the result of their work is now evident, the crop being greatly reduced in most of this region by their work."
- New York C. R. Crosby and assistants report this insect as being more abundant and serious than last year, the outbreak starting the middle of July in Genesee County. The damage was very serious on 1,000 acres of onions about Elba in this County. By August 15 the insect was still numerous, but not as injurious as earlier in the season. This pest in conjunction with the dry season has prematurely killed the onion tops.

on the muck lands in Orleans County. In Wayne County, about Williamson this insect was so very serious that many growers had decided about the middle of July to plow up their onions and put in late lettuce. Rains in late July, however, helped the onion crop. During the latter part of July they seemed to be leaving the onions and attacking lettuce and celery in nearby fields. A slight outbreak occurred in late July in Massau County, the insects attacking onions, carrots, lettuce, spinach, beans, and corn. Heavy rains in early August reduced this outbreak.

sconsin S. B. Fracker. "More injurious the past three years than previously about Milwaukee."

YELLOW-BEAR CATERPILLAR (Diacrisia virginica Fab.)

laware C. O. Houghton (July 28). "Adults of the first brood are now emerging. The accumulated excess temperature to date is approximately one thousand degrees."

ONION MAGGOT (Hylemyia antiqua Meig.)

lorado C. P. Gillette. "For a few years past radishes and onions in northern Colorado have suffered rather severely from maggots. Turnips are also being attacked to some extent in home gardens. For two or three years past in the Fort Collins section onions have suffered a heavy percentage of loss. I have never had a complaint of maggots injuring or attacking cauliflower."

BEETS AND SPINACH

SUGAR-BEET WEBWORM (Loxostege sticticalis L.)

braska M. H. Swenk (August 15). "In the northern Platte Valley there was a plentiful flight of moths of the sugar-beet webworm during July and a necessity of fighting this pest by spraying developed during that month in the region mentioned. However, the outbreak is being successfully repressed."

lorado C. P. Gillette. "The spring brood of moths of this insect appeared in moderately large numbers in most of the beet-growing sections of eastern Colorado this year but the prompt action of the Sugar Companies and the farmers with their power spraying outfits soon brought the worms under control. As a result, only an occasional field, where thorough spraying was not attended to in time, was seriously injured. Paris green at the rate of 4 pounds per acre, as recommended by Mr. Asa Maxson, of the Great Western Sugar Companies, is very generally used and with very satisfactory results."

TRIANGULAR FLEA-BEETLE (Disonycha triangularis Say)

Nebraska

M. H. Swenk (August 15). "During the middle of July there was an unusual abundance of this beetle in Kimball, Cheyenne, Deuel and Morrill Counties, and as they were found abundantly in the wheat fields, their presence caused considerable comment. They fed, however, only on chenopodiaceous weeds, and in a few instances on beets, and did not serious injure."

SPINACH LEAF-MINER (Pegomya hyoscyami Panz.)

New York

C. R. Crosby and assistants report this insect as still abundant in Wayne and Nassau Counties. Larvae, adults, and eggs were present in Nassau County on August 15, the larvae attacking the newly sown spinach

EGGPLANT

Alcaeorrhynchus grandis Dall.

Florida

J. R. Watson (August 15). "This insect is about as abundant as usual in the vicinity of Cocoa. The parasite Trichopoda pennipes is destroying about 50 per cent of the bugs."

SWEET POTATO

SWEET-POTATO WHITE FLY (Bemisia inconspicua Quaint.)

Florida

J. R. Watson (August 15). "This insect is always present on sweet potatoes in this State, but seldom does much damage. It is much worse this year and complaints have been coming in from all over the State."

CAULIFLOWER

ONION THRIPS (Thrips tabaci Lind.)

New York

I. H. Vogel (August 13). "Many growers at Mattituck, Long Island, have continued to set cauliflowers ten days later than usually considered safe due to a shortage of plants caused by thrips. The thrips were first found on the seed beds on June 22 and have been present since that time, first in the seed beds and later in the fields."

BLISTER BEETLES (Epicauta spp. and Macrobasis unicolor Kby.)

Indiana

J. J. Davis (August 16). "These insects have been common pests of various vegetables for the past six weeks."

Illinois

W. P. Flint (August 18). "Several soy-bean fields in the southern half of the State have been damaged from 5 to 10 per cent. These insects are also reported as doing damage to potatoes, tomatoes, cabbage, and beans; in some cases gardens were nearly ruined."

M. H. Swenk (August 15). "In southern Jefferson County potato and beets were locally considerably injured by the banded black blister beetle, Epicauta segmentata. In Dakota County garden truck was injured by the gray blister beetle, Epicauta cinerea."

Mississippi R. W. Harned (August 29). "Complaints continue to come from many counties in regard to the blister beetles. Epicauta marginata seems to be the chief offender."

FOREST AND SHADE-TREE INSECTS

GENERAL FEEDERS

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma S. & A.)

- New York C. R. Crosby and assistants. "This insect is reported as occurring in very small numbers in Nassau, Albany, Genesee, and Chautauqua Counties during late July."
- Illinois W. P. Flint (August 18). "All the larger cities and towns in the northern end of the State have had some damage to shade trees by this pest, which is more numerous than last year."
- Nebraska M. H. Swenk (August 15). "The white-marked tussock moth continued more than normally abundant on shade trees."

FALL WEBWORM (Hyphantria cunea Drury)

- Massachusetts A. I. Bourne (August 18). "This insect is unusually abundant this year in Hampshire County."
- Connecticut W. E. Britton (August 20). "Mr. I. W. Davis reports this insect as being quite numerous at Danielson. It is abundant everywhere throughout the State."
- Delaware C. O. Houghton (July 27). "This insect is more numerous than last year. Webs are now very common on quite a variety of trees and shrubs."
- Indiana J. J. Davis (August 16). "Webworms on timber and shade trees are everywhere abundant and especially in the southern part of the State where the conspicuous webs are a common sight."
- Maryland J. A. Hyslop (August 30). "This insect is much more common than last year in eastern Montgomery County."
- Nebraska M. H. Swenk (August 15). "The fall webworm has been disfiguring shade trees over the eastern half of Nebraska during the month."
- Wisconsin W. A. Reich (August 1). "Severe local damage in Lincoln County on apples."
- Mississippi R. W. Harn (August 29). "The fall webworm, Hyphantria cunea, is more numerous throughout Mississippi at present than for several years. Many small persimmon trees are completely defoliated. Sweet gum, hickory, pecan, and other trees are also being attacked."

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

- New York E. P. Felt (August 12). "I have received a report from Mr. John Dunbar that there was a bad outbreak of this insect near Rochester about a month ago."
- Pennsylvania E. P. Felt (August 12). "Mr. Edward Costich reports that this insect was very destructive in Philadelphia this year."

Kansas G. A. Dean (August 18). "There is an unusually serious outbreak of the evergreen bagworm; they are not only defoliating pine, cedar and arbor vitae, but also shade trees, particularly the elm, maple, and boxelder.

Arkansas W. J. Baerg (July 25). "This pest is much more abundant than usual about Yellville. The woods here consist in a large part of cedars, and these are seriously infested."

GIPSY MOTH (Porthetria dispar L.)

Maine E. M. Patch (August 19). "Specimens of a female moth were received from Auburn, Maine, on August 11 with a report that these moths have recently come in swarms, literally covering the trunks of the willow trees about the place."

MAPLE

COTTONY MAPLE SCALE (Pulvinaria vitis L.)

New York M. C. Hammond (August 6). "Appearing generally over Orange County".

Indiana J. J. Davis (August 16). "The cottony maple scale was unusually abundant as previously reported throughout the northern half of Indiana."

Illinois W. P. Flint (August 18). "Severe damage to maples of several species has been reported in a number of cities and towns in the northern half of the State."

Minnesota A. G. Ruggles (August 19). "Cottony maple scale is reported from two or three places in the State. In some places it is actually killing out boxelder trees and soft maples."

WOOLLY MAPLE LEAF-SCALE (Phenacoccus acericola King)

New York M. D. Leonard (August 5). "This insect is reported as abundant on shade trees in Walden, Chester, and Goshen."

E. P. Felt (August 23). "Very bad on the leaves and trunks of sugar maple at Highland Park."

ELM

ELM LEAF-BEETLE (Galerucella luteola Mull.)

Massachusetts E. R. Farrar (August 13). "Quite abundant in Lincoln (Middlesex County) this year. Have not seen them before for several years."

New York E. P. Felt (August 19). "Mr. R. E. Horsey reports an enlargement of the area infested, and Mr. Bell reports the grubs feeding on the 19th of August. Spraying with arsenate of lead is being continued in Rochester."

H. C. Hockett (August 12). "Foliage injury noticed in Nassau County."

Oregon L. P. Rockwood (August 13). "Shade trees in various parts of Forest Grove are badly eaten. The larvae now becoming scarce. The first serious injury observed last year on the Campus of the Pacific University."

ELM BORER (Saperda tridentata Oliv.)

Nebraska M. H. Swenk (August 15). "Injury by the elm borer has been very frequently complained of during the month."

BUMBLE FLOWER BEETLE (Euphoria inda L.)

Minnesota A. G. Ruggles (August 19). "The bumble flower beetle has been very abundant this month. I have two records where this insect was eating into soft bark of trees, one on elm, and the other on red maple."

WHITE ELM SCALE (Chionaspis americana John.)

Delaware C. O. Houghton (July 25). "Several of the small elm trees on University campus badly infested with this species."

Nebraska M. H. Swenk (August 15). "The scale insect most frequently reported has been the white elm scale."

EUROPEAN ELM SCALE (Gossyparia spuria Modeer)

Delaware C. O. Houghton (July 21). "Have found a few specimens of this species on elm trees on the University campus at Newark."

POPLAR

POPLAR BORER (Saperda calcarata Say)

New York E. P. Felt (August 21). "Bad in poplars at Cobb's Hill."

Nebraska M. H. Swenk (August 15). "Injury by the poplar borer has been very frequently complained of during the month."

Phyllonorycter tremulcidella Braun

Idaho J. C. Evenden (August 24). "Practically every shade tree in Coeur d'Alene City is very heavily infested."

TULIP TREE

TULIP-TREE SCALE (Tounevellia liriodendri Gmel)

Indiana J. J. Davis (August 16). "The tulip-tree lecanium is very common on the tulip tree or yellow poplar in the southern half of Indiana."

WALNUT AND BUTTERNUT

WALNUT CATERPILLAR (Datana integerrima G. & R.)

- New York M. D. Leonard (July 22). "Much foliage injury reported to many old trees at Eden Center in Erie County."
- W. T. M. Forbes (August 19). "Observed two trees entirely stripped of foliage and several others badly eaten in Ithaca. Caterpillars now in the last two larval stages and beginning to migrate."

CATALPA

CATALPA SPHINX (Ceratomia catalpae Boisd.)

- Delaware C. O. Houghton (July 27). "Caterpillars of this species are nearly full grown at Newark."
- J. J. Davis (August 16). "The catalpa sphinx caterpillar continues to be reported frequently from southern Indiana."

PINE

PINE LEAF SCALE (Chionaspis pinifoliae Fitch)

- New York M. D. Leonard (August 15). "Badly infested specimens received from LeRoy."
- E. P. Felt (August 19). "A careful examination of the badly infested trees in Highland Park, Rochester, shows a few live new scale; however, the spraying was at least 90 per cent effective. Several trees in a different portion of the park found this month infested with these insects; evidently these trees were infested last year but were not noticed."
- Delaware C. O. Houghton (August). "This species occurs upon pine on the University campus at Newark."

ABBOTT'S WHITE PINE SAWFLY (Loophyrus abbotii Leach)

- Maine E. M. Patch (August 19). "On my return to Orono, I found specimens of larvae of this insect from Sebec and Rockland with complaints of their abundance on white pine. This species was also rampaging last year."

EUROPEAN PINE SAWFLY (Diprion simile Hartig)

- New York E. P. Felt (August 19). "Mr. R. E. Horsey reports that this insect is causing a little damage to Scotch pine at Cobb's Hill."

LARCH

SAWFLY (species undetermined)

Idaho

J. C. Evenden (August 24). "Practically every larch tree in the Coeur d'Alene region is severely attacked. Previous attacks have never been reported."

CAMPHOR

CAMPHOR SCALE (Pseudaonidia duplex Ckll.)

Mississippi

R. W. Harned (August 29). "The Japanese camphor scale was discovered on August 13 at Jackson, Miss., by G. D. Dorroh. This is the second infestation found in Mississippi. The infested plants had come from New Orleans during the past two years. All infested plants have been burned and the vicinity has been carefully inspected."

SOUTHERN FIELD CROP INSECTS

COTTON

COTTON BOLL WEEVIL (Anthonomus grandis Boh.)

The cotton boll weevil surveys carried on under the direction of Mr. B. R. Coad of the Bureau of Entomology were received August 13. The reports from the several States are as follows:

South
Carolina

"Reports from two counties in the south-central part of the State indicate an average infestation of 56 per cent, the infestation in Aiken County averaging from 30 to 35 per cent. Crop prospects fair. Infestation in Barnwell County 70 to 95 per cent. Crop very short, farmers say less than one-half crop. Heavy cut in fertilizer applied this year."

Florida "Weevil infestation very high in the northern portion of the State. Crop prospects poor to fair."

Georgia "East-central part of the State has an average infestation of from 70 to 80 per cent. West-central part 40 per cent."

Alabama "Average infestation for Marengo County from 15 to 25 per cent. Heavy infestation in river bottoms adjoining timber, but no damage elsewhere. Crop very poor as a whole, due to extreme drought and lack of fertilizer. Tuscaloosa County about the same as Marengo County; crop slightly better, due to a few additional rains earlier in the season. Weevil infestation very light in Montgomery and Autauga Counties."

Mississippi "Weevil infestation fairly heavy in Lincoln County averaging around 40 per cent. Cotton shedding badly and this is causing considerable boll weevil injury by weevils in Leflore County. Weevil infestation scattered but rather heavy, complete infestation being noted in a few places. Weevil infestation in Holmes County about the same as in Leflore County. Weevil infestation rather heavy in Washington and Sunflower Counties; cotton conditions fair, but late owing to replanting."

Louisiana "Weevil infestation very heavy and cotton crop poor in the northeastern portion of State. Infestation generally heavy to very heavy in the southern and central portions of the State."

Arkansas "Weevil infestation very heavy, cotton crop poor to fair."

Oklahoma "Weevil infestation heavy and cotton conditions poor."

Texas "The general State condition is noted as having deteriorated considerably the past 10 days and is now considered to be about 60 per cent normal. Infestation practically complete in Victoria County. Williams County, weevil infestation fairly

light; crop however, poorest in many years. Collins County infestation somewhat spotted but generally very heavy. Infestation heavy and prospects very poor in Fannin and Cooke Counties."

Alabama W. E. Hinds (August 26). "Boll weevil damage in the central and southern part of the State is less than had been anticipated at the beginning of the season, because of the control of the first generation of weevils by the hot, dry weather occurring during the month of June and most of July in most of that region. Fields, however, that received more rainfall are suffering heavier damages. In northern Alabama the injury from the weevil is heavier than it has been in any previous year. As a general rule comparatively little dusting control has been practiced this season."

Mississippi R. W. Harned (August 29). "The boll weevil is very abundant in all parts of the State. The entire State is now probably more seriously infested than ever before at this season of the year."

Texas M. C. Tanquary (August 22). "Infestation continues to increase in the vicinity of College Station in spite of the dry, hot weather."

COTTON APHIS (Aphis gossypii Glov.)

Texas M. C. Tanquary (August 22). "During the latter part of July and the first week in August there was a heavy infestation in some cotton fields at College Station. The infestations have been greatly reduced by parasites and climatic conditions."

BOLLWORM (Chloridea obsoleta Fab.)

Texas M. C. Tanquary (August 22). "Since July 22 many complaints have been received concerning damage to cotton by the bollworm. The infestation seems to be quite general."

COTTON WORM (Alabama argillacea Hubn.)

Alabama W.E.Hinds (August 26) "The cotton leafworm has just been reported from Benton, Lowndes County, occurring upon some very late planted thrifty young cotton in which boll weevil damage is also very heavy. The initial occurrence of this species is so late that heavy defoliation is not anticipated for this season."

Mississippi R. W. Harned (August 29). "Reports of the appearance of the cotton worm have been received from various parts of the State,"

GRAY HAIR STREAK (Uranotes melinus Hubn.)

Louisiana T. H. Jones (August 1). "County Agent W. H. Humble sent in infested squares and larvae collected at Alexandria."

SUGAR CANE

SUGAR-CANE MEALYBUG (Pseudococcus calceolariae Mask.)

Louisiana T.H.Jones. "Mr. Gouaux reports on returning from a field trip that the mealybug is common on sugar cane in fields about the mills and refineries in the Franklin, Gramercy, Reserve, and Paincourtville sections. Their abundance in such fields as compared with other fields of the plantations is apparently due to the fact that the Argentine ant which attends the mealybug is more numerous in the fields about the mills and refineries."

FALL ARMY WORM (Laphygma frugiperda S. & A.)

Louisiana T. H. Jones. "Mr. W. A. O'Neill reported an outbreak of these insects on his plantation at Baldwin early in July."

NORTHERN TOBACCO HORNWORM (Phlegethontius quinquemaculata Haw.)

New York C. R. Crosby (July 20). "Doing considerable damage about Cato."

GRASSHOPPERS (Acridiidae)

New York C. R. Crosby (July 20). "Reported as injurious in tobacco fields about Cato."

GREENHOUSE AND ORNAMENTAL PLANTS

ASTER

TARNISHED PLANT-BUG (Lygus pratensis L.)

New York M. D. Leonard (August 1). "Considerable damage in College gardens at Ithaca; buds deformed or imperfect blooms produced."

WHITE GRUBS (Phyllophaga sp.)

New York J. D. Palmer (July 30). "A large bed of asters suffered about 40 per cent from injury by white grubs in Ulster County."

BOSTON FERN

HEMISPHERICAL SCALE (Saissetia hemisphaerica Targ.)

Louisiana T. H. Jones (July 25). "Specimens sent to the Station from Thibodaux."

COLUMBINE

COLUMBINE BORER (Papaipema purpurifascia G. & R.)

New York M. D. Leonard (July 30). "Plants in the College gardens at Ithaca badly affected. Larvae about full grown on July 18."

CYCLAMEN

SUGAR-BEET THRIPS (Heliothrips femoralis Heeger)

Indiana H. F. Dietz. "Was observed to be injuring cyclamen and chrysanthemum in an Indianapolis greenhouse July 15. On cyclamen many of the leaves were badly curled and crippled due to the attacks of these insects. The injury closely resembles that caused by the cyclamen mite."

GOLDEN GLOW

GOLDEN GLOW APHIS (Macrosiphum rudbeckiae Fitch)

New York E. P. Felt (August 1st). "Occasioned considerable damage to golden glow at Big Moose."

GLADIOLI

FLOWER THRIPS (Euthrips tritici Fitch)

Indiana H. F. Dietz. "Gladioli growers, especially those who have no system for irrigating or artificial watering, have experienced trouble with the wheat thrips."

ONION THRIPS (Thrips tabaci Lind.)

Indiana H. F. Dietz. "This insect is doing very similar damage to that of the wheat thrips."

TWO-SPOTTED MITE (Tetranychus bimaculatus Harv.)

Indiana H. F. Dietz. "Red spider was also common and injurious to gladioli."

HAWTHORN

TWO-SPOTTED MITE (Tetranychus bimaculatus Harv.)

New York E. P. Felt (August 5). "Reported as very bad on American hawthorn in Genesee Valley Park."

TERRAPIN SCALE (Lecanum nigrofasciatum Perg.)

Delaware C. O. Houghton (July 21). "Crataegus on University Campus heavily infested with this species."

IVY

IVY SCALE (Aspidictus hederæ Vallet)

Louisiana T. H. Jones (July 13). "Specimens received from Alexandria for identification."

LILAC

OYSTER-SHELL SCALE (Lepidosaphes ulmi L.)

New York E. P. Felt (August 5). "About one-tenth as much scale on sprayed plants as compared with last year at Cobb's Hill."

M. D. Leonard (July 21). "Shrubs badly infested at Johnson City."

Delaware C. O. Houghton. "About as numerous as usual about Newark."

Indiana J. J. Davis (August 16). "The oyster-shell scale is abundant in the northern half of the State. The form on the lilac is beginning to produce the overwintering eggs. Our experience has shown that there is ample time after the last young hatch to apply effective summer sprays."

