INSECTS OF INDIANA FOR 1932

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The winter of 1931-32, following the mild winter of 1930-31, was unusually mild and favorable for the successful hibernation of insects. This resulted in greater abundance of some insects such as the corn earworm, boxelder bugs and scales and a range of destructiveness farther north than heretofore recorded for such pests as the Mexican bean beetle and harlequin cabbage bug.

The mild weather up to and including February, advanced plant growth, many bulbs coming up and reaching the bud stage, while fruit buds were much enlarged. During most of March the temperature was much below normal, in fact it averaged the third coldest March of state record. The cold wave of March froze all green vegetation to the ground and killed all peach fruit buds in southern Indiana.

The remainder of the year up to the present time was not far from normal excepting the marked deficiency of rainfall in May and the excess in September. (Table 1.)

The following insects of economic importance came to our attention during the year:

CEREAL AND FORAGE INSECTS

The European corn borer (*Pyrausta nubilalis* Hbn.) experienced a very unfavorable season and as a result made little progress into new territory and was held without increase over last year in the previously infested territory. Only eight new townships and four new counties (Dearborn, Jasper, Ripley and Tippecanoe) were found to be infested in 1932. As a result of the mild winter of 1931-32, and favorable conditions up to the time the moths emerged and were laying eggs, there was every indication of a notable increase. However, unfavorable temperature and other weather conditions for migration of the moths into new territory and also for larval survival, resulted in the situation noted above. The conditions were so unfavorable that it was surprising to find that the insect held its own in previously infested areas and made some spread. It was impressive in that if the corn borer can survive under the extremely unfavorable weather conditions of 1932, as well as those of 1930, that we must be prepared for alarming increases in intensity and spread if and when a normally favorable or extremely favorable season develops.

The corn earworm (*Heliothis obsoleta* Fab.) showed a marked increase over 1931, doubtless the result of two successive moderate winters.

[1] The writer is indebted to the following persons for records and information contained in this report: H. O. Deay, Geo. E. Gould, G. Edw. Marshall, Geo. A. Ficht, V. R. Diamond, C. M. Packard, R. F. Sazama, John Amos, Paul Ulman and H. K. Rippey.

TABLE 1. Comparative Monthly Weather Data for Indiana, 1932

Month		Temperature		Precipitation		Number of Days		
		State Mean °F.	Departure from normal °F.	State Average Inches	Departure from normal Inches	Clear	Partly Cloudy	Cloudy
January	Normal	28.4		3.13		10	7	14
	1932	38.4	+10.0	5.43	+2.30	9	6	16
February	Normal	30.2		2.52		9	7	12
	1932	39.4	+9.2	1.71	—0.81	12	6	11
March	Normal	40.7		3.75		10	8	13
	1932	34.2	—6.5	2.83	—0.92	8	11	12
April	Normal	51.9		3.56		11	9	10
	1932	51.6	—0.3	2.67	—0.89	13	7	10
May	Normal	62.1		4.06		12	10	9
	1932	62.8	+0.7	1.38	—2.68	16	8	7
June	Normal	71.2		3.86		13	10	7
	1932	72.9	+1.7	4.64	+0.78	14	11	6
July	Normal	75.3		3.38		16	10	5
	1932	76.4	+1.1	3.48	+0.10	19	9	3
August	Normal	73.2		3.34		15	10	6
	1932	74.0	+0.8	3.66	+0.32	17	9	5
September	Normal	67.0		3.24		15	8	7
	1932	66.1	—0.9	5.83	+2.59	16	7	7
October	Normal	54.6		2.74		15	7	9
	1932	54.7	+0.1	3.93	+1.19	13	7	11

It was first reported from the southern end of the state July 1, and frequent reports were received from all sections of the state during the remainder of the season. Sweet and field corn were the most commonly attacked, although other crops, especially green beans and tomatoes, were severely damaged. In the fall this worm attacked chrysanthemum buds and geranium foliage in greenhouses.

Chinch bugs (*Blissus leucopterus* Say) was noticeably more abundant than usual, being moderately abundant during July in Allen, Dekalb and Huntington counties.

Corn root aphid (*Aphis maidi-radicis* Forbes) was abundant and destructive during June and July to sweet corn in several southern Indiana localities.

Clover white grub (*Colaspis brunnea* Fab.) destroyed half of a 30-acre field of corn near Williamsport early in June.