LILAC BORER (Podosesia syringæ Harr.)

New York E. P. Felt (August 3). "Damaging lilacs at Naples."

ROSE

MOSSY ROSE GALL (Dipolepis rosæ L.)

New York M. D. Leonard (August 8). "Twigs bearing galls received from Rochester."

STRAWBERRY LEAF-BEETLES (Paria canella Fab.)

Pennsylvania C. A. Weigel (July 22). "Adults of the strawberry rootworm are now emerging in large numbers in the rose houses in the vicinity of Philadelphia."

SNAPDRAGON

Cosmopepla biraculata Thos.

New York M. D. Leonard (August 1). "Considerable damage being done in College gardens at Ithaca by stunting of the bud clusters and deforming of the individual buds."

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

M A N

COMMON CAT AND DOG FLEA (Ctenocephalus canis Curtis)

- Massachusetts H. T. Fernald (August 20). "Recently fleas have been very abundant in many parts of the State following the warm and rather damp weather of late July and have been so troublesome as to attract considerable attention in many places."
- Indiana H. F. Dietz (August 16). "Fleas in houses have been frequently reported to date. Every report has been checked back to the presence of either dogs or cats in the places."
- Central States F. C. Bishopp (August 22). "There seems to have been a marked diminution in the outbreak of fleas which occurred during spring and early summer in the central States. All the specimens examined were Pulex irritans, but the trouble has extended eastward into the north Atlantic and New England States. During August house infestations were reported in a number of localities in that section. In the lots received Pulex irritans, Ctenocephalus canis, and C. felis were found to have occurred, usually the cat and dog fleas occurring together and the human fleas alone. It appears however that cat and dog flea predominate in these districts."

DEER FLIES (Chrysops sp.)

- New York R. C. Shannon (August 7). "Chrysops vittatus was present and causing some annoyance at Conquest. Collected Chrysops obsoletus at Fairhaven."

TERMITES

- Texas O. G. Babcock (July 29). "Considerable increase over last year. Sticks, horse dung, etc. are well covered with the cemented dirt covering by these ants in the pastures."

MOSQUITOES (Culicidae)

New York R. C. Shannon (August 7). "Collected a specimen of Psorophora ciliata in the act of biting near Conquest. Anopheles walkorii was abundant and very annoying during the whole night at Conquest and was also collected at Fairhaven."

ANTS (Formicidae)

Indiana J. J. Davis (August). "We have had numerous inquiries reletive to ridding houses of ants. Where specimens have been submitted we have found the most serious offender to be the cornfield ant."

Alabama W. E. Hinds (August 26). "The Argentine ant is causing serious complaint and is found scattered through the principal towns and cities throughout the State. Campaigns for ant control have been started in 10 communities including the City of Mobile and Selma which are the largest infested areas known at this time."

Mississippi R. W. Harned (August 29). "The Argentine ant, Iridomyrmex humilis, has caused more complaint this summer than ever before. The Plant Board is planning to put on control campaigns in several towns in cooperation with the local authorities."

CATTLE

HORN FLY (Lyperosia irritans L.)

Texas O. G. Babcock (July 29). "Horn fly has been at its height the latter part of June at Sonora when they were numerous enough to gather about the base of the horns at times. Now almost gone, average not over 25 per animal."

F. C. Bishopp. "The horn fly became abundant in Dallas and adjacent counties in May, but decreased rapidly during June and is not causing serious annoyance to live stock in July. In south Texas the abundance was rather above normal during June."

HORSE-FLY (Tabanus rubescens Bellardi)

Texas F. C. Bishopp (August 20). "In southwestern Texas where this species occurred in injurious numbers earlier in the year it has decreased very markedly and is now causing no annoyance to live stock. Reports have been received, however, from the vicinity of Jacksboro of the unusual abundance of this species during July, but there also the number is rapidly decreasing."

THE INSECT PEST SURVEY BULLETIN.

A monthly review of entomological conditions throughout the United States.

Volume 1.

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Number 6.

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING.

OUTSTANDING ENTOMOLOGICAL FEATURES OF SEPTEMBER, 1921

The season of insect activity in many of the States is now rapidly drawing to a close. In view of this fact we think it advisable to discontinue the Monthly Bulletin for the months of November, December and January. The seventh number, to be issued November 1, therefore, will be the last for the calendar year 1921. During the winter months we will issue the annual summary of entomological conditions throughout the United States. We do not wish our collaborators, however, to understand that we do not wish to receive entomological notes during these months. All observations on entomological conditions should be reported as heretofore and these features of the winter months will be written up in the February number. The unusual conditions in the South will be handled with special reports and telegraphic announcements.

During the past month recent rains reduced the ravages of the second brood of the chinch bug in Indiana and Illinois. This brood is heavy enough in Kansas to necessitate a control campaign being put on this winter. In Mississippi this pest is epidemic, the outbreak now underway being the most serious in the past 10 years.

The corn earworm is reported as being unusually abundant in Connecticut, New York, Delaware, Maryland, Indiana, Illinois, Michigan and Wisconsin.

The fall army worm arrived in northern Indiana late this month. In Kentucky this pest is doing serious damage at the present time. The true army worm has just put in its appearance in Kansas, where it is attacking late corn.

A hearing is to be held early next month before the Federal Horticultural Board to consider quarantine measures for the new territory infested by the European corn borer.

The blue-grass billbug is appearing in unprecedented numbers in parts of Iowa. It is so badly infesting blue-grass that the dead sod can be rolled up like carpet.

The alfalfa webworm is destroying many acres of alfalfa in east-central Kansas.

The codling moth, throughout the country, seems to be much more destructively abundant than usual. This may be partly accounted for by the concentration of the worms in the relatively small crop occasioned in many sections by late spring frosts. The unusual severity of plum curculio damage is probably also to be similarly accounted for.

The silver leaf mite is recorded for the first time as a pest in Pennsylvania.

The boll weevil has been discovered on the Island of San Salvador since the last issue of this Bulletin. In North Carolina the new area invaded by this pest this year is already as wide as the entire area invaded last year and the migrating season is only half over. It has been found 40 and 50 miles north of the limit of migration of last year in many places.

The cotton worm is very severe in parts of Louisiana, completely defoliating all the cotton in the vicinity of Alexandria and much from there to Opelousas. A late report has been received of heavy infestation about College Station, Texas. These outbreaks are so late, however, that they will probably have little effect upon the cotton crop.

Wireworms of the genus Phelates are estimated to be destroying potatoes valued at \$250,000 in the Yakima Valley region of Washington.

The imported cabbage worm and the cabbage looper are very seriously infesting cabbages in many of the middle Atlantic States.

The sweet-potato white fly is doing serious damage to sweet potatoes and beans in Florida.

The melon aphid has been extremely injurious to cantaloupes in the Imperial Valley of California. This pest has also been very destructive in Nebraska, Indiana, and Maryland, and has appeared for the first time in many years as a serious pest in Ohio.

One of the events of the month has been the very successful use of the aeroplane in distributing arsenicals in tall trees infested with leaf-feeding insects. At Troy, Ohio, a 6-acre grove of catalpas over 30 feet tall was treated in 54 seconds, the application being thorough enough to destroy 99 per cent of the catalpa sphinx caterpillars infesting the grove.

CEREAL AND FORAGE-CROP INSECTS

WHEAT

HESSIAN FLY (Phytophaga destructor Say.)

- Indiana J. J. Davis (September 14). "The Hessian fly situation is unchanged. The farmers are urged to delay sowing until after the "fly-free" dates and, from the inquiries received and the general sentiment throughout the State, universal adoption of this practice this year is anticipated.
- Illinois W. P. Flint (September 19). "Recent surveys show flaxseeds slightly less abundant than usual, except in a few of the mid-western counties. Here there is a moderately heavy infestation. A little more than 50 per cent of the flaxseeds are parasitized. No indication of second or supplementary fall brood."
- Nebraska M. H. Swenk (September 15). "The distribution of the Hessian fly seems to be very local as to menacing abundance. The pest did not increase in numbers during the summer to the extent that was threatened earlier in the season. Nevertheless many farmers are sowing late to avoid possible injury by this insect."
- Kansas E. G. Kelly (September 22). "Our summer survey indicated a very light infestation in east Kansas. Rains throughout the State in August and early September produced a good crop of volunteer wheat. The volunteer wheat, however, is very little infested."

FALSE WIREWORM (Elocodes spp.)

- Kansas E. G. Kelly (September 22). "The larvae of this insect are doing considerable damage to early sown wheat in some of the western counties."

CORN

CHINCH BUG (Blissus leucopterus Say)

- Indiana J. J. Davis (September 14). "The chinch bug is probably the most conspicuous and most talked of pest in Indiana. Following the summer flight of matured bugs it dropped out of sight, so far as the farmer was concerned, but they are again reporting a great abundance of the bugs in corn, not only where it was observed last summer but in many new localities. The heavy rains, no doubt, destroyed large numbers of the bugs but the check was not sufficient to control the pests. Corn has been badly damaged by the second brood of bugs in some localities, although this second-brood injury is not as widespread as anticipated because the corn was sufficiently advanced to overcome a considerable amount of injury and the heavy rains apparently have assisted."

Illinois W. P. Flint (September 19). "Chinch bugs in Illinois have received some setback from recent rains."

Kansas E. G. Kelly (September 22). "The chinch bug came forward in late summer and did some damage to corn in northeast counties of Kansas. We have enough to necessitate a campaign of control this winter."

Mississippi R. W. Harned (September 10). "The chinch bug is probably more numerous in Mississippi at the present time than at any time during the past 10 years. Yesterday Dr. Carl J. Drake and Mr. H. W. Allen investigated a serious complaint in regard to these insects in Lowndes County. They state that they have never seen chinch bugs more numerous. The ground was literally covered with them and in a field of sorghum hundreds of nymphs and adults were on almost every plant."

CORN EARWORM (Chloridea obsoleta Fab.)

Connecticut W. E. Britton (September 27). "This insect is being reported generally on late maturing sweet corn and field corn from many parts of the State."

New York E. P. Felt (September 21). "Mr. R. E. Horsey reports that the corn earworm has been somewhat injurious to corn in the vicinity of Rochester."

C. R. Crosby and assistants report that this insect is very abundant and destructive in Madison County; serious in Orleans, Cayuga, Livingston, and Allegany Counties; and fairly destructive in Monroe, Wyoming, Orange, and Yates Counties. It has also been reported as doing some damage in Chautauqua and Chemung Counties.

Delaware C. O. Houghton (September 7). "This pest is more abundant than usual in the vicinity of Newark."

Maryland J. A. Hyslop, Bureau of Entomology (September 24). "This insect is much more numerous than it has been for the past three years in the eastern part of Montgomery County, over 90 per cent of the sweet corn and much of the field corn being infested."

Indiana J. J. Davis (September 14). "The corn earworm seems to be more general this year than usual, judging from the many reports received."

Illinois W. P. Flint (September 19). "The corn earworm has destroyed 5 per cent of the crop to date."

Michigan R. H. Pettit. "Very abundant throughout the State. Damage ranging from 10 to 75 per cent of the crop."

Wisconsin S. B. Fracker (September 23). "Many complaints are being received this year. Serious losses from this insect are uncommon in this State."

FALL ARMY WORM (Lophyrata frugiperda S. & A.)

Indiana J. J. Davis (SPECIAL TELEGRAPHIC REPORT SEPT. 20). "Fall army worm first observed in northern Indiana on September 20 attacking alfalfa." The outbreaks reported from Laporte and Bedford.

Kentucky H. Garman (September 21). "The fall army worm has recently made its appearance in Kentucky and has, for a couple of weeks, been doing some severe mischief in Carroll County on the Ohio River to corn, riddling the expanded blades and working like a corn earworm in the rolled blades of late-planted corn. In Washington County, farther south, it is destroying vegetation of all sorts."

ARMY WORM (Girphis unipuncta Haw.)

Kansas E. G. Kelly (September 22). "This species has made its presence known in two localities in McPherson County on late corn."

STALK BORER (Papaiperna nitela Guen.)

Indiana J. J. Davis (September 14). "The stalk borer is still being reported, the reports for the past month relating to its occurrence in corn in the large basal portions of the stalk."

EUROPEAN CORN BORER (Pyrausta nubilalis Hubn.)

W. R. Walton, Bureau of Entomology. "Infestation in Ohio now extends from the Pennsylvania State line along the shore of Lake Erie almost continuously to Toledo. Infestation in the Province of Ontario, Canada, is very much more extensive and severe than anywhere in the United States, one record extending as far west as the shore of Lake Ontario. A hearing is to be held before the Federal Horticultural Board on October 11 to consider quarantine measures for the newly infested territory."

BUMBLE FLOWER BEETLE (Euphoria inda L.)

New York C. R. Crosby (August 30). "Injuring the ears of corn about Rochester. Much worse on the outside of fields."

M. D. Leonard (August 30). "Damage reported from Honeoye Falls, Monroe County. The beetles are reported as working through the husks and eating the kernels of the best ears."

E. P. Felt (September 21). "Bumble flower beetle has been somewhat abundant and injurious in both Rensselaer and Essex Counties."

Delaware C. O. Houghton (Late August). "Reported as doing some damage about Stanton."

COTTON CUTWORM (Prodenia ornithogalli Guen.)

Illinois W. P. Flint (September 19). "Occurring in moderate numbers about Urbana."

Prionus sp.

Illinois W. P. Flint (September 19). "An undetermined Prionus is doing severe damage about Urbana."

CORN LANTERN FLY (Peregrinus maidis Ashm.)

Mississippi R. W. Harned (September 10). "The corn lantern fly is causing serious damage in some cornfields in southern Mississippi."

COWPEAS

BELTED CUCUMBER BEETLE (Diabrotica balteata LeC.)

Mississippi R. W. Harned (September 10). "The banded Diabrotica is again causing serious loss to beans in southern Mississippi. This beetle apparently reached Mississippi some time during the past 8 or 10 years. It had never been noticed before that time, but for the past 5 years it has attracted as much attention as any of the Diabroticas. The complaints in regard to this insect have been largely from growers of beans, dahlias, and cucurbits."

Louisiana T. H. Jones (September 10). "Beetles have been unusually abundant lately on cowpeas, beans, Irish potatoes, squash, and other plants at Baton Rouge. Cowpeas have been badly eaten in Louisiana this year, principally by Cerotoma trifurcata, but Diabrotica balteata adults have been responsible for some of the injury."

(September 20). "At the request of the county agent of Rapides Parish, I spent yesterday in investigating the damage done by this beetle in the vicinity of Alexandria. We found the beetles abundant on various crops but they were attracting special attention because of the injury being done to Irish potatoes and cowpeas. This morning specimens were received from Oberlin with the information that the beetles were attracting attention in that section. In both sections mentioned, it appears to be the general impression that a new pest has put in its appearance. This would indicate that the species has not heretofore been abundant there, though specimens were taken near Alexandria by the writer as early as 1914. While the beetles have been locally abundant in the State in previous years, particularly in the fall of the year, it seems that this species is becoming more and more a serious pest."

BEAN LEAF-BEETLE (Cerotoma trifurcata Foerst.)

Louisiana T. H. Jones (September 10). "Cowpea foliage has been badly injured in Louisiana by insects this year, the damage being largely done by the adults of this species."

COWPEA CURCULIO (Chalcodermus seneus Boh.)

Georgia O. I. Snapp, Bureau of Entomology (September 12). "This curculio seems to be unusually abundant this year, and severely damaging the cowpea crop in central Georgia. Several farmers report one fourth to one half of the crop destroyed. Many pods cut off at the place of attachment to the vine. The weather has been hot and dry for the past three weeks.

LESSER CORN STALK-BORER (Elasmopalpus lignosellus Zell.)

Mississippi R. W. Harned (September 10). "The lesser corn stalk-borer continues to partially destroy stands of late cowpeas by tunneling the main stem and root. Small plants about 6 or 8 inches high are being attacked."

GREEN CLOVER WORM (Plathypena scabra Fab.)

Indiana J. J. Davis (September 14). "The green clover worm has been damaging soybeans and cowpeas in some sections."

VELVET BEAN

VELVET BEAN CATERPILLAR (Anticarsia gemmatilis Hubn.)

Florida J. R. Watson (September 15). "Doing some serious damage in a few localities in northern Florida but, on the whole, less serious than in average years. Parasites will probably appear within the next few weeks."

BLUE-GRASS

BLUE-GRASS BILLBUG (Sphenophorus parvulus Gyll.)

Iowa C. N. Ainslie, Bureau of Entomology (September 22). "It may be of interest to you to know that this insect seems to be multiplying at a great rate in this region, or at least in this vicinity. A few weeks ago the foreman of one of our cemeteries appealed to me for help. The sod was dying and could be rolled up like a carpet. I found a good many full-grown lachnosterna larvae at work, but along with these were a great number of the larvae of S. parvulus. Recently the adults have appeared in unprecedented numbers in my part of the city. Not many days ago I took adults from the walk between the Laboratory and my house, going back and forth three or four times. I have since taken them here and there from the walks, where the walks were bounded by bluegrass lawns, no grass with stems anywhere near, so I am sure they are living on the grass roots." (Sioux City, Ia.)

GENERAL FEEDERS

GRASSHOPPERS (Acridiidae)

Wisconsin S. B. Fracker (September 22). "Damage to field crops ceased in August and these insects are now doing considerable damage to cabbage."

Nebraska M. H. Swenk (September 15). "Grasshoppers continue to be present in supernormal numbers in a number of the eastern Nebraska counties especially in Nemaha County and along the Missouri River."

WHITE GRUBS (Phyllophaga spp.)

Indiana J. J. Davis (September 14). "White grubs are more abundant this year than for many years. They are reported as especially injurious to corn, strawberry, golf fair greens, and sod pastures."

Illinois W. P. Flint (September 19). "A serious outbreak throughout the northern two-thirds of the State."

Wisconsin S. B. Fracker, (September 23). "Serious on small fruit; hardly as injurious to corn as anticipated."

Kansas E. G. Kelly (September 22). "We expected considerable damage from white grubs this year but it did not occur except in three of the northeastern counties where slight damage was done to corn."

TRUCK - CROP INSECTS

GENERAL FEEDERS

WIREWORMS (Phelotes sp.)

Washington M. C. Lane (Bureau of Entomology). "In the company of Chief Horticultural Inspector W. L. Close, I spent the 18th of July in visiting as many farms as possible around Outlook and Sunnyside, Washington, where the damage to potatoes was reported worst last fall. Wireworms were easily found tunneling at this time in the half-grown potatoes and also in the stems of the plants below the surface. They were also found working near tops of half-grown sugar beets and severing the simple roots of the small rutabagas. Many were found feeding at the crowns of a succulent water grass common in the fields. On talking with several prominent farmers of this district, one having lived there for 29 years, I gathered that the wireworms have gradually become worse in the last 6 or 7 years, attacking corn, potatoes, and sugar beets mostly. The opinion here was that alfalfa was not attacked to any great extent and that fields of recently plowed alfalfa did not become badly infested with wireworms for at least two or three years. Later I found a badly infested field of potatoes that had been in alfalfa last year and for a long time previously. There is no doubt but that the wireworms are becoming more numerous and injuring the above-mentioned crops to a great extent in their early growth, but the main source of loss in the opinion of all talked with, is the lowering of the grade of the potatoes at market time, due to the tunnels of the wireworms. This is a very material loss and affects the growers directly. The estimated crop of this year will sell at very nearly \$1,000,000. Mr. Zundel, pathologist of the Washington State College, estimates that the loss occasioned by wireworms and disease this year will amount to nearly \$250,000 in the Yakima Valley. He has been over the Indian Reservation around Wapato and reports the same conditions as I found around Sunnyside."

BLISTER BEETLES (Epicauta spp.)

Mississippi R. W. Harned (September 10). "Blister beetles still continue to attract attention by their abundance on various kinds of crops throughout Mississippi."

FIRE ANT (Solenopsis geminata Fab.)

Louisiana T. H. Jones (September 10). "Specimens of this ant were received on September 7 from a correspondent at Burtville, with report that they were carrying away garden seed after these had been planted. This species is quite commonly complained of as causing such damage and also girdling young vegetable plants at the surface of the ground."

POTATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

- Maine R. J. Haskell, Plant Disease Survey (September 10). "Mr. W. J. Morse reports that flea-beetles have done considerable damage throughout central and southern Maine except where the potatoes had been very thoroughly sprayed."
- Vermont R. J. Haskell, Plant Disease Survey (September 10). "These insects have also done serious damage in northern and central Vermont."
- New Hampshire R. J. Haskell, Plant Disease Survey (September 10). "They are also reported as having done considerable damage in northern and central New Hampshire."
- New York O. C. Boyd (September 2). "These beetles are very numerous at the present time at Southampton."

POTATO APHIS (Macrosiphum solanifolii Ashm.)

- New York C. R. Crosby and assistants report that during the past week in September these insects were quite common in several fields about Nichols in Tioga County. One grower included 40 percent nicotine sulphate in his spray on a 30-acre patch. A few are still present about Southampton, in Suffolk County.

APPLE LEAFHOPPER (Empoasca mali LeB.)

- New York C. R. Crosby and assistants report that these insects are still quite common in Tioga, Suffolk, and Schuyler Counties.
- Wisconsin S. B. Fracker (September 23). "Killed Green Mountain variety except where sprayed and resulted in more serious burn on Rural New Yorker than ever before in northern part of State."

NORTHERN MOLE CRICKET (Gryllotalpa borealis Burm.)

- Massachusetts A. I. Bourne (September 15). "Doing some damage to potatoes about Fairview."
- Nebraska M. H. Swenk (September 15). "During the middle and latter part of August a very unusual number of mole crickets were reported from various parts of the State."

CABBAGE

IMPORTED CABBAGE WORM (Pontia rapae L.)

- New York M. D. Leonard (September 3). "Quite common but not doing much damage in one 3-acre field at Watkins in Schuyler County."
- Delaware C. C. Houghton (September 15). "All stages of this species in small numbers are still to be found here."
- Maryland J. A. Hyslop (September 25). "Cabbage worm is more numerous this year than it has been for the past three years in the southeastern part of Montgomery County. Very late planted cabbage is being entirely defoliated."

S. B. Fracker (September 23). "Doing considerable damage in Monroe and Kewaunee Counties."

CABBAGE LOOPER (Autographa brassicae Riley)

Maryland

J. A. Hyslop (September 25). "These insects are so numerous on late cabbage that in conjunction with the imported cabbage worm they are threatening the crop in the southeastern part of Montgomery County. They are also attacking kale and turnips."

New York

W. E. Davis (September 26). "One 3-acre field at Auburn quite badly infested and several others less so. Larvae were first observed to be injurious about a week ago."

CABBAGE APHIS (Brevicoryne brassicae L.)

New York

E. O. Merrill, Assistant County Agent, Erie County. "About 3 per cent of the crop is being damaged here, due to very dry weather. Many plants have gone down beyond recovery."

G. E. Smith (September 6). "Increasing in injurious numbers on many patches in Orleans County."

HARLEQUIN CABBAGE BUG (Murgantia histrionica Hahn.)

Indiana

J. J. Davis (September 14). "Harlequin cabbage bug has been damaging cabbage in the southern end of Indiana."

TURNIPS

GARDEN WEBWORM (Loxostege similalis Guen.)

Maryland

J. A. Hyslop (September 20). "These insects are destroying about 10 per cent of the late turnip plants in the southeastern part of Montgomery County. They seem to be worse where the turnips are drilled in, the larvae working along the drill rows."

STRAWBERRY

STRAWBERRY WEEVIL (Anthonomus signatus Say)

New York

C. R. Crosby and assistants. The annual survey of the commercial strawberry crop indicates that this insect destroyed from 5 to 50 per cent of the crop in different parts of Columbia County.

WHITE GRUBS (Phyllophaga sp.)

Nebraska

M. H. Swenk (September 15). "White grubs continue to do serious injury to blue-grass lawns and strawberry beds over most of eastern Nebraska. The great bulk of these insects are in the second year of their development."

STRAWBERRY LEAF-BEETLE (Paria canella Fab.)

Wisconsin

S. B. Fracker (September 23). "Serious damage from both adults and larvae in the State's best small-fruit area, in the west-central part of the State. Mr. E. L. Chambers reports this outbreak as a record breaker."

ASPARAGUS

ASPARAGUS BEETLE (Crioceris asparagi L.)

Delaware C. O. Houghton. "All stages of this insect in small numbers may still be found on asparagus about Newark."

BEANS

BEAN APHIS (Aphis rumicis L.)

Maryland E. N. Cory (September 25). "This insect occurs in abnormal numbers and threatens late bean crop about Rhodesdale."

SWEET -POTATO WHITE FLY (Pemisia inconspicua Quaint.)

Florida F. M. O' Byrne (August 26). "Destroyed a 30-acre field of sweet potatoes about Alachua and are now attacking a 10-acre field of beans across the road."

CUCUMBER

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

Massachusetts A. I. Bourne (September 20). "This insect appeared in the region about Amherst in great numbers. Was at about peak of its abundance during week of August 20-27, when it was nearly as numerous as the striped cucumber beetle. Early in the season this species had not been found occurring in any great numbers as compared with the striped cucumber beetle."

PICKLE WORM (Diaphania nitidalis Cram.)

Mississippi R. W. Harned (September 10). "The pickle worm has been reported to be injuring late cucumbers in southern Mississippi."

MELON

COTTON APHIS (Aphis gossypii Glov.)

Maryland E. N. Cory (September 25). "Extremely injurious to cantaloupes, melons, particularly honeydew, about Rhodesdale."

Indiana J. J. Davis (September 14). "The melon aphid has been unusually abundant and destructive this year, the majority of the reports coming in the past month and after the greatest injury has been done -- usually too late to spray for satisfactory results."

Ohio H. A. Gossard (August 24). "Mr. J. S. Houser reports that a grower of muskmelons near Coshocton, who has been in the business for the past 25 years, experienced this season the first injury from the melon aphid. The attack commenced late in July and the upper surface of the leaves was sprayed with nicotine sulphate. A few days later a second application was made to the underside of the leaves through the use of specially constructed spars, using Bordeaux in combination with the nicotine sulphate and soap. Not only were the aphids controlled, but the wilt disease which was at that time making serious inroads on the field and threatening the crop was completely checked and an excellent crop of melons is being harvested."

Nebraska M. H. Swenk (September 15). "Melon aphid continues to be injurious on cucumbers and melons in all parts of the State."

SQUASH

SQUASH BUG (Anasa tristis DeG.)

Massachusetts E. R. Farrar (September 14). "This insect is about twice as abundant as usual at Lincoln. For the past few days we have found from 6 to 8 a day under shingles laid at the side of hills."

Indiana J. J. Davis (September 14). "The squash bug has been reported as very numerous in several localities."

SQUASH LADY-BEETLE (Epilachna borealis Fab.)

Delaware C. O. Houghton. "Adults still feeding on squash in small numbers about Newark."

ONION

PURSLEY SAWFLY (Sterictiphora zabriskei Ashm.)

Indiana J. J. Davis (September 14). "The pursley sawfly was reported from LaPorte as very abundant. It completely destroyed the pursley weed in a 10-acre field of onions. Other onion fields in the locality were apparently not freed of this weed by this sawfly larva."

SWEET POTATO

SWEET-POTATO WHITE FLY (Bemisia inconspicua Quaint.)

Florida Jeff Chaffin (September 10). "Doing serious damage and in some instances completely destroying large plantings of sweet potatoes. Calls for assistance are coming in from all over the potato growing sections. The Plant Board is trying to combat the pest with various citrus white fly fungi, but so far have had little success."

FRUIT INSECTS

APPLE

GREEN APPLE APHIS (Aphis pomi DeG.)

New York C. R. Crosby and assistants. The annual surveys of Columbia and Genesee Counties indicate that the damage by this insect was very slight and difficult to estimate, not amounting to 1 per cent.

ROSY APPLE APHIS (Anuraphis rosaeus Baker)

New York C. R. Crosby and assistants. The annual surveys indicate the following percentages of the apple crop damaged by this insect: Albany County, 8 per cent; Columbia County, traces difficult to estimate; Orleans County, 6 per cent; Wayne County, 20 to 30 per cent, sometimes as high as 65 per cent, this pest being the most serious insect attacking apple in this county this year.

CODLING MOTH (Carpocapsa pomonella L.)

New York C. R. Crosby and assistants. The annual survey indicates the following percentages of damage to the apple crop in the several counties: Orleans County, 12 to 15 per cent of apples with real wormholes, 18 to 20 per cent with side stings; Nassau County, 15 per cent; Albany County, 10 per cent wormholes, 15 per cent side stings; Columbia County, 15 per cent wormholes, side stings 4 per cent; Genesee County, 4 per cent wormholes, side stings 2 per cent; Wayne County, wormholes 0.5 to 1 per cent, side stings 2 to 4.5 per cent.

Kansas E. G. Kelly (September 22). "Owing to the severe freeze of last April we have practically no apple crop in Kansas, except in two southern counties where we have about one-third of a crop. In these counties a very heavy infestation of codling moth occurred; especially a late brood which stung practically 90 per cent of the crop. There were enough apples in all other sections of Kansas to carry through a good crop of worms for next year."

LESSER APPLE WORM (Epamonia prunivora Walsh)

Indiana J. J. Davis (September 14). "The lesser apple worm seems to be unusually abundant this year and even in some of our most thoroughly sprayed orchards it is numerous."

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

New York C. R. Crosby and assistants. The annual survey of the commercial apple crop indicates the following percentages of damage in the several counties: Orleans County, 5 per cent; Albany County, 7 per cent; Genesee County, 2 per cent; Wayne County, 0.05 per cent to 0.2 per cent; Columbia County, traces.

RED-BANDED LEAF-ROLLER (Eulia velutinana Walk.)

Pennsylvania S. W. Frost (September 27). "The red-banded leaf-roller is exceedingly abundant and causing serious late injury to the fruit."

APPLE AND THORN SKELETONIZER (Hemerophila pariana Clerck)

Connecticut W. E. Britton (September 20). "Injury attributed to this insect is being found on apple in nearly all sections of the State except along the northern boundary, where it has not yet been observed."

BUD MOTH (Tmetocera ocellana Schiff.)

New York C. R. Crosby and assistants. The annual survey of the commercial apple crop indicates the following percentages of damage: Orleans County, 2 per cent; Albany County, 10 per cent; Genesee County, 1 per cent.

LEAF CRUMPLER (Mineola indigenella Zell.)

Nebraska M. H. Swenk (September 15). "In Douglass County a severe infestation by the leaf crumpler was found early in September."

APPLE TRUMPET LEAF-MINER (Tischeria malifoliella Clem.)

Delaware C. O. Houghton (September 17). "This insect has been doing some damage about Newark."

FALL WEBWORM (Hyphantria cunea Drury)

Maryland E. N. Cory (August 28). "The fall webworm is much more abundant on the eastern shore than I have ever seen it. Observations were made in Talbot, Caroline, and Worcester Counties."

RED-HUMPED APPLE CATERPILLAR (Schizura concinna S. & A.)

Indiana J. J. Davis (September 14). "The red-humped apple caterpillar on apple and rose has been the subject of a number of inquiries."

LEOPARD MOTH (Zeuzera pyrina L.)

New York E. P. Felt (September 21). "Mr. L. P. Husted reports that the leopard moth larvae in apple twigs were doing some damage in Orange County."

APPLE MAGGOT (Rhagoletis pomonella Walsh)

New York C. R. Crosby and assistants. The annual survey of the commercial apple crop indicates the following percentages of damage done by this insect: Nassau County, 20 per cent; Albany County, 18 per cent; Columbia County, 5 per cent; Wayne County, traces of damage.

Wisconsin S. B. Fracker (September 23). "This insect, normally rare in Wisconsin, was a serious factor in some localities in the central part of the State this year."

APPLE RED BUG (Heterocordylus malinus Reut.)

New York C. R. Crosby and assistants. The annual survey of the commercial apple crop indicates the following percentages of damage done by this insect: Orleans County, 4 per cent; Albany County, 12 per cent; Columbia County, 15 per cent; Genesee County, 1 per cent; Wayne County, 2 to 3.5 per cent.

APPLE LEAFHOPPER (Empoasca mali LeB.)

New York M. D. Leonard (September 6). "Some damage to foliage observed in several orchards in Orleans County."

Delaware C. O. Houghton (September 24). "More abundant than usual on apple this year."

Pennsylvania S. W. Frost (September 27). "Not very abundant on apple this year."

Ohio H. A. Gossard (August 24). "Mr. J. S. Houser reports that the leaf-hopper was observed to be more abundant on the dusted than on the liquid sprayed apples in northwestern Ohio."

ROSE LEAFHOPPER (Empoa rosae L.)

Pennsylvania S. W. Frost (September 27). "Serious in Washington County, partially defoliating the trees."

SAN JOSE SCALE (Aspidiotus perniciosus Comstock)

New York C. R. Crosby and assistants. The annual survey of the commercial apple crop indicates the following percentages of damage done by this insect: Orleans County, 1 per cent; Albany County, traces; Columbia County, traces; Wayne County, 0.5 per cent.

Kansas E. G. Kelly (September 22). "This insect has had a very favorable summer on account of the lack of spraying in some of the orchards. Unsprayed fruit where there are only a few apples on the trees, are covered with the scales and the trees are badly infested. Will probably need the dormant spray."

APPLE SEED CHALCID (Syntormis druparum Boh.)

Connecticut Philip Garman (August 23). "Characteristic injury and infested seeds observed at Cornwall and Milford. This insect has not been observed in other years in this State."

PIUM CURCULIO (Conotrachelus nenuphar Herbst)

Connecticut W. E. Britton (September 27). "At harvest, apples in all parts of the State show an unusually large amount of injury by this insect."

New York C. R. Crosby and assistants. The annual survey of the commercial apple crop indicates the following percentages of damage by this insect: Wayne County, 4 to 8 per cent; Orleans County, 0.5 per cent; Albany County, 14 per cent; Genesee County, 1 per cent; Chautauque County, scarce.

diana J. J. Davis (September 14). "The plum curculio has been unusually severe in apple orchards."

BUMBLE FLOWER BEETLE (Euphoria inda L.)

ine E. M. Patch (September 13). "The last few days the brown fruit chafer is reported to be holding high revels in the McIntosh apples while ignoring snow apples in an adjoining row."

PEAR

PEAR THRIPS (Taeniothrips inconsequens Uzel)

w York D. V. Rivenburgh. The annual survey of the commercial pear crop in Columbia County indicates damage by this insect to be from 1 to 4 per cent.

PEAR PSYLLA (Psylla pyricola Foerst.)

w York C. R. Crosby and assistants. The annual survey of the commercial pear crop indicates the following percentages of damage done by this insect: Orleans County, 25 per cent; Niagara County, 25 per cent direct injury, 50 per cent indirect injury; Columbia County, 15 to 20 per cent; Genesee County, 1 per cent; Wayne County, controlled in most orchards.

PEAR LEAF BLISTER MITE (Eriophyes pyri Pgst.)

w York C. R. Crosby. (September 6). "Leaves badly infested at Oneida in Madison County."

CODLING MOTH (Carpocapsa pomonella L.)

w York C. R. Crosby and assistants. The annual survey of the commercial pear crop indicates the following percentages of damage done by this insect: Orleans County, 8 to 10 per cent; Niagara County, 2 per cent; Albany County, 8 per cent; Columbia County, 0.5 per cent; Genesee County, 4 per cent; Wayne County, traces.

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

w York C. R. Crosby and assistants. The annual survey of the commercial pear crop indicates the following percentages of damage by this insect: Wayne County, 1 per cent; Orleans County, 5 per cent; Niagara County, 2 per cent; Albany County, 2 per cent; Genesee County, 2 per cent.

Lygus Communis Knight

w York C. R. Crosby and assistants. The annual survey of the commercial pear crop indicates the following percentages of damage done by this pest: Orleans County, 3 per cent; Genesee County, 6 per cent; Niagara County, 0.5 per cent; Columbia County, 5 per cent.

PEACH

PEACH BORER (Aegeria exitiosa Say)

- New York M. D. Leonard (September 6). "Abundant in one 40-acre orchard at Lyndonville; nearly every tree infested. Some larvae about 1/2 inch in length. Also common in all orchards about Hector."
- Indiana J. J. Davis (September 14). "The peach-tree borer has been the subject of a great many inquiries, partly due, no doubt, to the publicity given the paradichlorobenzene method of control. Large quantities of this insecticide will be used in Indiana this fall, at least one county buying it in ton lots. Unfortunately an eastern company has been selling considerable quantities of a "paradichlorobenzene compound," a material which we can not recommend."

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

- New York M. D. Leonard (September 6). "Common in one 40-acre orchard at Lyndonville, mostly in old brown-rot cankers. Many larvae apparently full grown. Also common in weakened trees about Hector."
- C. R. Crosby (September 2). "Badly infested trees observed at Youngstown."
- Ohio H. A. Gossard (August 24). "Shot-hole borer is abundant in many sections of the State, affecting particularly peaches and cherries weakened by frost injury or other causes. The second-brood beetles were observed near Waterville on July 26 and August 6. Dust spraying programs executed at Waterville and Lorain have yielded satisfactory results as to insect control but at Waterville failure to control blotch and scab on apple is noted from the use of dusts of the 90-10 sulphur lead combination and also of the 12-8-90 dehydrate copper-arsenate of lead-lime mixture."
- Indiana J. J. Davis (September 14). "Shot-hole borer continues to be the subject of many inquiries."

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

- New York C. R. Crosby and assistants. The annual survey of the commercial peach crop indicates the following percentages of damage done by this insect: Orleans County, 5 per cent; Niagara County, traces; Genesee County, 2 per cent; Nassau County, 2 per cent.

RED-LEGGED LOCUST (Melanoplus femur-rubrum DeG.)

- Georgia O. I. Snapp, Bureau of Entomology (September 9). "On account of the very dry and hot weather in this locality for the past six weeks vegetation has dried up considerably and these grasshoppers have taken to the peach trees, eating off all the foliage, in many instances leaving only the midrib of the leaves. The damage was serious in several orchards as it will probably affect the fruit buds of next season's crop. In an examination made at Albany all the foliage had been devoured by these grasshoppers on about 100 trees in a 17,000-tree orchard. Every tree was severely damaged."

SILVER LEAF MITE (Phyllocoptes cornutus Banks)

Pennsylvania S. W. Frost (September 27). "The silver leaf mite is abundant in Cumberland County and a little infestation was noticed in Adams County. To my knowledge this is the first time it has been recorded from Pennsylvania."

COTTON WORM (Alabama argillacea Hübn.)

Michigan R. H. Pettit (September 15). "This insect has been fairly abundant at Provement and Holland attacking the fruit of peaches."

CHERRY

CHERRY MAGGOT (Rhagoletis cingulata Loew)

New York C. R. Crosby and assistants. The annual survey of the commercial cherry crop indicates the following percentages of damage by this insect: Columbia County, 1 to 2 per cent; Niagara County, 40 per cent on unsprayed trees; Orleans County, 3 per cent; Genesee County, 1 per cent; Wayne County, traces.

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

New York C. R. Crosby and assistants. The annual survey of the commercial cherry crop indicates the following percentages of damage done by this insect: Orleans County, 3 per cent; Albany County, 1 per cent; Genesee County, 4 per cent.

PLUM

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

New York C. R. Crosby and assistants. The annual survey of the commercial plum crop indicates the following percentages of damage done by this insect: Wayne County, 10 per cent; Genesee County, 8 per cent; Orleans County, 5 per cent; Niagara County, 5 per cent; Nassau County, 30 per cent; Albany County, 15 per cent; Columbia County, 10 per cent.

PECAN

PECAN NUT CASE-BEARER (Acrobasis hebescella Hulst)

Mississippi R. W. Harned (September 10). "The pecan leaf case-bearer is abundant this year in southern Mississippi."

FALL WEBWORM (Hyphantria cunea Drury)

Georgia O. I. Snapp, Bureau of Entomology (September 8). "This insect is causing severe defoliation in some sections of the Albany pecan district. Apparently it is more severe on trees in the lowlands."

HICKORY NUT WEEVIL (Balaninus caryae Horn)

Georgia O. I. Snapp, Bureau of Entomology (September 14). "This insect is doing more damage in the Myrtle section this year than last, while the damage was severe in this section last year. Most of the orchards are near woodlands containing hickory. Pecan growers in this section will fumigate with carbon disulphid for this insect."

GRAPE

GRAPE LEAFHOPPER (Erythroneura comes Say)

New York C. R. Crosby and assistants report this insect as having done very little damage in Columbia and Orleans Counties.