Common stalk borer (*Papaipema nebris* Gn.) was reported as destructive to corn at points scattered throughout the state during

June, July and August. Lily was reported damaged at Urbana, June 8. Apparently less than normally abundant.

Army worm moths (*Cirphis unipuncta* Haw.) were common at lights at Lafayette, May 1, and a student reported finding several moths several nights before. However, no army worm outbreaks occurred according to reports received.

Grasshoppers were not reported common during June and July except at Jasonville, June 14, and at Grabill, July 13, where they were attacking rose buds. Local outbreaks were reported from southern Indiana from July 30 to August 6. On July 30, millions of *Melanoplus differentialis* moved into orchards and corn fields near Vincennes, and by August 6 one year old apple trees had been seriously damaged. One correspondent estimated 90 per cent injury to corn in Vanderburgh County. By the middle of August most of the grasshoppers had apparently been killed by a fungous disease. One report came from Culver in northern Indiana, where alfalfa was seriously damaged August 3. Late in the season, September 4, a report was received from Jasper advising of damage to cabbage. At Bedford, Marshall reports damage to alfalfa, soybeans, garden crops and apple trees during the season.

Saddle-back caterpillar (*Sibine stimulea* Clem.) reported feeding on plum foliage at Evansville, August 18, and a few days later on corn at Mount Vernon.

Hessian fly (*Phytophaga destructor* Say) was the most abundant and showed greater potential destructiveness for a number of years. During June many reports of fallen wheat were received which in itself was evidence of fly abundance. C. M. Packard, in charge of Hessian fly investigations for the U. S. Bureau of Entomology and of the Cereal and Forage Insect Laboratory located at Lafayette, summarizes the situation during the past season as follows: "Spring weather conditions in 1932 favored further fly increase following that of the previous fall, with the result that the spring infestation became the most general and severe in years. The harvest-time survey showed an average infestation of 41 per cent of the stems, with occasional fields greatly reduced in yield. Prospects for heavy fall infestations were very threatening but fortunately did not wholly materialize, for several reasons; low summer survival of puparia in stubble due to desiccation and unusually high summer parasitism; rather unfavorable weather conditions for fall fly activity, namely, shortage of moisture in August and rainy weather in September and October; and generally late sowing, largely on account of delays due to weather but partially at least due to voluntary observance of the safe dates following general publicity of the threatening fly prospect. Early sown fields, though rare, contain heavy infestations, as does volunteer wheat. The main fall emergence was over by the time wheat sown on or after the safe dates had appeared above ground."

Wheat joint worm (*Harmolita tritica* Fitch) was decidedly more abundant than usual in the 1932 wheat crop in north-central Indiana.

Clover leaf weevil (*Hypera punctata* Fab.) was abundant in some localities of central Indiana, reports coming in early in May. However, the outbreaks were checked by a fungous disease before much damage occurred.

Clover aphid (*Macrosiphum pisi* Kalt.) was abundant on clover and alfalfa throughout most of the southern half of the state the last few days in April and early May, being especially damaging to young alfalfa. The chain drag, recommended by Smith in the April, 1932, Journal of Economic Entomology, was used with good results. The outbreak was checked early in May, probably a fungous disease acting as the chief control.

Tobacco flea beetle (*Epitrix parvula* Fab.) was very destructive to tobacco at Lawrenceburg the last of June.

VEGETABLE INSECTS

Harlequin cabbage bug (*Murgantia histrionica* Hahn) was unusually abundant and seriously destructive, the first reports coming in August 15. Heretofore we have no records of the occurrence of this species north of the tier of counties along the Ohio River. The past season reports of damage to cabbage were received from points as far north as Indianapolis, and east to Connersville. Here again the mild winters of 1930-31 and 1931-32 were probably responsible for the temporary extension northward of a typical southern insect.

Imported cabbage worms (*Ascia rapae* L.) were probably more abundant than usual, reports coming from all parts of the state the last of June and the first half of July and again the first half of August.

Cabbage looper (*Autographa brassicae* Riley) was also abundant generally the middle of August.

Cabbage curculio (*Ceutorhynchus rapae* Gyll.) was destructive to hotbed cabbage plants at Connersville and Kewanna, May 23 and 24, respectively. An adult was received from New Albany, June 1, where larvae were earlier damaging cabbage.