Indiana J. J. Davis (September 14). "The grape leafhopper is prevalent in unusual abundance in many sections of the State."

GRAPE ROOTWORM (Fidia viticida Walsh)

New York G. E. Smith. "The annual survey of the commercial grape crop indicates that this insect damaged 4 per cent of the crop in Orleans County."

GRAPE-BERRY MOTH (Polychrosis viteana Clem.)

New York G. E. Smith. "The annual survey of the commercial grape crop indicates that this insect damaged 3 per cent of the crop in Orleans County."

GRAPE LEAF SKELETONIZER (Harrisina americana Guér.)

Delaware C. O. Houghton (September 17). "Larvae of the second brood are now nearly full grown."

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

New York L. C. Tyler. "The annual survey of the commercial grape crop indicates that this insect damaged 1 per cent of the crop in Genesee County."

GRAPE PHYLLOXERA (Phylloxera vitifoliae Fitch)

New York L. D. Greene (August 29). "Badly infested leaves from cultivated grapes were observed at Newburgh in Orange County."

PYRIFORM SCALE (Pulvinaria pyriformis Ckll.)

Florida U. C. Zeluff (September 1). "All mangoes in the vicinity of Tampa are severely infested at the present time. This insect is much more abundant than usual this year."

CRANBERRY

BLACKHEAD CRANBERRY WORM (Rhopobota naevana Hübn.)

Wisconsin S. B. Fracker (September 23). "Mr. O. G. Halde reports that more fire-worm work than usual has occurred in Wood County, the crop loss in the Mather area being serious."

ORANGE

CITRUS RUST MITE (Eriophyes oleivorus Ashm.)

Florida J. R. Watson (September 15). "Rust mite usually does very little damage during August and September. It is doing a large amount of damage, however, at the present time. Most of the damage is usually experienced in June and July."

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

G E N E R A L F E E D E R S

FALL WEBWORM (Hyphantria cunea Drury)

- Massachusetts. E. R. Farrar (September 14). "This insect is about 75 per cent as abundant as it was last year about Lincoln."
- Nebraska. M. H. Swenk (September 15). "A very unusual abundance of fall webworm in Omaha, and to only a slightly less extent about Lincoln and other eastern Nebraska cities, as well as westward across the State in the Platte Valley. Probably as many inquiries were received regarding this insect as of all other pests of the period here covered combined."
- Louisiana T. H. Jones (September 9). "Moths, apparently from the third generation of caterpillars, noticed about lights at Baton Rouge last night."

FALL WEBWORM (Hyphantria textor Harr.)

- New York E. P. Felt (September 21). "Fall webworm, Hyphantria textor Harr., has been moderately abundant though not particularly injurious in the eastern part of the State."

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

- Kansas E. G. Kelly (September 22). "The bagworms have been unusually abundant this summer on evergreens, many of the trees having been defoliated."

M A P L E

TERRAPIN SCALE (Lecanium nigrofasciatum Perg.)

- New York M. D. Leonard (September 5). "Badly infested twigs and leaves covered with honeydew and sooty fungus were received from Elmira. This insect is reported as being severe in one section of the City."

WOOLLY MAPLE LEAF SCALE (Phenacoccus acericola King)

- Indiana J. J. Davis (September 14). "Woolly maple leaf scale is reported as common on maple in some sections of southern Indiana."

NORWAY MAPLE APHIS (Periphyllus lyropictus Kess.)

- New York M. D. Leonard (September 6). "Leaves of a shade tree sticky with honeydew and aphids fairly abundant at Newburgh. The leaves show some yellowing due to this insect."

ELM

ELM LEAF-BEETLE (Galerucella luteola Mull.)

New York E. P. Felt (September 21). "R. E. Horsey reports that the elm leaf-beetle skeletonized several trees on Alexandria Street, Rochester, and by September 6 there were thousands of grubs on the leaves and trunk, probably of the second brood. Trees in the same vicinity sprayed earlier in the season were free from this pest."

BUMBLE FLOWER BEETLE (Euphoria inda L.)

Wisconsin S. B. Fracker (September 23). "Unusual number of complaints, from various parts of the State, of these insects on elm trees."

POPLAR

POPLAR MOCHA STONE MOTH (Melalopha inclusa Hübner.)

Maryland E. N. Cory (September 21). "This insect is decidedly more numerous than usual on willows and poplars about Berlin."

Apatela sp.

Nebraska M. H. Swenk (September 15). "In Hitchcock County the trees in general, and especially the cottonwoods, were injured during late August by caterpillars of the genus Apatela."

ASH

CARPENTER WORM (Prionoxystus robiniae Peck)

Nebraska M. H. Swenk (September 15). "Reports of injury by the carpenter moth were received during the period here covered, especially in relation to the injury to ash trees."

WALNUT

WALNUT CATERPILLAR (Datana integerrima G. & R.)

Kansas E. G. Kelly (September 22). "The second brood of this insect occurred in late July and defoliated many walnut trees throughout the State. The occurrence seemed to be general."

BIRCH

BIRCH LEAF SKELETONIZER (Bucculatrix canadensisella Chamb.)

Massachusetts A. I. Bourne (September 15). "This insect is much more abundant than usual in the eastern part of the State. It is apparently coming back into importance again after a lapse of about 10 years."

- Connecticut B. G. Walden (September 20). "More abundant than usual in the vicinity of Derby."
- New York E. P. Felt (September 21). "Has been locally abundant and somewhat injurious to birches in the northeastern part of the State, ranging from Rensselaer County north to Essex County. The insect has been so numerous as to cause a general browning of groups of birches here and there throughout the area. It was not so abundant as during the outbreak of 1901."
- Michigan R. H. Pettit (September 9). "A serious outbreak of this pest occurred in the southern part of the lower peninsula defoliating white birches."

EUROPEAN HORNET (Vespa crabro L.)

- New York E. P. Felt (September 21). "European hornet has been injuring blue birch twigs in the vicinity of New York City by girdling them and thus causing the tips to die. One tree was quite badly damaged."

CATALPA

CATALPA SPHINX (Ceratomia catalpae Boisd.)

- Maryland E. N. Cory (August 23). "Formerly abundant about Berlin."
- Ohio H. A. Gossard (August 24). "Mr. J. S. Houser reports that the aeroplane was used successfully as a means of distributing arsenate of lead upon tall trees on August 3 at Troy. A 6-acre grove of catalpas 30 feet tall badly infested with the larvae of the catalpa sphinx was sprayed in 54 seconds. At least 99 per cent of the caterpillars were destroyed."

SPRUCE

SPRUCE GALL APHID (Adelges abietis Kalt.)

- Connecticut W. E. Britton (September 20). "This insect is found in all parts of the State, wherever spruce trees are grown, and is seemingly on the increase."
- New York E. P. Felt (September 21). "Spruce gall aphids continue to attract notice by the production of galls; complaints have come from both Ulster and Herkimer Counties recently."

PINE

PINE LEAF SCALE (Chionaspis pinifoliae Fitch)

New York M. D. Leonard (September 10). "Several shade trees about Schenectady reported as badly infested. About the middle of August young scales, apparently of this species, were abundant on an Austrian pine shoot sent in from Briarcliff Manor. No old scales could be found on this shoot, however."

PINE LEAF MINER (Paralechia pinifoliella Chamb.)

New York M. D. Leonard (August 17). "Many trees reported to be badly infested about Briarcliff Manor."

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

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

North

Carolina Franklin Sherman (September 23). "The principal entomological event of the past month in North Carolina has been the rapid increase of the boll weevil in territory invaded a year ago, and its early and rapid migration into new areas. The new territory invaded by it this year is already as wide as the entire new area invaded last year, and the migration season is not half over. It has been found in numbers at places 30 to 40 miles north of its limit a year ago."

Louisiana T. H. Jones (September 10). "Judging from reports, the cotton boll weevil has caused severe injury to the cotton crop in Louisiana this year."

San

Salvador J. L. Webb (Bureau of Entomology) "Specimens of the boll weevil were recently received from Mr. S. Caldron, collected from cotton during August on the island of San Salvador. Up to this time this pest was not known to occur on that island."

RED SPIDER (Tetranychus telarius L.)

North

Carolina A. C. Foster (September 1.) "Very destructive in north-central counties of this State."

COTTON WORM (Alabama argillacea Hübner.)

New York E. P. Felt (September 21). "Cotton moth has appeared in small numbers in various localities in the State, notably Albany, Utica, and Silver Creek,"

Michigan R. H. Pettit (September 15). "Adults fairly abundant at Provemont and Holland."

Louisiana T. H. Jones (September 19). "All cotton fields in the vicinity of Alexandria, seen on a field trip today, have been defoliated by the larvae. Pupae and pupal cases the only stages now noted. Was told by the pink bollworm inspectors of the Federal Horticultural Board that they had noted fields defoliated from Opelousas to Alexandria in a recent trip over the road."

PINK BOLLWORM (Pectinophora gossypiella Saund.)

Porto Rico G. N. Wolcott (September 14). "I am enclosing copy of some recommendations regarding Pink Bollworm in cotton, which has recently been found in Porto Rico."

GREENHOUSE AND ORNAMENTAL PLANTS

AZALEA

CORNUS BORER (Oberea tripunctata Swed.)

New York E. P. Felt (September 21). "Mr. R. E. Horsey reports that this insect has been working in the twigs of azalea beds in the Department of Parks, Rochester, though it has not caused much injury."

EUONYMUS

EUONYMUS SCALE (Chionaspis euonymi Comst.)

New York M. D. Leonard (September 6). "Specimens of this plant from Mt. Kisco were sent in to this office. These were badly infested."

CANNA

SADDLE-BACK CATERPILLAR (Sibine stimulea Clem.)

Delaware C. O. Houghton (September 17). "This insect is now attacking cannas about Newark."

COLEUS

CITRUS MEALYBUG (Pseudococcus citri Risso)

New York M. D. Leonard (August 29). "Plants in a garden at Ithaca badly infested."

District of Columbia A. V. Swarthout, Bureau of Markets (September 30). "Causing entire plantings to die in the vicinity of Cleveland Park."

CHRYSANTHEMUM

CHRYSANTHEMUM GALL MIDGE (Diarthronomyia hypogaea F. Loew)

New York L. F. Strickland (September 21). "Chrysanthemum midge has become established in considerable numbers in a Lockport greenhouse."

BARBERRY

Omphalocera dentosa Grote

Connecticut W. E. Britton (September 20). "This insect was first observed in 1908 and was abundant in 1911. I have never seen it since until this year, when it was observed in New Haven in a Japanese barberry hedge."

HAWTHORN

WOOLLY APPLE APHIS (Eriosoma lanigerum Hausm.)

New York E. P. Felt (September 21). "Mr. R. E. Horsey reports that these insects are a serious pest on the branches and twigs of American hawthorn in Highland Park, Rochester. The cheapest way to control this insect is by using clear water in a power sprayer."

RED SPIDER (Tetranychus sp.)

New York E. P. Felt (September 21). "Mr. R. E. Hersey reports that red spiders were abundant on American hawthorn in Genesee Valley Park, Rochester."

ROSE

ROSE SCALE (Aulacaspis rosae Bouche)

Delaware C. O. Houghton (September 15). "Have found some plants heavily infested with this species this year about Newark."

TWELVE-SPOTTED CUCUMBER BEETLE (Diabrotica 12-punctata Oliv.)

New York M. D. Leonard (September 7). "Beetles doing considerable injury to rose petals in a private garden containing a valuable collection of roses."

INSECTS ATTACKING MAN AND DOMESTIC ANIMALS

MAN

GARDEN SLUG (Agriolimax agrestis L.)

Indiana J. J. Davis (September 14). "Large garden slugs have been numerous in cellars, cisterns, etc. No injury to crops has been reported."

BEDBUG (Cimex lectularius L.)

Indiana J. J. Davis (September 14). "Numerous calls for the control of bedbugs in dwellings and chicken houses have been received."

ANTS

Indiana J. J. Davis (September 14). "Ants in houses and lawns continue to be a source of trouble and annoyance."

IO MOTH (Automeris io Fab.)

New York M. D. Leonard (September 13). "Reports have been received from Long Island of bean pickers getting severe rashes on the hands from touching these larvae."

SHEEP AND GOATS

NOSE FLY (Oestrus ovis L.)

California W. D. Pierce (August 29). "The goat bot is very abundant in the heads of goats on the ocean shore of San Mateo County, and many goats are dying."

BEES

WAX MOTH (Galleria mellonella L.)

Delaware C. O. Houghton. "This species is quite common here and a serious pest of weak colonies."

STORED-PRODUCT INSECTS

ANGOUNOIS GRAIN MOTH (Sitotroga cerealella Oliv.)

Indiana J. J. Davis (September 14). "The Angoumois grain moth is frequently reported as a serious pest."

MEDITERRANEAN FLOUR MOTH (Ephestia kuehniella Zell.)

Indiana J. J. Davis (September 14). "The Mediterranean flour moth seems to be a very serious pest in many of the flour mills of the State."

FOREIGN GRAIN BEETLE (Cathartus advena Waltl.)

Nebraska M. H. Swenk (September 16). "There were an unusual number of complaints of weevils in grain during the period here covered (August 15 to September 15). Most of the complaints related to the new wheat crop. Some of the complaints related to stored oats and shelled corn. Complaints of this sort were received from all parts of the State."

Ohio H. A. Gossard. "An unusual number of reports of injury from the several grain weevils have been received during the past month."

GRANARY WEEVIL (Calendra granaria L.)

Nebraska M. H. Swenk (September 15). "This weevil is also causing considerable trouble throughout the state."

YELLOW MEALWORM (Tenebrio molitor L.)

Nebraska M. H. Swenk (September 15). "This insect is associated with the other granary pests previously reported."

CADELL (Tenebroides mauritanicus L.)

Nebraska M. H. Swenk (September 15). "Also associated with the other granary insects."

BOOK-LOUSE (Atropos divinatoria Mill.)

New York C. L. Crosby (September 2). "This insect is infesting the paper linings of a thousand barrels of milk sugar in Chenango County."

"
BEAN WEEVIL (Hylabris obtectus Say)

- Massachu- A. I. Bourne (September 20). "From September 15 to 20 complaints are
etts beginning to be received from various parts of the State relative to
the appearance of these beetles in this year's harvest."
- ndiana J. J. Davis (September 15). "The usual frequent inquiries have been
received on weevils in cowpeas, beans, wheat, etc."
- Michigan R. H. Pettit. "These insects seem to be more numerous than usual all
over the State this year."

THE INSECT PEST SURVEY BULLETIN.

A monthly review of entomological conditions throughout the United States.

Volume 1.

November 1, 1921.

Number 7.

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING.

OUTSTANDING ENTOMOLOGICAL FEATURES OF OCTOBER, 1921

The Hessian fly situation is very encouraging in the central Mississippi Valley Region. Very general adoption of recommendations as to the planting of wheat after the fly-free date is reported from Ohio, Illinois, Indiana, and northern Missouri, and the fly is quite universally reported as emerging according to schedule.

The corn earworm is probably the most serious pest of the month, its outbreaks covering the greater part of the region lying east of the Rocky Mountains. Maine and Massachusetts report the most serious outbreaks of this pest in years. In New England the corn earworm as a rule occurs only in scattering localities and is not considered a pest. The Middle Atlantic States report the pest as extremely severe on late sweet corn and all field corn. In the Mississippi Valley very unusual depredations are reported from Ohio, Illinois, Indiana, Nebraska, and Missouri.

The hearing before the Federal Horticultural Board on the European corn-borer quarantine was held on October 11. This hearing was very well attended and is quite fully reported in this number.

The chinch bug is more numerous in Ohio than it has been since the series of outbreaks in 1904, 1905, and 1906. It is also present in threatening numbers in Illinois and Missouri. If weather conditions are favorable this winter we may expect next year a serious infestation from northern Ohio, Indiana, and Illinois, southward to the Gulf and southwestward over Missouri and Kansas, to northern Texas.

Reports of an outbreak of the sorghum webworm indicate a very severe outbreak of this pest in the region covered by the southeastern corner of Kansas, the southern third of Missouri, the northwestern corner of Arkansas, and probably the northeastern part of Oklahoma. In this region kafir corn seed in many cases is reported as an entire failure. An isolated report, which probably refers to this insect, has also been received from the southwestern corner of Indiana. This pest is known to occur eastward from the region infested this year to Maryland, and southward to the Gulf.

An outbreak of the apple and thorn skeletonizer in the lower Hudson River Valley developed early in the month. The insect is defoliating hundreds of trees in the infested territory.

The paradichlorobenzene treatment for the peach borer is being very generally practised this fall. In Georgia alone about one-quarter of a million pounds of this chemical will be used.

The outbreak of the grape leafhopper, which was threatened earlier in the season in the Fresno District of California, did not materialize. However, a destructive outbreak developed later in the season in the Sonoma district.

Early this month the dictyospernum scale was found for the first time in a nursery in southern California. It has previously been reported from this state as infesting avocado in a greenhouse at Berkeley in 1916.

Late in August the cotton worm appeared in the lower Gulf States, being reported from Alabama August 26 and from Mississippi August 29. By September 10, adults had been observed in upper New York State, and by the 14th in Ohio, by the 15th in Nebraska and Michigan, and by the 27th in Massachusetts. In the cotton belt this insect defoliated the cotton in some places, but did little damage to this crop except in parts of Oklahoma. Farther northward, however, quite serious damage was done to ever-bearing strawberries and the tree fruits by the adults. The moths seemed to have followed two lines of flight northward, one upward along the Atlantic Coast to the Hudson River, thence southwestward along the Great Lakes, the other flight following up the Mississippi Valley. The data, however, are very fragmentary, and further notes on the date of appearance of this insect are solicited.

The boll weevil has appeared 40 miles north of the commercial cotton producing section in Arkansas, and is now north of the crest of the Ozarks.

The Mexican bean beetle is known to occur, in addition to the territory already reported, in the western corner of South Carolina, in Cherokee and Clay Counties, North Carolina, in the southeastern border of Kentucky, in McCreary County, and in Sonora Texas.

The greenhouse leaf-tyer has been reported as very seriously interfering with certain lines of florists work in parts of New York State.

INSECT PEST SURVEY BULLETIN

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CEREAL AND FORAGE - CROP INSECTS

WHEAT

HESSIAN FLY (Phytophaga destructor Say)

- Ohio H. A. Gossard (October 21). "Hessian fly apparently issued at about the normal date this season and most of the brood came forth as adults before the 1st of October. The highest rate of emergence at the breeding stations at Sandusky and Bryan was about the 22nd of September; but steady and heavy emergence continued until a second peak nearly equal to the first was reached on the 23th of September at Bryan and on the 29th of September at Sandusky. Considerable emergence was reported on the 1st and 2nd of October, after which there was a rapid falling off of Hessian fly activity. The peak of emergence of parasites in the cages was on the 20th and 21st of September, just one or two days earlier than the peak of fly emergence. It is thought that practically all counties observed the seeding dates sufficiently well to escape any heavy infestation. The cooperation of the farmers and heavy parasitism of the fly will doubtless prevent much of a brood next year. We expect the entire State to have but little more than a normal infestation next year, even in the districts that were most heavily infested this season."
- Indiana J. J. Davis (October 14). "The Hessian fly seems to have issued normally and we do not anticipate any trouble from this source since sowing wheat after the fly-free date was universal."
- Illinois W. D. Flint (October 15). "Probably over 95 per cent of the wheat in the State was sown after the fly-free date, this in spite of the fact that in most counties a larger acreage than usual has been seeded. From present indications the fly had all emerged before wheat sown on the fly-free dates had come up. Volunteer wheat and a few early sown fields show moderate infestation."
- Missouri L. Haseman (October 18). "During the month field observations and experimental seedings of wheat in the various Hessian fly experimental fields throughout the State have been made. Extension Entomologist Burrill has also done considerable field work with county agents and farm organizations and has kept as closely in touch with the development of the fly situation as possible. North of the Missouri River much of the wheat seeding necessarily was delayed until the determined fly free date for

that section of the State. On volunteer wheat eggs have been deposited in alarming numbers and considerable trouble will no doubt develop where fields of volunteer wheat are permitted to stand throughout the fall and winter and then give off flies in the spring. Weather conditions have delayed wheat seeding and have no doubt helped materially in the northern part of the State, with the fly problem on the coming crop. South of the Missouri River conditions have been different; the fall rains stopped in time for early seeding and unfortunately too much of the wheat in the counties south of the Missouri River went into the ground from one to three weeks too early. As a result of this early seeding a number of farmers are already reporting the serious situation, asking for help in the way of saving the crop that is now doomed. As an illustration one grower in Jackson County whose letter is just before me, dated October 18, states that his 80 acres of wheat was seeded on September 10, and that it is now heavily infested, some of the flies already approaching the flaxseed stage. This wheat of course is doomed if the fly is as abundant as he reported and it is of course too late to plow under and prepare the ground for reseedling. Through Central Missouri the fly is depositing eggs later than usual, no doubt due to the prolonged cold rainy spell which did not desert until about October 6. Generally speaking in the northern half of the State the fly situation looks more promising than earlier, while south of the river, where in spite of our protests early seeding has occurred, the situation looks much more threatening though the fly is apparently not so abundant south of the river as it appears to be on volunteer wheat north of the river."

CORN

CORN EARWORM (Chloridea obsoleta Fab.)

- Maine E. M. Patch (October 8). "In September, 1892, Maine experienced a visitation of this insect. The next time this insect appeared in such numbers as to attract attention was late in September, 1915. Then we forgot what it looked like until October 1 to October 7, 1921, when early-instar specimens began to rush in and reports of serious infestations were received from Skowhegan, Charleston, Port Clyde, and Auburn."
- Massachusetts H. T. Fernald (October 13). "A most unusual outbreak of the corn earworm occurred during the latter half of September and the first half of October. We usually have from two to three cases a year from the extreme southeastern part of the State only. This year four reports were received from September 13 to September 27. Reports then started to come in in numbers and by October 13 twenty-five additional reports had been received. Sweet corn seemed to have been most seriously infested, in some cases the infestation being as high as 95 to 100 per cent. Field corn and ensilage corn were slightly infested, and one report was received of damage to popcorn."

New York E. P. Felt (October 27). "This insect has attracted unusual attention throughout the month. Specimens were received from many parts of the State, in some cases accompanied by records of severe damage. This appears to be one of the most serious outbreaks which has occurred in the State."

C. R. Crosby and assistants report outbreaks from nearly every county in the State. The infestation seems to be attracting more attention, however, in the central and western part of the State, though reports have come in from as far north as Jefferson and Franklin Counties, and two reports from Long Island. Golden Bantam seems to be especially favored by the earworm. Many cases of ensilage corn and a few cases of Flint and Popcorn were also reported in one case in Erie County. One acre and a half of wax beans were so badly infested as to render the crop unmarketable."

Delaware J. F. Adams (October 1). "Observations so far show that several fungous diseases are commonly associated with the feeding of the earworm. The excessive moldy condition of ears this year may be charged to the earworm. In many instances at least 10 to 15 per cent of the weight of grain of infested ears is destroyed."

C. O. Houghton (October 10). "This species has injured 100 per cent of the crop in some small garden patches of sweet corn. Larvae of all sizes are to be found at this time at Newark."

South Carolina A. F. Conradi. "Mr. J. R. Blair, county agent of York County, reports that early in September late rank cotton was attacked by this insect."

Ohio H. A. Gossard (October 21). "The corn earworm has done by far more damage in Ohio to corn this season than at any time since 1904, and probably more than has been done in any year since entomological records have been kept within the State. New farmers estimate the damage to field corn to be less than 5 or 10 per cent of the money value, while many farmers have reported from 90 to 100 per cent of the ears attacked. The canners in southeastern Ohio estimate the loss on sweet corn to have amounted to 50 per cent or more. The insect has been found attacking all kinds of corn, ripe peaches, tomatoes, and beans."

Indiana J. J. Davis (October 14). "Probably the most conspicuous outbreak of the present month is the abundance and destructiveness of the corn earworm. It is very abundant in every section of the State and the infestations average from 5 to 30 per cent and in exceptional cases even much higher. A great amount of damage is being done by the corn ear rots and apparently the majority of these rots start with the corn earworm injury. Correspondents are particularly interested regarding possible injury to animals by feeding the damaged corn. Apparently the earworm itself is not harmful to animals but it is possible that some of the rots may be harmful."

At least it is not unlikely that they might cause certain disorders. Weather conditions have been favorable for certain disorders among swine and the farmer is likely to confuse these troubles and lay the blame on the earworm. Experiments have been carried on relative to the toxicity of these rots as long ago as 1892, but no conclusive results have so far been published."

- Illinois W. P. Flint (October 15). "This insect continues to injure sweet corn. Has also been reported doing serious damage to lima beans, string beans, tomatoes, and peppers. It is also abundant in many fields of alfalfa and is causing considerable damage to this crop."
- Nebraska M. H. Swenk (October 17). "The third brood of the corn earworm did considerable damage to late planted fields and sweet corn during the period covered by this report."
- Missouri L. Haseman (October 18). "This pest continued its earlier destructive work. Late sweet corn and field corn show practically 100 per cent infestation with serious damage since the heavy rains permitted much smut and mold to develop. The corn that was down from chinch bug work also suffered from rot. The worms seemed to be so abundant that they pushed out onto the foliage of tobacco, cowpeas, soybeans, apple and nursery stock, and a number of other crops, besides riddling the seed pods of tobacco, green and ripe tomatoes, and practically all the pod-forming legumes. I believe I have never seen this insect so abundant as it has been during the past month."

ARMY WORM (Cirphis unipuncta Haw.)

- Illinois W. P. Flint (October 15). "Adults of this insect are less abundant than usual for this time of the year."

CHINCH BUG (Blissus leucopterus Say)

- South Carolina A. F. Conradi (October 1). "J. W. Sanders, county agent of Kershaw County, observed this insect to be quite generally distributed over his County, but doing very little damage this season."
- Ohio H. A. Gossard (October 21). "We have had abundant inquiries regarding chinch bugs during the month of September from practically all of western Ohio from the southern to the northern part of the State and also several inquiries from northeastern Ohio. There are apparently more chinch bugs in Ohio at the present time than have been here since the seasons of 1904 to 1906. If weather conditions are favorable to their hibernation this winter and to their development next spring, we may expect severe and widespread damage from them."

- Illinois W. P. Flint (October 15). "Rains during the early fall had some effect in decreasing the numbers of the bugs, but present indications are that there are enough of these insects in hibernation to cause serious damage next season over a large area in central and southwestern Illinois."

Missouri L. Haseman (October 18). "This pest wrought havoc on the corn crop throughout quite a bit of the more heavily infested section of the State but the fall rains again have played their part, apparently, in helping to eliminate the pest where abundant. Fall burning campaigns have been planned and will be carried out in the more threatening sections of the State but the cold prolonged fall rains have been decidedly against the pest and we are hopeful that with the carrying out of burning campaigns this fall the situation will clear materially for next year."

MAIZE BILLBUG (Sphenophorus maidis Chitt.)

South A. F. Conradi. "W. J. Sanders of Kershaw County reports under date
Carolina of October 1 that this insect is quite widely distributed in his county and has done considerable damage to corn."

EUROPEAN CORN BORER (Pyrausta nubilalis Hübner.)

On October 11 the Federal Horticultural Board held a hearing in Washington for the purpose of considering changes in the present quarantine against the European corn borer; also, for the discussion of the newly infested area through Ohio and Michigan. The meeting was largely attended by delegates from the New England States, New York, Pennsylvania, Ohio, Indiana, Michigan, and several other States that are vitally interested in the control of this pest.

Dr. Marlatt, chairman of the board, called on several of the government experts who are studying the European corn borer, to define the origin, the present distribution, status, etc. Messrs. Caffrey and Worthley, who have made a study of its life history and control measures, gave interesting talks and outlined what had been done to date.

The notice of the hearing sent out by the Federal Horticultural Board proposed a change in the quarantine which would make the quarantine regional rather than simply including the infested area, as it is now operated. It was the consensus of opinion that this would work a great hardship on many of the States and in the long run would be very costly and injurious. In the case of New England, where the infestation is confined chiefly to Massachusetts and where the area infested includes only about one-third of the State, the proposed quarantine is to include all of the New England States as far west as the Connecticut River. It seems that this would open a considerable new area to the ravages of the corn borer and even when the insect finally reached the Connecticut River there would be no means of checking it. Connecticut, New Hampshire, and Maine were opposed to this plan, inasmuch as they would be obliged, if it went into effect, to establish State quarantines against the infested area. These State officials were very well pleased with the present quarantine and its work, and were strongly opposed to any change.

Dr. E. D. Ball, budget official of the Department of Agriculture, appeared at the hearing and outlined fully the financial situation and implied that it would be very difficult to obtain additional funds other than those called for in the budget to fight the European corn borer.

During the afternoon session Dr. E. P. Felt, State entomologist of New York, discussed the New York infestations, giving very interesting accounts of the conditions in his State. The representatives of the other States present were heard. It was inferred that the Federal Horticultural Board would in all probability leave the quarantines as they are at the present time with the exception of quarantining the recently infested areas in Ohio and Michigan.

At the conclusion of this hearing, the meeting was turned over to Commissioner Arthur W. Gilbert of Massachusetts and was attended by all who were present at the Federal Horticultural Board hearing. The following resolution was proposed and was adopted unanimously:

Resolved: That this conference, after due consideration, affirms its belief that Federal quarantine measures for preventing spread of the European corn borer should be continued substantially as in the past season, on the basis of holding the pest as closely as possible to the area actually known to be infested.

It was further resolved, the resolution being adopted unanimously, "That Congress be asked for the sum of \$275,000 for the purpose of carrying out the above program for the current fiscal year."

Moved and carried that the chairman name a committee of five, of which he shall be a member and chairman, to confer with the Secretary of Agriculture and the Department Budget Officer, and others, to represent the Conference in assisting to bring about favorable consideration of the above program. The following committee was appointed: Dr. Arthur W. Gilbert, Commissioner of Agriculture, State House, Boston, Mass.; Prof. W. C. O'Kane, Durham, N.H.; Dr. George G. Atwood, Albany, N.Y.; Prof. L. R. Taft, East Lansing, Mich.; Prof. G. I. Christie, Lafayette, Ind.

SORGHUM AND KAFIR CORN

SORGHUM WEBWORM (Celama sorghiella Riley)

Indiana J. J. Davis. (October 14). "We have received a small undetermined Lepidopterous caterpillar which has been very destructive to sorghum and millet, eating into and destroying the seeds. This was reported from the extreme southern end of the State and the farmer sending in material advises us that he has had trouble for the last three or four years with this same insect."

- Arkansas Dwight Isley (October 10). "There has been considerable complaint of injury to kafir corn heads, from the western and central part of Arkansas, by the larvae of this insect. (Specimens determined by Mr. Carl Heinrich, U.S.N.M.). I have seen it in fields in the central part of the State and at Fayetteville where nearly 100 per cent of the kafir grain is destroyed."
- Missouri L. Haseman (October 16). "During the month this insect has probably created more excitement than any other and has gotten into the State press quite extensively. Preliminary investigations into the bibliography of the insect seem to reveal the fact that for the first time in its history this worm has assumed the role of a serious menace to the sorghum-like crops in Missouri. I presume it has also been injurious in the kafir-growing sections of Kansas and Oklahoma, judging by reports from our southwestern counties. It has been destructive in a number of counties principally south of the Missouri River. It has been destroying sorghum and kafir in the following counties: Newton, Jasper, Lawrence, Cedar, Polk, Greene, Webster, Dallas, Laclede, Benton, Phelps, Dent, Crawford, Butler, and Boone. Our county survey has not been completed but I dare say it has done some damage in every county south of the river where sorghum or kafir is grown to any extent. In some localities the grain of these crops has been damaged to the extent of 70 per cent of the crop. In a few individual cases the grower reports a 100 per cent loss. In other cases the damage for the entire county is estimated as low as 20 per cent. In those counties where it is no doubt present but from which we have no reports, the damage is probably negligible or has been largely overlooked by the grower. Breeding experiments are being carried on to determine its life cycle and yearly habits and a detailed report of this will be given later. Studies in connection with parasitism reveal that both eggs and the larvae are attacked by hymenopterous parasites. Two larval parasites have been reared and one species of egg parasites has emerged from eggs in confinement. While sorghum crops are not a major crop in Missouri they are coming to be important grain crops for the Ozark region of the State and if this worm continues as destructive as it has been this year it is certain to seriously handicap the growing of these crops in Missouri."
- Kansas G. A. Dean (October 11). "Several reports have reached the department of serious injury to kafir heads by the sorghum webworm. This is the first time we have received any report of this insect injuring kafir in this State. The infestation is confined to the southeastern part of the State. In some instances, fields as large as 15 acres are a total loss."

CLOVER AND ALFALFA

FALL ARMY WORM (Laphygma frugiperda S. & A.)

Ohio H. A. Gossard (October 21). "The fall army worm has been more or less conspicuous in several places and is probably general over the State."

Indiana J. J. Davis (October 14). "The fall army worm was abundant in clover and alfalfa fields in several sections of the State, and reports were received early in October from scattered sections throughout the State."

Michigan R. H. Pettit. "This insect has been much more serious than ever before in the lower half of the State, in some cases having destroyed 50 per cent of the crops attacked. It seems to be most serious on alfalfa, rye, and cowpeas. I am not sure of the species but have some which we are rearing for definite determination."

GARDEN WEBWORM (Loxostege similalis Guen.)

Indiana J. J. Davis (October 14). "The alfalfa webworm has been present in destructive abundance in northern Indiana and is attacking principally alfalfa."

Michigan R. H. Pettit. "This insect has been much more numerous than usual in the southern part of Michigan, where it was attacking alfalfa."

UNDETERMINED LEPIDOPTERA.

Indiana J. J. Davis (October 14). "An unknown caterpillar, similar to but evidently distinct from the corn earworm, is very abundant in northern Indiana, and we have received specimens from as far south as Greencastle, Ind. It attacks clover and alfalfa and has destroyed many of this season's plantings. The caterpillar is far more abundant and destructive than either the fall army worm or the alfalfa webworm. We have not yet obtained adults and are therefore not positive of the identification. Another unknown caterpillar was reported from one section in southern Indiana as destructive to alfalfa and clover. It is a spiny caterpillar, apparently a nymphalid, but we do not know the species."

SOYBEANS AND COWPEAS.

GREEN CLOVER WORM (Plathypena scabra Fab.)

South Carolina A. F. Conradi. "Mr. J. M. Eleazer reports from Saluda County that this insect is abundant in scattered localities in his county, but is not doing much damage. It is attacking velvet beans and soybeans."

COWPEA CURCULIO (Chalcodermus aeneus Boh.)

South Carolina A. F. Conradi. "County agents of Saluda and Wershaw counties report this insect as doing considerable damage to cowpeas in their territory."

SUNFLOWERS

DIPTEROUS MAGGOT.

Montana A. I. Strand (September 25). "This maggot, the identity of which is unknown, was found infesting 80 per cent or more of the Giant Russian sunflowers grown on the College farm. Although the infestation is high, the decrease in tonnage due to the insect is small. Most of the maggots leave the stalks through which they bore from the head almost to the crown about September 6 to 12, or just previous to the time of cutting, to pupate in the soil about the roots of the plants."

TRUCK CROP INSECTS

POTATO AND TOMATO

COLORADO POTATO BEETLE (Leptinotarsa decemlineata Say)

Kansas F. M. Wadley (October 21). "The Colorado potato beetle has been, from my observations, less numerous than in former years."

POTATO FLEA-BEETLE (Epitrix cucumeris Harr.)

New York I. H. Vogel (October 1). "In fields not sprayed the crop was reduced about 10 per cent at Mattituck, Long Island."

TOBACCO WORM (Phlegethontius quinquemaculata Haw.)

Delaware C. O. Houghton (October 10). "Larvae of various sizes are still quite common about Newark. About the usual amount of damage has been done by this species this year."

TOMATO WORM (Phlegethontius sexta Joh.)

Ohio H. A. Gossard (October 21). "Among lepidopterous forms more abundant than usual may be named the tomato hawk moth which was received from four different localities within a five-day period in September."

CABBAGE AND TURNIP

IMPORTED CABBAGE WORM (Pontia rapae L.)

New York I. H. Vogel (October 1). "Leaves of cauliflowers were badly damaged at Mattituck, Long Island, but apparently there was not much commercial loss to the crop. Also some damage to young cabbage seed stock."

Delaware C. O. Houghton (October 12). "Larvae are numerous on late planted cabbage and adults are still on the wing."

District F. H. Chittenden, Bureau of Entomology (October 3). "The common cabbage of Colum- worm has continued somewhat later than in former years and, although it bia appeared at about the same time, it has done less damage than the cabbage looper."

South Carolina A. F. Conradi. "Mr. W. R. Gray, county agent of Clarendon County, reports under date of October 1 that this insect has done very severe damage in his county."

Ohio H. A. Gossard (October 21). "The imported cabbage worm was noted in great abundance all fall around Wooster."

Montana A. L. Strand (September 25). "The imported cabbage worm has done more than the average amount of damage in Montana during the present season, even though spraying is much more widely practiced."

H. E. Morris (October 15). "The cabbage worm is unusually abundant this year. Repeated sprayings did not control this pest."

CABBAGE WEBWORM (Hollula undalis Fab.)

South Carolina A. F. Conradi. "Mr. S. M. Byars, county agent of Anderson County, under date of September 20, reports that this insect has destroyed about 50 per cent of the rutabagas and turnips in his county. Mr. S. B. Altman, county agent of Greenwood County, under date of September 30, reports that this insect is also quite serious in his county."

FALSE TURNIP APHIS (Aphis pseudobrassicae Davis)

Louisiana T. H. Jones (October 12). "This plant-louse usually becomes injuriously abundant on turnips, mustard and radishes at this season of the year, and complaints have been received from Ringgold, White Sulphur Springs and Whitefield, referring to damage by this insect."

MOLE CRICKETS

South Carolina A. F. Conradi. "Mr. S. B. Altman, county agent of Greenwood County, under date of September 30, reports that these insects are very injurious to gardens in his county."

Alabama K. L. Cockerham (October 12). "Damage to cabbage seed beds, beets, radishes and rutabagas is more serious than usual about Bayou La Batre. The insect damaged from 50 to 75 per cent of the crops attacked. These insects work most seriously during spells of wet weather."

CABBAGE SEED WEEVIL (Ceutorhynchus quadripes Panz.)

New York I. H. Vogel (October 1). "About 40 per cent of the seed stalks are infested in the vicinity of Mattituck, Long Island, but the loss of said crop is not much over 7 per cent. All stages of this insect were found on October 1."

CABBAGE LOOPER (Autographa brassicae Riley)

New York I. H. Vogel (October 1). "Fairly abundant and quite injurious to the leaves, but causing very little commercial damage to the crop at Mattituck, Long Island."

District of Columbia F. H. Chittenden, Bureau of Entomology (October 3). "The cabbage looper appeared in great numbers in the District of Columbia, Maryland and Virginia on late cabbage and had made considerable ravages before its

presence was detected."

Ohio H. A. Gossard (October 21). "The cabbage looper was noted in great abundance all fall around Wooster."

STRAWBERRY

STRAWBERRY ROOT-BORER (Graphops nebulosus Lec.)

Nebraska M. H. Swenk (October 17). "Some strawberry beds were injured by the larvae of this insect."

WHITE GRUBS (Phyllophaga sp.)

Nebraska M. H. Swenk (October 17). "Injury by white grubs to strawberries continued up to the latter part of September."

ASPARAGUS

COTTON CUTWORM (Prodenia ornithogalli Guen.)

Maryland F. H. Chittenden, Bureau of Entomology (October 3). "The so-called cotton cutworm appeared in great numbers on asparagus at College Park and elsewhere in Maryland than has been noticed for a long period of years. It was more abundant on well grown plants than on new growth. It was not noticed to attack any other plant in the vicinity."

BEANS

MEXICAN BEAN BEETLE (Epilachna corrupta Muls.)

South Carolina A. F. Conradi. "The Government inspection in Oconee County reports that this insect is locally distributed in this county. The damage this year, however, has been very slight."

Kentucky C. H. Popenoe, Bureau of Entomology. "Inspections by Luther Brown have determined a light and local infestation of the Mexican bean beetle to occur in McCreary County, Kentucky."

North Carolina C. H. Popenoe, Bureau of Entomology. "Inspectors of the Bureau of Entomology have found light infestations of the Mexican bean beetle in Cherokee and Clay Counties in the western portion of the State."

Texas C. H. Popenoe, Bureau of Entomology. "Dr. W. D. Hunter transmits report of the occurrence of the Mexican bean beetle at Sonora, Tex."