Cabbage aphid (*Aphis brassicae* L.) occurred throughout the state and was normally abundant. Early in the season (May 20) several growers reported this aphid abundant and destructive to plants which had been received from Georgia. Indiana growers have been experiencing much trouble with insect infested cabbage and tomato plants, shipped in from southern states, for several years. Growers should refuse such infested material.

Zebra caterpillar (*Mamestra picta* Han.) was abundant on cauliflower at Winamac, June 21.

Striped cucumber bettle (*Diabrotica vittata* Fab.) was very abundant throughout the state, probably more so than normally.

Melon aphid (*Aphis gossypii* Glov.) was apparently less abundant than usual, although some reports of damage were received the first half of July.

Squash bug (*Anasa tristis* DeG.) which was more abundant in 1931, than for many years, again overwintered in large numbers and during August and September it was a general pest in all parts of the state, attacking squash and pumpkin. Sazama reports that this insect was abundant and that it practically prevented growing any squash or pumpkins in the vicinity of Vincennes and that it was exceedingly troublesome in homes. The same situation occurred at Bedford, according to

Marshall. In many of the collections the southern leaf-footed plant bug (*Leptoglossus oppositus* Say) occurred in almost equal numbers as the common squash bug.

Squash vine borer (*Mellitia satyriniformis* Hbn.) injured squash and pumpkin in all parts of the state during July and into August. At Lafayette their abundance, combined with effects of dry weather in July, caused the death of many squash plants.

Mexican bean beetle (*Epilachna corrupta* Muls.) extended its range of destructiveness to practically all sections of Indiana during 1932, reports having been received from every county except Newton, Lake and Porter in the northwestern corner. The favorable winter of 1930-31 enabled this insect to be destructive in a few localities in northern Indiana in 1931. The second mild winter (1931-32) apparently enabled large numbers to winter over successfully farther north than ever before and as a result we were besieged with inquiries. The first report was received May 28, but most inquiries were received after June 6, being very abundant during July. Also many inquiries in August. A new generation commenced to appear at Lafayette about August 17, and by August 26 had destroyed many bean patches. The potato beetle killer (*Perillus bioculatus*) was reported from several points in Southern Indiana, where it was observed feeding on larvae of the Mexican bean beetle and the Colorado potato beetle.

Onion thrips (*Thrips tabaci* Lind.) began to show up in threatening numbers in the onion fields of Northern Indiana early in June. However, serious damage did not develop.

Wooly bear caterpillars (probably *Diacrisia virginica* Fab.) were abundant on onion at Columbus, according to a report received June 15.

Egg plant flea beetle (*Epitrix fuscula* Crotch) was observed as very destructive to young egg plants at Lafayette, June 10. A new generation of adult beetles were appearing July 16, and by July 22 most untreated plants were practically defoliated. Reports received show that it was generally abundant and destructive throughout the state. Excellent control was obtained with Bordeaux as a spray and barium fluosilicate as a dust.

Colorado potato beetle (*Leptinotarsa decemlineata* Say) were attacking potato at Indianapolis in May as soon as the plants appeared above ground. Later in the season they were normally abundant throughout the state. The potato beetle killer (*Perillus bioculatus*) was reported abundant and effective in checking the abundance of these pests in several localities.

Potato leafhopper (*Empoasca fabae* Harr.) was only moderately abundant in the potato growing areas.

Aphis rumicis L. reported destructive to cultivated dock at Brookston, June 13.

Rhubarb curculio (*Lixus concavus* Say) damaged rhubarb at Fort Wayne, June 10.

Tortoise beetles (*Chrysomelidae*) were reported severely damaging sweet potatoes at Vincennes, July 2.

Wireworms (*Elateridae*) damaged tomatoes at Ladoga, May 31.

Pale striped flea beetle (*Systema taeniata*, var. *blanda* Melsh.) dam-

aged tomato at Kokomo, June 13, sweet corn at Plymouth, June 25, and crops not reported at Albion, June 21.

Blister beetles were probably normally abundant throughout the state, especially in the northern half of the state. Three species were involved, namely, *Epicauta vitatta* Fab., *E. marginata* Fab. and *E. pennsylvanica* DeG. The first reports were received July 7, and continued through August, in fact a few reports were received up to September 15. Quite a variety of plants were reported as damaged, but potatoes, tomatoes, and beets were the most common hosts. Marshall states that blister beetles were more abundant and destructive in the vicinity of Bedford than in 1931.