BEAN APHIS (Aphis rumicis L.)

Ohio

H. A. Gossard (October 21). "All sorts of aphids have been quite abundant all season. During late September and October we received Aphis rumicis from Cleveland."

CUCUMBERS, MELONS AND SQUASHES

PICKLE WORM (Diaphania nitidalis Cram.)

Missouri

L. Haseman (October 18). "During the month this pest did extensive damage in this State. It has been reported by farmers and truck gardeners from various sections."

COTTON APHIS (Aphis gossypii Glov.)

Kansas

F. M. Wadley (October 21). "The melon crop here was large; due to the absence of the melon aphid which is usually so injurious and there was a tendency towards a glutted market. The melon business here will always be subject to such fluctuations until the farmers are able to control in a satisfactory manner the aphids every year."

SQUASH LADYBIRD (Epilachna borealis Fab.)

Delaware

C. O. Houghton (October 11). "Adults were quite common on late squash at Newark."

District
of Colum-
bia

F. H. Chittenden, Bureau of Entomology (October 3). "The squash ladybird, related to the Mexican bean beetle, was more abundant in the parts of Maryland and Virginia, close to the District, than in many years previously. In fact, it is more abundant than the writer has ever noticed it before in this vicinity."

FRUIT INSECTS

APPLE

APPLE APHIS (Aphis pomi DeG.)

Washington E. J. Newcomer (September 29). "This insect is more abundant than usual in the Yakima Valley. A great deal of the fruit is smeared with honeydew from this aphid and will have to be washed or reduced in grade."

WOOLLY APPLE APHIS (Eriosoma lanigerum Hausm.)

Ohio H. A. Gossard (October 21). "The woolly apple aphid has been reported from several localities injuring apple, and I have noticed it during the past month in unusual abundance on apple trees with shaded trunks at Wooster."

CODLING MOTH (Carpocapsa pomonella L.)

Washington E. J. Newcomer (September 29). "Present indications are that the percentage of side stings and calyx worms will be lower than usual in the Yakima Valley. Sprayed trees run from less than 1 to 20 per cent, while unsprayed trees range from 35 to 100 per cent infested."

RESPLENDENT SHIELD-BEARER (Ceptodisca splendidiforella Clem.)

Ohio H. A. Gossard (October 21). "This insect was received from Leipsic and one or two other localities this month."

APPLE AND THORN SKELETONIZER (Hemiphysa pariana Clerck)

New York E. F. Felt. "Under date of October 5 Mr. G. M. Codling reports that this insect has severely affected and even defoliated hundreds of trees in southern Westchester County along the Hudson River. There has been damage as far north as Ossining. The outbreak throughout the southern part of the county appears to have been generally severe, while last year there was little injury, except to Dobbs Ferry and Hastings. Under date of October 22, he reports that hundreds of trees have been entirely defoliated in the region about New Rochelle and White Plains. Back of Mamaroneck and in Tuckahoe entire orchards have been stripped. Mr. P. L. Heusted reports under date of October 22, that this insect has been noticed on the west bank of the Hudson from Nyack to Chester, a distance of about 45 miles."

M. D. Leonard (October 5). "Foliage of young trees themselves suffering from the infestation about Nyack. Leaves badly skeletonized, and freshly emerged moth observed on October 10 in Putnam County."

APPLE TRUNKED LEAF-MINER (Tischeria malifoliella Clem.)

Georgia O. I. Shapp (October 15). "This insect is doing some damage to apple foliage at Marshallville and in Crawford County."

Undetermined Leaf Skeletonizer.

Missouri L. Haseman (October 18). "During the past month one of the small leaf-feeding caterpillars of the skeletonized type has done considerable damage, more especially to the foliage of young apple trees both in the nursery and orchard. It has attracted attention from the southern part of the State, as well as through the central and northern part of the State. The feeding came late in the season and did not result in any serious injury."

RED-HUMPED APPLE CATERPILLAR (Schizura concinna S. & A.)

Montana L. Strand (September 10). "The red-humped apple caterpillar which occurs in Montana only in the region of Flathead Lake had left the trees and was preparing to pupate. More damage occurred this season than for several years past."

APPLE MAGGOT (Rhagoletis pomonella Walsh)

New Hampshire S. B. Detwiler, Bureau of Plant Industry (August 30). "This insect is very bad this year about Plymouth. The damage seemed to be much worse on Jonathan apples, which in some cases are 100 per cent infested."

New York M. D. Leonard. "Badly infested northern spies from Long Island and crab-apples from Monadnock were sent into this office during late September."

Erythroneura obliqua Say

Ohio H. A. Gossard (October 6). "We received this insect today from Waterville with a statement that it caused great annoyance to the apple pickers from flying in their faces and that it seemed to be doing damage to apple foliage."

PEACH

PEACH BORER (Aegaria exitiosa Say)

Ohio H. A. Gossard (October 21). "All fall we have received a stream of inquiries regarding the use of paradichlorobenzene for the peach borer, which indicates that this remedy is likely to be quite generally tested over the State."

Georgia O. I. Snapp (October 15). "Practically all of the growers in ^{the} Georgia Peach Belt are using paradichlorobenzene this week on trees over 6 years of age for the control of the peach-tree borer. About one quarter of a million pounds of the chemical will be used by Georgia growers this year. The insect is doing much damage in neglected and not properly cared for orchards. The infestation appears to be normal, but heavier on the light soils poorly drained."

SHOT-HOLE BORER (Scolytus rugulosus Ratz.)

Ohio H. A. Gossard (October 21). "The fruit-tree barkbeetle came to us five times from widely separated points in late September and has come to us twice in October. We have also noted it in considerable abundance on weakened peach trees at Wooster."

Georgia O. I. Snapp (October 15). "Many trees in neglected orchards are being attacked by this insect following San Jose scale infestation. The adults have been observed feeding above buds on healthy twigs. The infestation is probably heavier than normal this season."

PLUM CURCULIO (Conotrachelus nenuphar Hbst.)

Georgia O. I. Snapp (October 15). "The curculio infestation is still abnormal in the Georgia peach belt, many adults hibernating. Practically all adults have entered hibernating places by this date. Some trees yield 15 to 20 beetles when jarred during the fall."

PEACH TWIG MOTH (Anarsia lineatella Zell.)

California E. O. Essig (October 7). "This insect is much more abundant than usual throughout the entire peach district. The chief injury has been to fruit of late cling peaches which in some cases are damaged from 30 to 50 per cent."

SAN JOSE SCALE (Aspidiotus perniciosus Comst.)

Georgia O. I. Snapp (October 15). "Infestation appears to be heavier than normal in all sections of Georgia peach belt. Crawlers have been very abundant, and some of the fruit is spotted, apples being especially heavily spotted with the scale. Climatic conditions have been excellent for the development of the insect during the past summer. Many adults probably survived the winter on account of careless spraying or not giving prunings the proper attention. Furthermore, the past winter was mild. The infestation is so heavy that many growers will be compelled to make two scale applications during the dormant season. Scale spraying will start next month. Many proprietary compounds for scale are used in the Georgia peach belt."

SILVER LEAF MITE (Phyllocoptes cornutus Banks)

D. D. Sharp (September 22). "Leaves badly silvered about Hemet, Riverside, and Wineville. Lime-sulphur was used with considerable success in the Hemet section."

California E. O. Essig (October 7). "This insect is more in evidence than during any past year, it being comparatively new this season, and is appearing in many sections of the State for the first time."

PLUM

RED-HUMPED APPLE CATERPILLAR (Schizura concinna S. & A.)

California O. E. Bremner (September 20). "This insect is doing considerable damage to young prune trees about Healdsburg."

PECAN

TWIG GIRDLER (Oncideres cingulata Say)

South Carolina A. F. Conradi. "S. M. Byars, county agent of Anderson County, reports that this insect is widely distributed in his county."

rida J. Chaffin (October 25). "This insect is reported as doing serious damage to Australian pines on the lower east coast, where it is also attacking guava. It is also reported from all over the State as doing quite serious damage to pecans.

PECAN SHUCKWORM (Lespedesia canyera Fitch)

rgia O. I. Snapp (October 31). "This insect is about normally abundant this season in the Fort Valley section."

COTTONY CUSHION SCALE (Icerya purchasi Mask.)

isiana T. H. Jones (October 5). "Mr J. P. Anthony, county agent of Caddo Parish, sent specimens of the cottony cushion scale on pecan with the information that they were also present on oaks and several other kinds of trees in one neighborhood in Shreveport, the trees being practically covered with the pest. So far as I am aware this is a new locality for this species. It has not been taken north of Baton Rouge in this State before."

GRAPE

GRAPE LEAFHOPPER (Erythroneura comes Say)

ifornia O. E. Bremner (September 20). "This is the heaviest infestation observed in Sonoma for a number of years, where we estimate that 10 per cent of the crop was damaged."

A. J. Flebut (October 3). "The injury expected because of the large number of adults present in the spring did not materialize in the Fresno district, although scattered infestations show considerable loss of foliage, especially where the water conditions were not good. At present it looks as though a large number of adults would go into hibernation this fall."

GRAPE LEAFYBUG (Pseudococcus maritimus Ehrh.)

ifornia A. J. Flebut (October 3). "This insect is much less abundant than usual in the Fresno district. Twelve reports of infested fruit coming into packing houses in this county compared with 115 reports in 1920. Traces can only be found in vineyards which were heavily infested last year. All cases reported are very slight, and the experimental work of the past season rendered a failure, because checks were also free from the pest. The large reduction in numbers is due in part to parasitism by Pseudophycus sp."

ACHEMON SPINX (Pholus achemon Drury)

ifornia A. J. Flebut (October 3). "The outbreak which was threatened at Merced County has been entirely cleared up by timely spraying for the first brood. No second or third brood showed up in that area which was entirely defoliated."

ALFALFA CATERPILLAR (Eurytus eurytheme Boisd.)

California A. J. Flebut (September 6). "An insect, which is tentatively determined as the above, has appeared in a vineyard near Terra Bella and one near Delano, both young vineyards on new land. The caterpillars are feeding on the foliage but so far have done no serious damage."

AVOCADO

DICTYOSPERMIUM SCALE (Chrysomphalus dictyospermi Morg.)

California E. O. Essig (October 7). "This insect first appeared on avocado in a greenhouse at Berkeley in 1916, and first appeared in a nursery in southern California at La Habra on October 2 of the present year."

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

COTTON

BOLL WEEVIL (Anthonomus grandis Boh.)

- South Carolina A. F. Conradi. "Mr. H. K. Sanders, county agent of Chester County, reports under date of September 15 that this insect is doing serious damage in his county."
- Arkansas Dwight Isley (October 10). "Cotton boll weevil has appeared in a small cotton field on the Experiment Station Farm at Fayetteville. This is of particular interest in that Fayetteville is about 40 miles north of the commercial cotton producing region and is separated from it by the crest of the Ozarks. Weevils were first collected the latter part of last month. At that time a few nearly mature weevils were found in squares, so that the migration may have occurred a few weeks earlier."
- Texas M. C. Tanquary (September 26). "Many letters continue to come in from various sections of the State indicating a very heavy and widespread outbreak of boll weevil."

COTTON WORM (Alabama argillacea Hübner.)

- Massachusetts H. T. Fernald (September 27). "A small flight of these insects appeared on this date at Amherst; no reports have been received from elsewhere in Massachusetts."
- New York W. T. M. Forbes (October 10). "A heavy flight of these moths has been reported from Sprakers in Montgomery County, the moths being so numerous as to be a nuisance at night in one house."
- M. D. Leonard (October 10). "Observed a moth in a building at Ithaca today."
- Ohio H. A. Gossard (October 21). "This insect was sent to us September 26 from Ashtabula with a complaint that it was damaging peaches and that the moths were very abundant. They were quite abundant at points farther west about the middle of September."
- Indiana J. J. Davis (October 14). "The cotton caterpillar moth has been reported from all sections of the State, particularly in the northern end where it has damaged apple and ever-bearing strawberries, in each case the fruit being injured."

- Nebraska M. H. Swenk (October 17). "Shortly after the middle of September there was a conspicuous flight of the cotton worm."
- Maryland F. W. Oldenburg (September 26). "Lamp-posts and buildings in Cumberland were covered with the cotton moths on this date."
- South Carolina A. F. Conradi. "Mr. J. R. Blair, county agent of York County, reports under date of September 20, that this insect is present on all late-grown cotton, defoliating the plants, but doing no damage. Mr. J. A. Berley reports under date of October 1 that in Anderson, Oconee County, this insect is defoliating plants but doing no damage."
- Missouri L. Haseman (October 18). "This peculiar moth has again moved north over Missouri in destructive numbers, attracting attention from various parts of the State. It has been reported as being especially destructive to everbearing strawberries, to the tomato crop, late cantaloupes, and where the apple crop was not a complete failure it has also done some damage to apples. Here in Central Missouri it seems to be fully as abundant as in its last heavy migration about 10 years ago."
- Oklahoma Robert Stratton Agricultural Experiment Station (October 15). "The cotton worm has destroyed the leaves of whole fields of cotton. In some cases this occurred so early that the entire crop was nearly destroyed."
- Texas M. C. Tanquary (September 26). "There is a heavy infestation of the cotton leaf-worm in the vicinity of College Station, but the infestation developed too late in the season to do any damage."

INSECTS ATTACKING MAN AND DOMESTIC ANIMALS

BOOK LOUSE (Atropos divinatoria Mill.)

- Indiana J. J. Davis (October 14). "In some sections of the State the common book louse has been reported as very abundant in dwellings, Apparently this insect is capable of being a very serious nuisance when it once becomes established in a dwelling, but fortunately such infestations are rare, at least in Indiana."

STABLE FLY (Stomoxys calcitrans L.)

- Missouri F. C. Bishopp (September 27). "During the latter part of August and early September a very severe outbreak of the stable fly occurred over the greater part of the State. Great annoyance and suffering were experienced by live stock of all kinds and farming was handicapped."

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

G E N E R A L F E E D E R S

FALL WEBWORM (Hyphantria cunea Drury)

Nebraska. M. H. Swenk (October 17). "In western Nebraska injuries by the fall webworm continued until the middle of September and a little later."

BAGWORM (Thyridopteryx ephemeraeformis Haw.)

Delaware C. O. Houghton (October 13). "This insect has been about as destructive as usual about Newark this year."

M A P L E

GREEN-STRIPED MAPLE WORM (Anisota rubicunda Fab.)

Delaware J. F. Adams. "This species was abundant throughout Sussex County during July on silver maples."

SILVER MAPLE LEAF-MITE (Phyllocoptes quadripes Shim.)

New York M. D. Leonard (September 27). "Observed a young tree with numerous galls on the leaves in Syracuse."

P O P L A R

OYSTER-SHELL SCALE (Levidosaphes ulmi L.)

New York C. R. Crosby (October 17). "Very abundant on Carolina poplars about Ithaca."

CICADA (Okanosana rimosa Say)

Montana A. L. Strand (September 16). "The difficulty in growing shade trees (cottonwood) in the vicinity of Butte has been increased by the work of this insect, whose egg punctures kill the smaller twigs and branches."

COTTONWOOD LEAF-MINER (Zeugophora scutellaris Suff.)

Montana A. L. Strand (September 10). "Cottonwood territories throughout that part of Montana lying east of the Continental Divide suffered severely from this insect during August and September."

T U L I P

TULIP TREE SCALE (Tounevella liriodendri (Gmel.))

New York E. P. Felt (October 27). "Mr. P. L. Heusted reports that the tulip scale has been exceptionally abundant in Rockland County this year."

WILLOW

BUCK MOTH (Hemilaica maia Drury)

New York W. T. M. Forbes. "Early this season larvae were reported as stripping everything in Selkirk Bog, especially willows."

WILLOW GROVE PLANT-LOUSE (Melanoxantherium smithiae Monell)

New York C. R. Crosby (September 6). "Trees very badly infested at Pen Yan."

HICKORY

TWIG-GIRDLER (Oncideres cingulata Say)

Indiana J. J. Davis (October 14). "The hickory twig-girdler has been reported as a pest of persimmons from Mitchell."

Missouri L. Haseman (October 18). "This insect has shown up especially on elms and hickories in most unusual numbers during the past 10 days. It was reported from all parts of the State and is present in about the same destructive numbers as when it last appeared as an epidemic about 10 years ago. Elm shade trees and hickory nut trees in the open country have piles of girdled twigs under them."

BLACK WALNUT

POWDER-POST BEETLE (Lyctus parallelipedus Melsh.)

New York E. P. Felt (October 27). "This insect has been reported as rather seriously injurious to black walnut lumber at Buffalo."

OAK

OAK LECANIUM (Lecanium quercifex Fitch)

South Carolina A. F. Conradi (September 30). "Mr. L. B. Altman, county agent of Greenwood County, reports that this insect is causing the death of branches in water oak trees in his county."

LARCH

LARCH CASE-BEARER (Coleophora laricella Hübner.)

Delaware C. O. Houghton (October 1). "Two trees on the University Campus at Newark have been heavily infested with this species this year."

CAMPHOR

CAMPHOR SCALE (Pseudaonidia duplex Ckll.)

Louisiana

T. H. Jones (September 23). "On this date I was called to Victory Park, Baton Rouge, to look at scale insects on Camellia japonica. Examination of the scale indicated that it was the camphor scale. Specimens were sent to Mr. Harold Morrison and he has verified the determination. It seems that the plants on which the scale was found were set out in the Park about a year ago and came from New Orleans. This is, I believe, the first finding of the scale in Louisiana outside of New Orleans."

GREENHOUSE AND ORNAMENTAL PLANTS

MISCELLANEOUS FEEDERS

FALL ARMY WORM (Lyophygma frugiperda S. & A.)

- Ohio H. A. Gossard (October 21). "The fall army worm has been more or less conspicuous in several places and is probably general over the State. It was found destroying lettuce in a greenhouse at Lancaster and has been injuring geraniums in the State greenhouse at Wooster."

GOFF EMBROIDER (Chloridea obsoleta Fab.)

- Delaware G. O. Houghton. "Dr. J. F. Adams reports that this insect was damaging zinnias and chrysanthemums at Wyoming, Del., the 1st of September."

CATOPHILUS MEALYBUG (Pseudococcus gahani Green)

- California E. C. Hsieg (October 7). "This insect bids fair to be the most serious mealybug in the central and northern coast districts. It attacks orchard trees, ornamental shade trees, and many annuals, and is becoming more and more abundant each year in the San Francisco Bay Region."

CHRYSANTHEMUM

CHRYSANTHEMUM GALL MIDGE (Diarthronomyia hypogaea F. Loew)

- New York L. P. Felt (October 27). "This insect has become established in an Oneonta greenhouse and a few weeks ago was received from Lockport. Both of these are evidently recent infestations and indicate the dissemination of the pest by the shipment of infested plants or cuttings."

GREENHOUSE LEAF-TYER (Phlyctaenia ferrugalis Hübner)

- New York H. D. Leonard (October 1). "A bad infestation in a greenhouse at Auburn has been reported. Chrysanthemums, especially the early ones, are nearly ruined. Geraniums are also badly infested. The grower stated that he has to give up growing cinerarias entirely on account of this pest, and thinks he may have to give up growing chrysanthemums, unless he can find a practical means of control. He reports this insect equally as destructive on plants grown out of doors."

PRIVET

WEST INDIAN PEACH SCALE (Aulacaspis pentagona Targ.)

- Louisiana T. H. Jones. "For some time I have been hearing reports concerning injury to privet hedges in New Orleans, apparently due to a scale insect, but have not seen specimens. Specimens of this scale have been taken in New Orleans and Hammond, sections of the privet hedges from which they were taken being dead, apparently due to the scale, and previous statements regarding injury to such hedges seem to refer to this insect."

ASTER

Forda olivacea Rohrer

New York C. R. Crosby (September 8). "Aphids, which were tentatively determined as the above by Dr. A. C. Baker, were found seriously infesting the roots of asters at Ithaca."

ROSE

POTATO APHID (Macrosiphum solanifolii Ashm.)

Delaware C. O. Houghton (October 5). "This species is still quite common on the tips of rosebushes at Newark. Have observed no injury to potatoes this season."

C O R R E C T I O N

J.L. Webb. In the last issue of this bulletin, Vol. 1, No. 6, reference was made on pp.228 and 252 to the discovery of the boll weevil on the island of San Salvador. In making this report the island of San Salvador was confused with the city of San Salvador in the state of Salvador in Central America. The specimens mentioned came from the latter country.

THE INSECT PEST SURVEY BULLETIN.

A monthly review of entomological conditions throughout the United States.

Volume 1.

Index.

BUREAU OF ENTOMOLOGY
UNITED STATES
DEPARTMENT OF AGRICULTURE
AND
THE STATE ENTOMOLOGICAL
AGENCIES COOPERATING.

INDEX TO INSECT PEST SURVEY BULLETIN

VOLUME I, 1921

In the following index to Volume I of the Insect Pest Survey Bulletin, all technical names are underlined. Parentheses enclosing names of describers, to indicate reference of a species to the indicated genus subsequent to the description of that species, have been omitted. For convenience of reference, common names have been included in the index, but citations in these cases are only indicated by cross reference to the technical names.

It is hoped that the common names used by the Survey will be accepted by all working entomologists, and eventually adopted by the American Association of Economic Entomologists. We wish particularly to urge upon our collaborators the use of these common names already accepted by the Association and which should be considered as official names by all American Economic Entomologists. Dr. W. E. Hooker, who for many years, has reviewed the literature on Economic Entomology for the Experiment Station Record, suggests the plan followed in this index, of indicating these common names approved by the American Association of Economic Entomologists by affixing the letters, a. n. o. (americano nomina officinale) and in this way directing attention to the desirability of using these approved names.

The Entomologist in charge of the Insect Pest Survey here wishes to acknowledge the assistance he has received throughout the year, and particularly, in preparing this index, from the following taxonomists working in the United States National Museum: Mr. E. A. Schwarz, Dr. H. G. Dyar, Dr. Carl Heinrich, Dr. J. M. Aldrich, Dr. H. E. Ewing, Mr. A. N. Caudell, Mr. S. A. Rohwer, Mr. R. A. Cushman, and Mr. A. B. Gahan.

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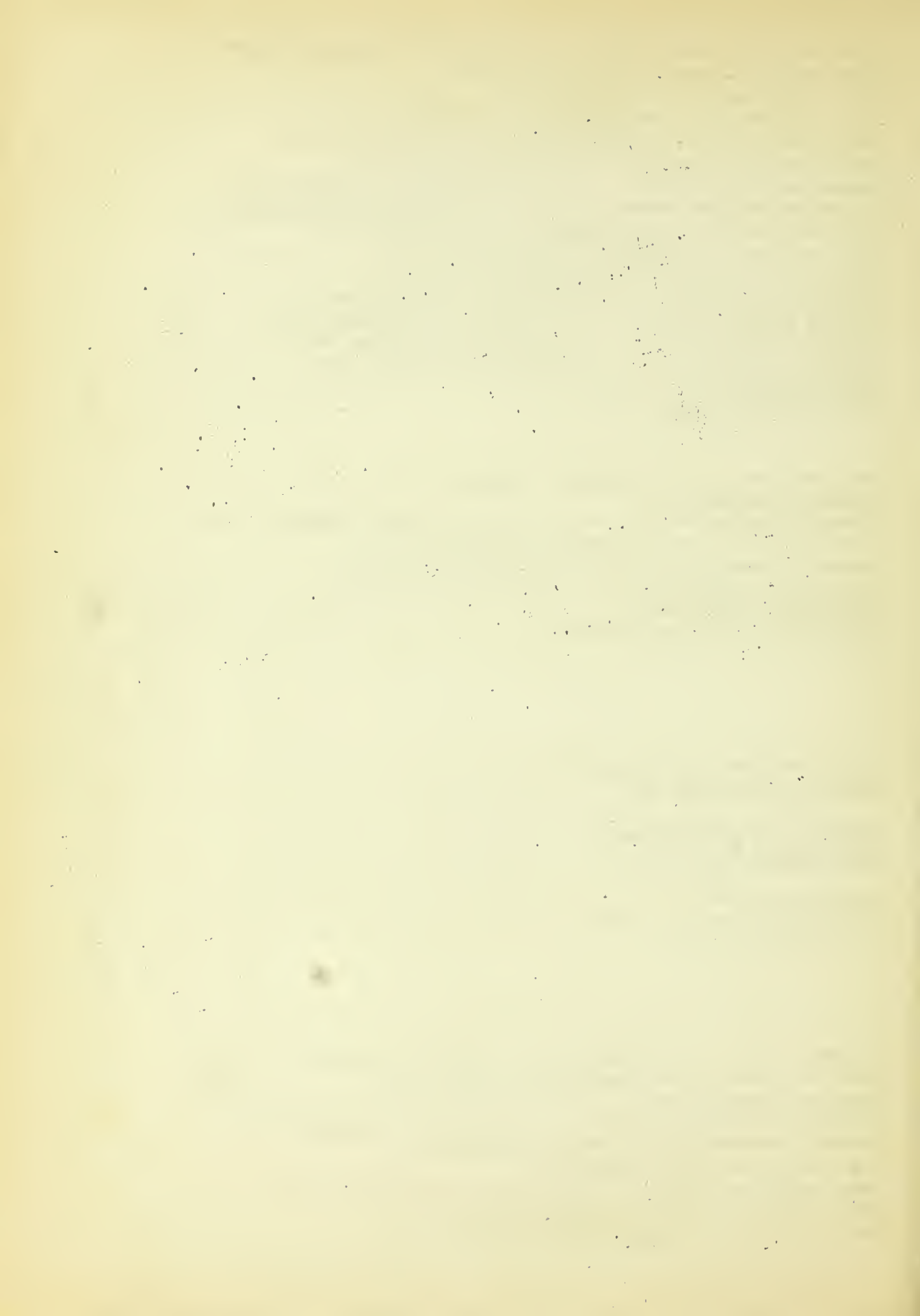
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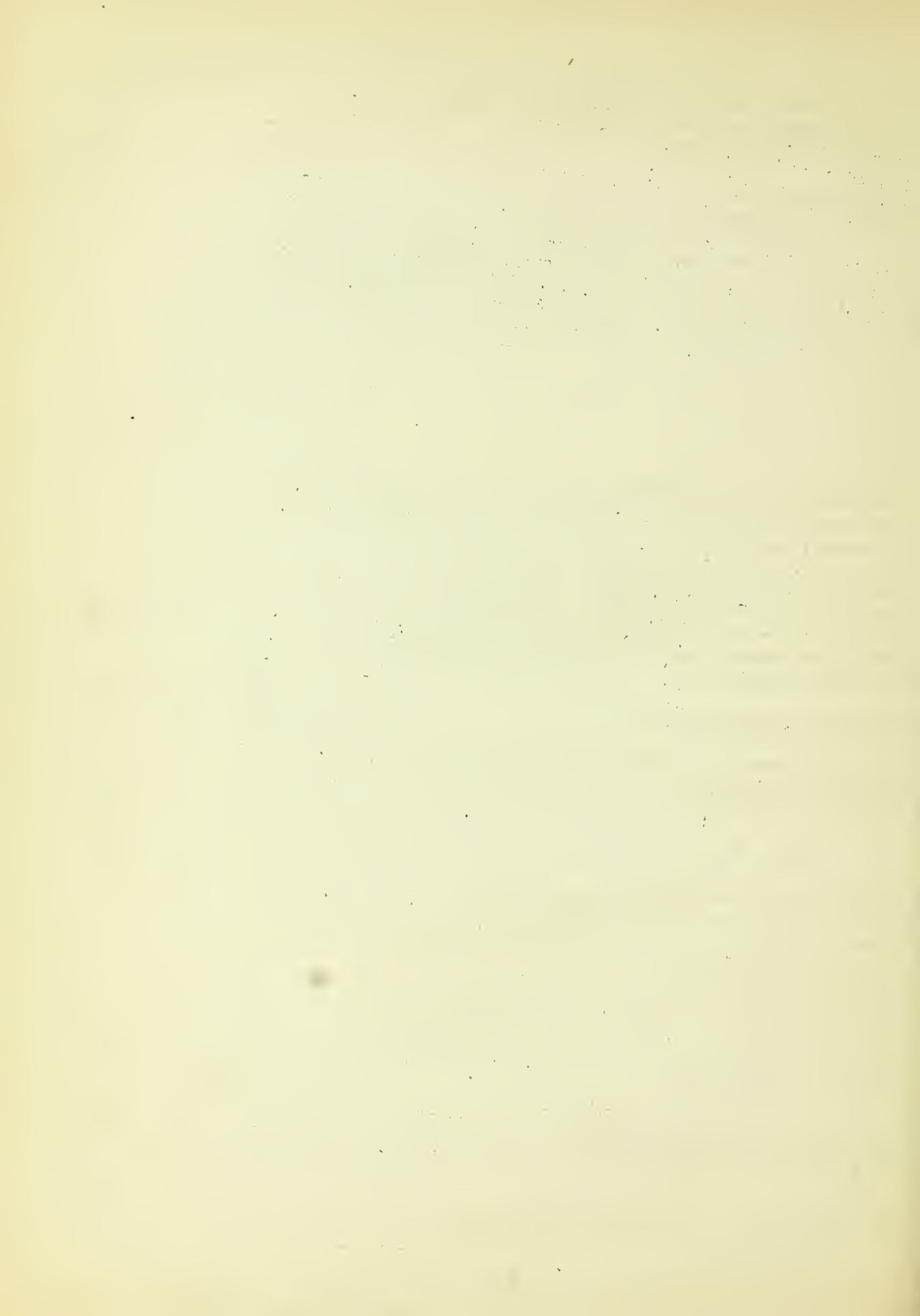
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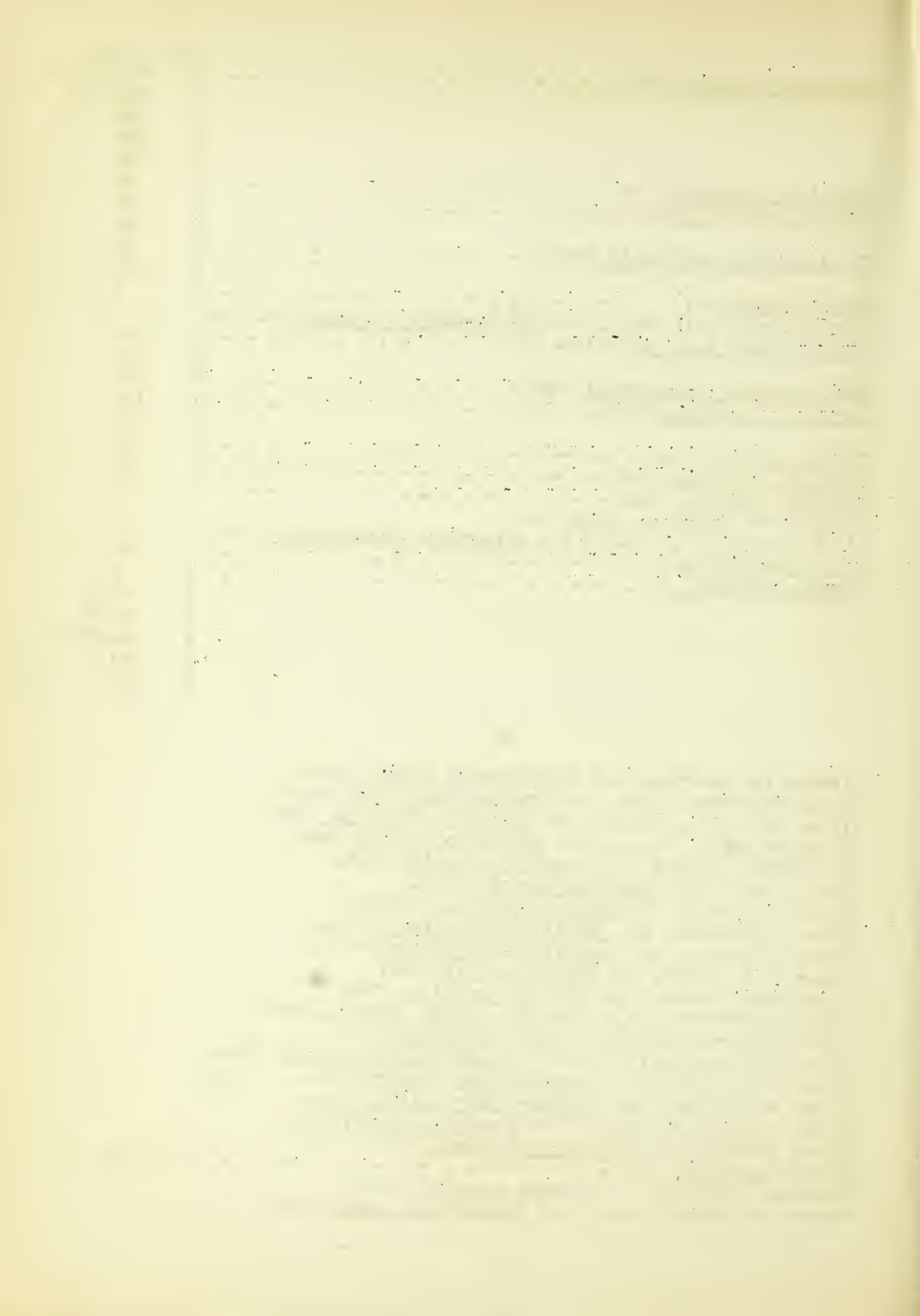


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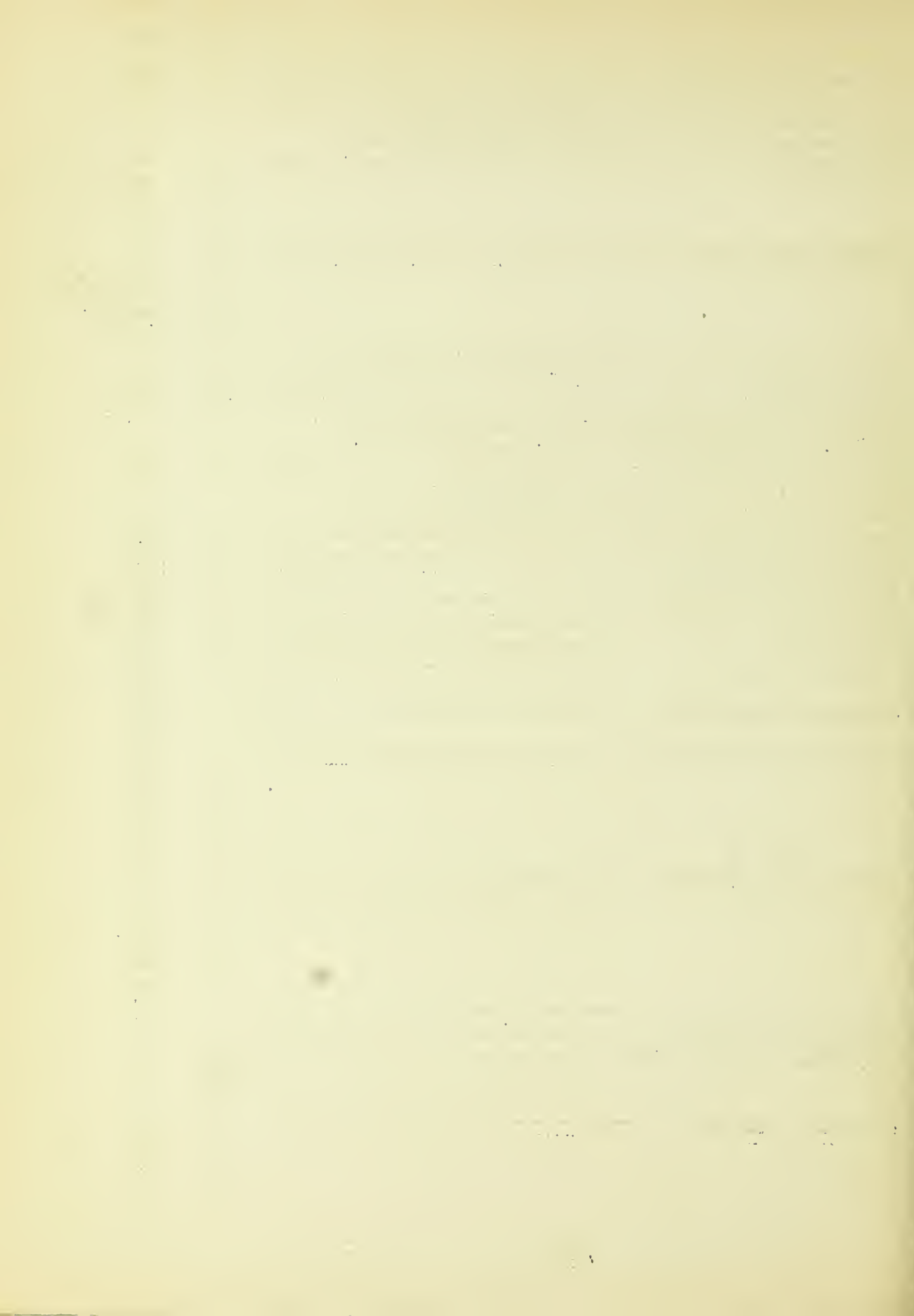
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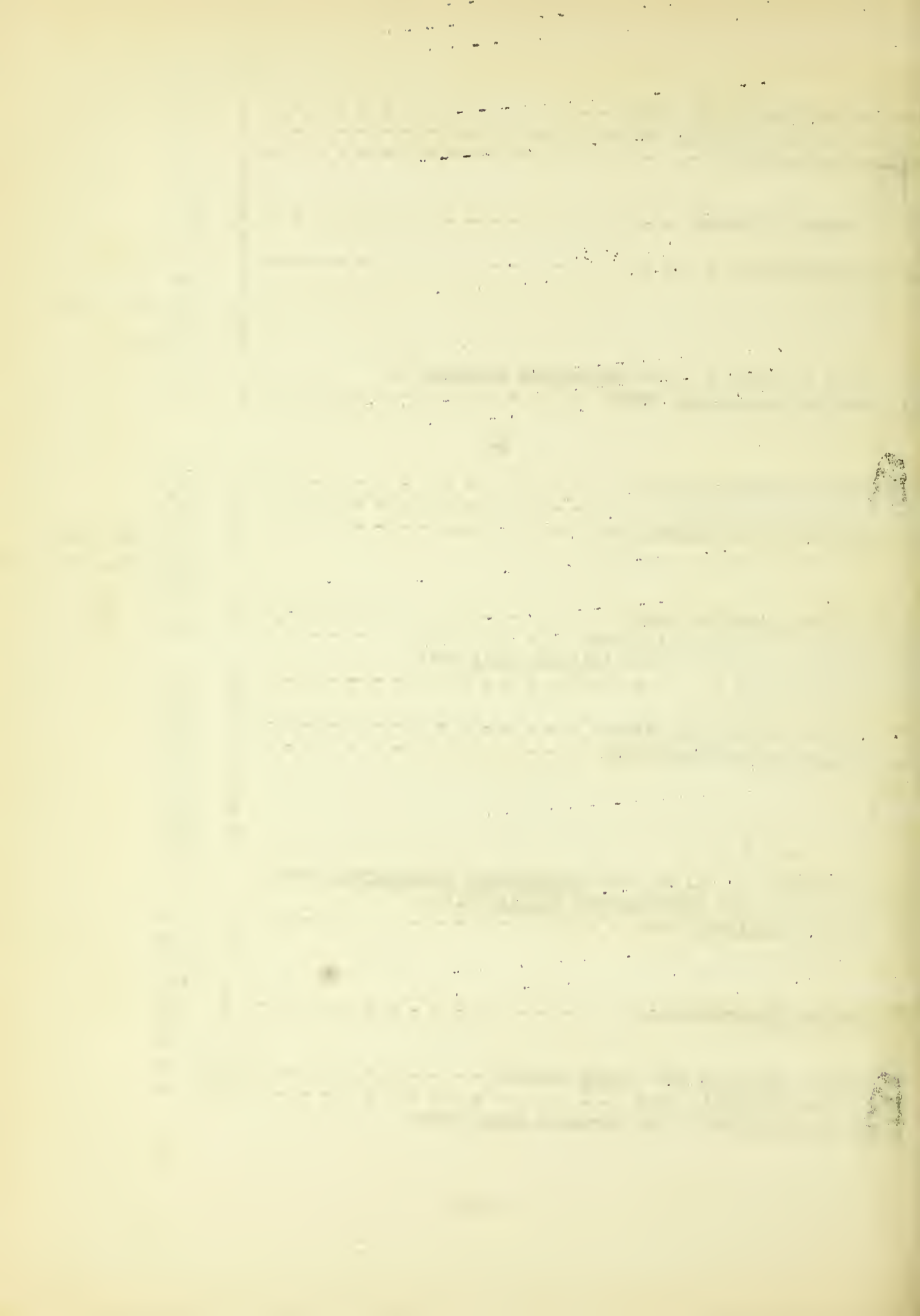
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<u>Macrosiphum adelanifolii</u> Ashm. - - - - -	2	64
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	5	204
	6	236
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	3	90
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<u>Malacosoma disstria</u> Hubn. - - - - -	2	72
	3	99
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<u>Melanoplus atlantis</u> Riley - - - - -	4	153
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<u>Melanoplus bivittatus</u> Say - - - - -	4	153
<u>Melanoplus bruneri</u> Scud. - - - - -	4	153
<u>Melanoplus differentialis</u> Thomas - - - - -	4	153
<u>Melanoplus femur-rubrum</u> DeG. - - - - -	4	153
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<u>Melanoplus saltator</u> Scud. - - - - -	5	194
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<u>Melanotus pilosus</u> Blatch. - - - - -	3	86
<u>Melanoxantharium smithiae</u> Monell - - - - -	7	282
<u>Melittia satyriniformis</u> Hubn. - - - - -	3	128
	4	175
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<u>Mineola nebulella</u> Riley - - - - -	1	24
<u>Miris dolabratus</u> L. - - - - -	3	86
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<u>Murgantia histrionica</u> Hahn - - - - -	1	27
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	4	172
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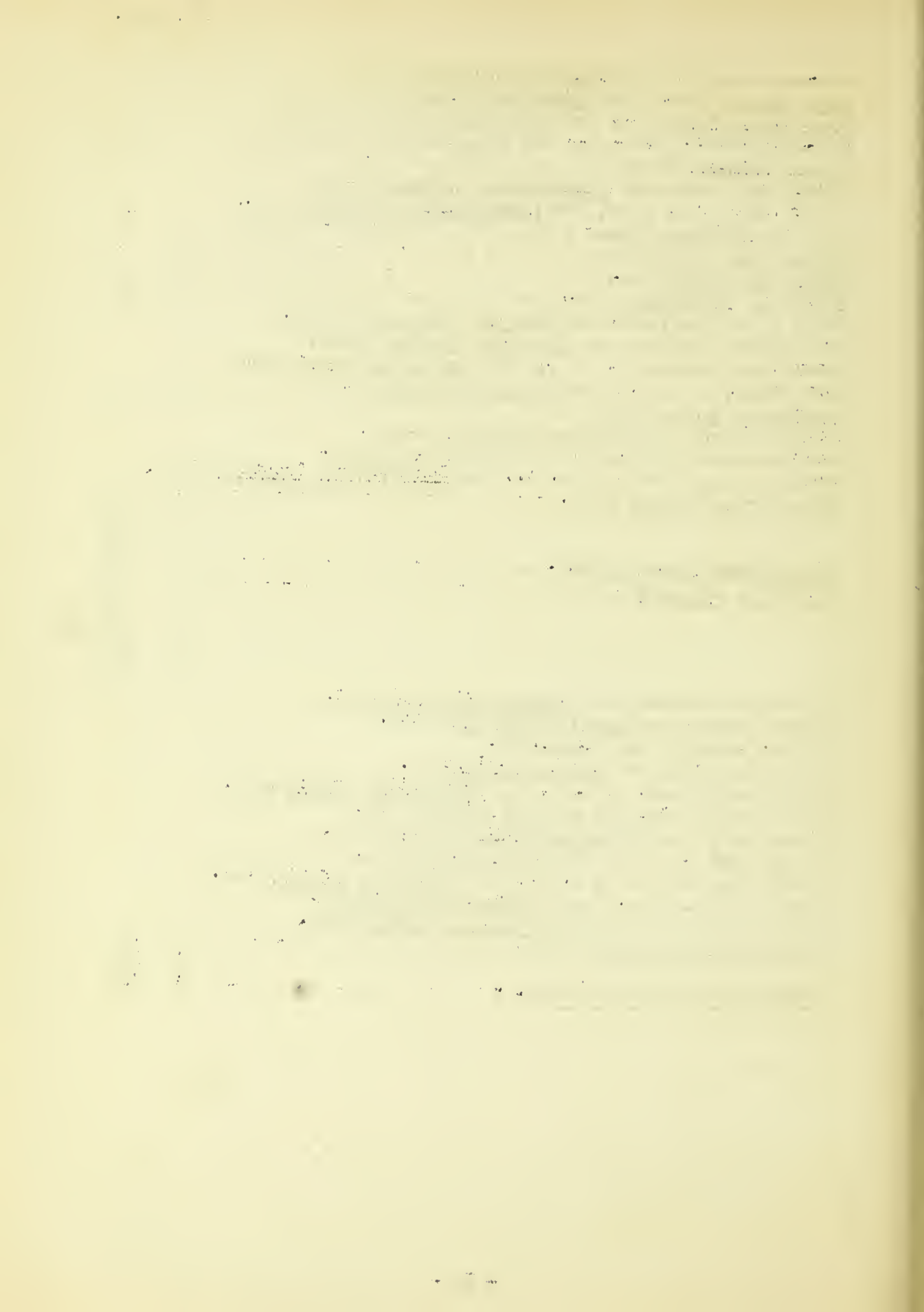
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Seed-corn maggot, see <u>Hylemyia bilicrura</u> Rond.		
<u>Sesia acerni</u> Clem., see <u>Synanthedon acerni</u> Clem.		
<u>Sesia tipuliformis</u> L., see <u>Synanthedon tipuliformis</u> L.		
Shot-hole borer, a. n. o., see <u>Scolytus rugulosus</u> Ratz.		
<u>Sibine stimulea</u> Clem. - - - - -	6	254
Silver leaf mite, see <u>Phyllocoptes cornutus</u> Banks.		
Silver maple leaf mite, see <u>Phyllocoptes quadripes</u> Shim.		
<u>Simulium pictipes</u> Hagen- - - - -	2	77
<u>Siphocoryne avenae</u> Fab. - - - - -	1	7
<u>Sitona hispidulus</u> Fab. - - - - -	1	12
<u>Sitotroga cerealella</u> Oliv. - - - - -	6	256
Small body hen louse, see <u>Menopon pallidum</u> Nitzsch.		
Smut beetle, common, see <u>Phalacrus politus</u> Melsh.		
Snowy tree cricket, a. n. o., see <u>Oecanthus niveus</u> DeG.		
Soft scale, a. n. o., see <u>Coccus hesperidum</u> L.		
<u>Solenopsis geminata</u> Fab. - - - - -	6	235
Sorghum webworm, see <u>Colama sorghiella</u> Riley.		
Southern green plant-bug, see <u>Nezara viridula</u> L.		
Southern pine beetle, a. n. o., see <u>Dendroctonus frontalis</u> Zimm.		
<u>Sphenophorus maidis</u> Chitt. - - - - -	-3	90
	4	152
	7	265
<u>Sphenophorus parvulus</u> Gyll. - - - - -	6	233
<u>Spilonota ocellana</u> D. & S. - - - - -	1	18
	2	48
	3	98, 111
	4	157
	6	241
Spinach leaf-miner, see <u>Begomya hyoscyami</u> Panz.		
Spiraea aphid, see <u>Aphis apiraecola</u> Patch.		
Spittle insects, see Cerconidae.		
Spotted cutworm, see <u>Agrotis c-nigrum</u> L.		
Spring cankerworm, a. n. o. see <u>Paleacrita vernata</u> Peck.		
Spruce gall aphid, see <u>Adelges abietis</u> Kalt.		
Squash borer, see <u>Melittia satyriniformis</u> Hubn.		
Squash bug, a. n. o., see <u>Anasa tristis</u> DeG.		
Squash lady beetle, a. n. o., see <u>Epilachna borealis</u> Fab.		
Stable fly, a. n. o., see <u>Stomoxys calcitrans</u> L.		
Stalk borer, a. n. o., see <u>Papaipema nitela</u> Guen.		
<u>Stephanitis rhododendri</u> Horv. - - - - -	3	138
	4	182
<u>Sterictiphora zabriskei</u> Ashm. - - - - -	6	239



Stinging caterpillar, see <u>Megalopyge opercularis</u> S. & A.		
<u>Stenoxys calcitrans</u> L. - - - - -	2	77
	5	226
	7	280
Strawberry crown-birdler, see <u>Brachyrhinus ovatus</u> L.		
Strawberry crown-miner - - - - -	3	125
	5	207
Strawberry flea-beetle, see <u>Maltica ignita</u> Ill.		
Strawberry leaf-beetle, see <u>Paria canella</u> Fab.		
Strawberry leaf-roller, a. n. o., see <u>Anoxilis comitana</u> Froehl.		
Strawberry root-borer, see <u>Graphops nebulosus</u> Lec.		
Strawberry root louse, see <u>Aphis forbesi</u> Wood.		
Strawberry weevil, a. n. o., see <u>Anthrenus signatus</u> Sav.		
Striped blister beetle, a. n. o., see <u>Epicauta vittata</u> Fab.		
Striped cucumber beetle, a. n. o., see <u>Diabrotica vittata</u> Fab.		
Striped flea-beetle, see <u>Phyllotreta vittata</u> Fab.		
Striped tree cricket, see <u>Oecanthus nigricornis</u> Walk.		
<u>Stylen helinus</u> Hubn. - - - - -	5	220
Sucking goat louse, see <u>Lingnathus stenopsis</u> Burm.		
Sugar-beet thrips, see <u>Heliothrips fernalis</u> Heeger.		
Sugar-beet webworm, see <u>Loxostege sticticalis</u> L.		
Sugar-cane beetle, a. n. o., see <u>Eusthela ruficeps</u> Lec.		
Sugar-cane borer, a. n. o., see <u>Diatraea saccharalis</u> Fab.		
Sugar-cane mealybug, see <u>Pseudococcus calceolariae</u> Mask.		
Sugar-maple borer, a. n. o., see <u>Glycinius speciosus</u> Say.		
Sunfloweraphis, see <u>Aphis helianthi</u> Monell.		
Sweet potato flea-beetle, see <u>Chaetocnema confinis</u> Cr.		
Sweet potato weevil, a. n. o., see <u>Cylas farinarius</u> Fab.		
Sweet potato white fly, see <u>Berisia inconspicua</u> Quaint.		
<u>Synanthedon acerni</u> Clem. - - - - -	4	178
<u>Synanthedon tipuliformis</u> L. - - - - -	3	113
<u>Syntusis druparum</u> Boh. - - - - -	6	242
<u>Systema taeniata</u> var. <u>blanda</u> Melsh. - - - - -	3	88, 91
	4	173
<u>Systema taeniata</u> Say. - - - - -	3	128
	4	173
	5	208
T.		
<u>Tabanus costalis</u> Weid. - - - - -	4	184
<u>Tabanus lasiophthalmus</u> Macq. - - - - -	3	140
<u>Tabanus rubescens</u> Bellardi - - - - -	3	140
	5	225
<u>Taeniothrips inconsequens</u> Uzel - - - - -	1	21
	2	52
	3	103
	6	243
Tarnished plant-bug, a. n. o., see <u>Lyrus pratensis</u> L.		
<u>Tarsonemus pallidus</u> Banks - - - - -	3	140
<u>Tenebrio molitor</u> L. - - - - -	6	256
<u>Tenebroides mauritanicus</u> L. - - - - -	6	256
Tent caterpillar, a. n. o., see <u>Maltosira americana</u> Fab.		

Termites, see Reticulitermes flavipes Kol.

Termites - - - - - 5 224

Terrapin scale, see Lecanium nigrofasciatum Perg.

Tetranychus bimaculatus Harv., see T. telarius L.

Tetranychus citri McGregor- - - - - 3 102

Tetranychus spp.- - - - - 4 166

6 255

Tetranychus telarius L.- - - - - 1 30

3 137,138

4 159

5 198,202,22

6 252

Three-lined potato beetle,, see Lema trilineata Oliv.

Thrips, see Thysanoptera.

Thrips tabaci Lind.- - - - - 1 31

3 129

4 175

5 210,212,2

Thyridopteryx ephemeraeformis Haw. - - - - - 1 33

2 73

3 132

4 178

5 214

6 248

Thysanoptera - - - - - 4 155

Tischeria malifoliella Olemens - - - - - 6 241

7 274

Tmetocera ocellana D. & S., see Spilonota ocellana D. & S.

Tobacco flea-beetle, a. n. o., see Epitrix parvula Fab.

Tobacco worm, a. n. o., see Protoparce quinquenaculata Haw.

Tomato worm, a. n. o., see Protoparce sexta Joh.

Toumeyella liriodendri Gmel. - - - - - 4 180

5 216

7 281

Toxoptera graminum Rond. - - - - - 1 4

3 85

Trialeurodes vaporariorum Westwoodi- - - - - 2 76

3 140

Triangular flea-beetle, see Disonychia triangularis Say.

Trichodectes hermsi Kellogg and Nakayama - - - - - 5 226

Trombidium - - - - - 4 184

Tulip-tree scale, see Toumeyella liriodendri Gmel.

Twelve-spotted asparagus beetle, see Eriocera 12-punctata L.

Twelve-spotted cucumber beetle, see Diabrotica 12-punctata Fab.

Twig girdler, a. n. o., see Oncideres cingulatus Say.

Two-spotted mite, see Tetranychus telarius L.

Two-striped grasshopper, see Melanoplus bivittatus Say.

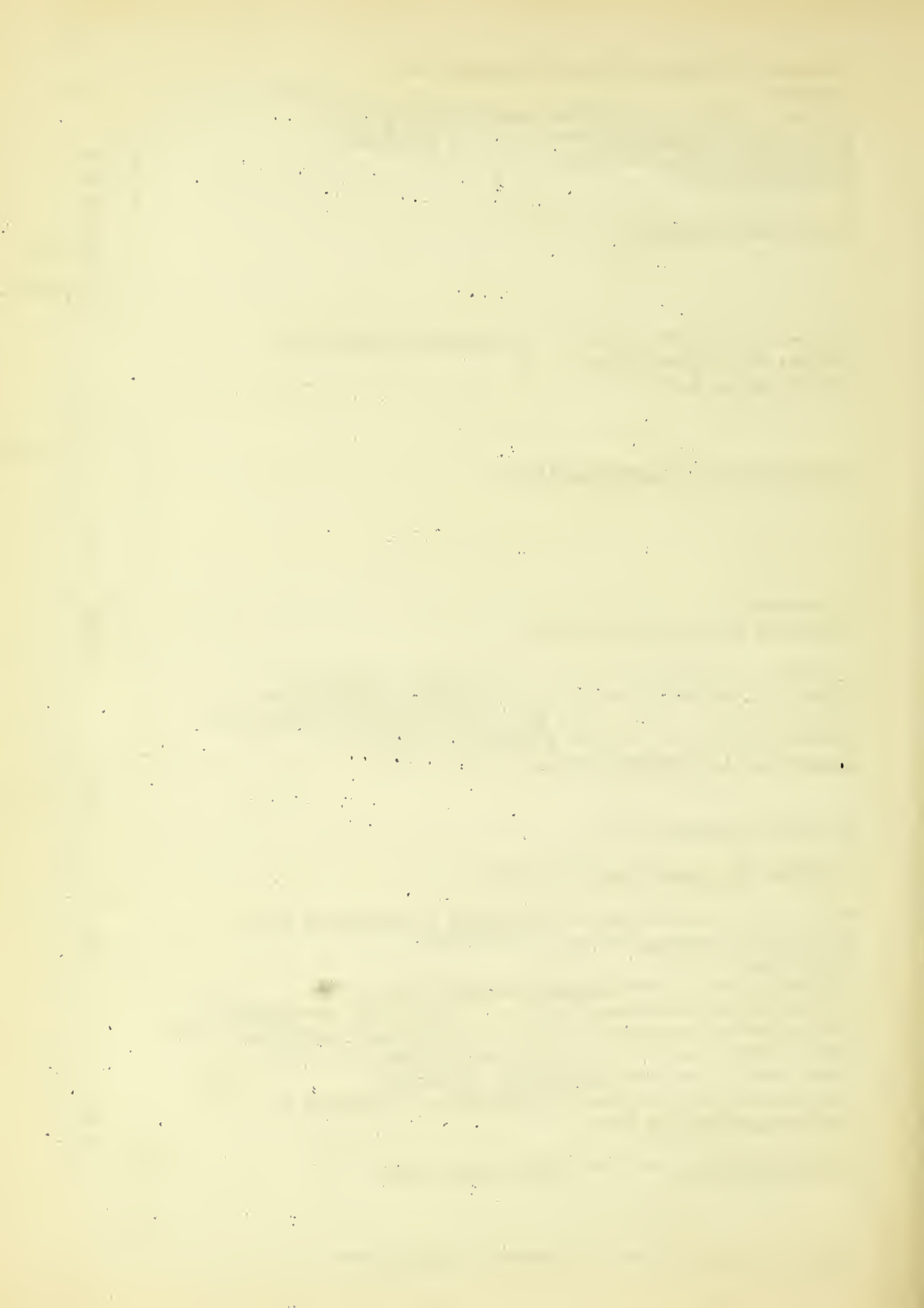
Tychius picirostris Fab.- - - - - 2 42

3 89

Typhlocyba comes Say, see Erythroneura comes Say.

U.

Uranotes melinus Hubn., see Strymon melinus Hubn.



V.

Variegated cutworm, see <u>Lycophotia margaritosa</u> Haw.		
Velvet bean caterpillar, see <u>Anticarsia gemmatilis</u> Hubn.		
<u>Vespa crabro</u> L. - - - - -	6	250

W.

Woolly maple leaf scale, see <u>Phenacoccus acericola</u> King.		
White fly (species unknown) - - - - -	5	206
White grubs, see <u>Phyllonhaga</u> spp.		
White oak blotch leaf-miner, see <u>Lithocolletes hamadryella</u> Clem.		
Wheat straw-worm, see <u>Harmolita grande</u> Riley.		
Wheat-head army worm, a. n. o., see <u>Neleucania albilinea</u> Hubn.		
White-marked tussock moth, a. n. o., see <u>Hemerocampa leucostigma</u> S. & A.		
Wax moth, see <u>Galleria mellonella</u> L.		
Willow grave plant-louse, see <u>Melanoxantherium smithiae</u> Monell.		
Western wheat-stem maggot, see <u>Hylemyia cerealis</u> Gillette.		
Wheat-sheath gall jointworm, see <u>Harmolita vaginicola</u> Doane.		
Wireworm, see Elateridae.		
Woolly apple aphid, a. n. o., see <u>Eriosoma lanigerum</u> Haus.		
Woolly elm aphid, see <u>Eriosoma americana</u> Riley.		
Western army cutworm, see <u>Euxoa auxiliaris</u> Grote.		
Wheat midge, a. n. o., see <u>Contarinia tritici</u> Kirby.		
Wheat-stem maggot, greater, see <u>Meromyza americana</u> Fitch.		
Wheat sawfly, western, see <u>Cephus cinctus</u> Nort.		
Willow flea-beetle, see <u>Chalcoides helxines</u> L.		
Western wheat sawfly, see <u>Cephus cinctus</u> Nort.		
White elm scale, see <u>Chionaspis americana</u> John.		
Walnut caterpillar, see <u>Datana integerrima</u> G. & R.		
Western 12-spotted cucumber beetle, see <u>Diabrotica soror</u> Lec.		
Wheat leaf-miner, see <u>Agromyza parvicornis</u> Loew.		
Wheat wireworm, see <u>Agriotes mancus</u> Say.		
West Indian peach scale, see <u>Aulacaspis pentagona</u> Targ.		

X.

<u>Xylodorus luteolus</u> Barber - - - - -	1	33
<u>Xylina antennata</u> Walk., see <u>Graptolitha antennata</u> Walk.		
<u>Xylina</u> sp. - - - - -	4	178

Y.

Yellow mealworm, a. n. o., see <u>Tenebrio molitor</u> L.		
Yellow-necked caterpillar, see <u>Darana ministra</u> Drury.		
Yellow-bear caterpillar, see <u>Diacrisia virginica</u> Fab.		

Z.

Zebra caterpillar, a. n. o., see <u>Mamestra picta</u> Harr.		
<u>Zeugophora scutellaris</u> Suffr. - - - - -	7	281
<u>Zeuzera pyrina</u> L. - - - - -	-6	241





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