Cutworms *(Noctuidae)* were reported destructive to such crops as corn, beans, cabbage, sweet potato, and hollyhock during May from many localities in the northern half of the state.

Garden slugs *(Helix* sp.) were abundant under debris at Frankfort, May 7, in a locality where they were destructive in gardens in 1931. They were also annoying in basements in several localities of central Indiana this fall; also, in hotbeds.

Millipedes have been reported from year to year but apparently they are incidental with other trouble in most cases. However, in 1931, and again in 1932, they were definitely destructive to potatoes in the muck areas of Northern Indiana. In one case mint damage was reported but as in several other cases of injury, we were unable to visit the region and absolutely verify the report. The first of June we had one report which was probably authentic, reporting that millipedes were playing havoc in a bottom land field of corn at Bloomfield.

The mint flea beetle (*Longitarsus waterhousei* Kutsch) continues as a serious pest of mint in northern Indiana, which is almost certain to be a permanent hindering factor in mint production. At Warsaw, the first pupae were found June 23, and the first adults appeared July 8, which is several days later than for the previous two years.

Fruit Insects

Codling moth larvae *(Carpocapsa pomonella* L.) wintered over in large numbers with a low winter mortality and the early prospects were for an abundance of worms, which proved to be the case. On April 23, three per cent of the over-wintering worms had pupated at Bedford, while none had pupated at Lafayette on that date. The first adults from over-wintering worms appeared at Bedford, May 6, and the first eggs noted May 9, but because of the cool weather following they did not hatch until May 22. At Lafayette the first moths did not appear until May 20. At Bedford the first larvae left the apples 23 days after hatching, that is June 14, and the second brood adults issued 15 days later on June 29. An early adult of this brood emerged at the Troth-Burton Orchard at Mitchell, June 21. The first larvae of the second brood hatched July 8, and on Aug. 2, these larvae were leaving apples to pupate. The adults of this second brood of worms began to issue Aug. 17, and they were laying eggs on Aug. 23. These eggs hatched Aug. 31 and before cold weather had left the apples to build hibernaculae

for over-wintering. The past year has been one of the worst codling moth seasons, if not the worst, for perhaps six years. The worms are abundant in winter quarters and will require extra efforts in 1933 to prevent more serious damage.

Apple leaf skeletonizer *(Psorosina hammondi* Ril.) defoliated young, unsprayed apple trees in a few cases near Bedford, but in well-kept orchards it was not a problem.

Red humped caterpillar *(Schizura concinna* S. and A.) was abundant on apple at New Albany and Franklin the middle of July. Other common caterpillars in southern Indiana, especially in young, unsprayed orchards were the yellow-necked apple caterpillar *(Datana ministra* Drury), white-marked tussock moth caterpillar *(Hemerocampa leucostigma* S. & A.), webworms *(Hyphantria cunea* Drury), and "canker worms."

Apple curculio *(Anthonomus quadrigibbis* Say) was abundant and destructive to apple at Lafayette.

Apple leafhoppers were abundant early in April but did not show the increase anticipated, in fact they did little if any injury.

Apple aphids *(Aphis pomi* DeG. and *Rhopalosiphum prunifoliae* Fitch) were abundant on apple in the green bud stage, but gradually decreased until April 25, when they became quite scarce.

Rosy apple aphid *(Anuraphis roseus* Baker) was abundant on apple in several regions of central and southern Indiana early in June and their persistence in some orchards resulted in injury to fruit. By late June these aphids were well under control as a result of the activity of natural enemies.

Wooly apple aphid *(Eriosoma lanigerum* Haus.) was abundant at Lafayette early in July.

Apple scurfy scale *(Chionaspis furfura* Fitch) was abundant and destructive to apple at Brookville and Lebanon. At Bedford it was more abundant late in the season than for at least three years.

San Jose scale *(Aspidiotus perniciosus* Comst.) wintered over very successfully and was abundant and destructive where thorough control measures were not applied. In most cases, however, the commercial growers adopted the controls stressed by the entomologists, resulting in very effective control. A severe infestation in an old orchard at Bedford was almost completely destroyed by a fungous disease during July and early August.

Round-headed apple tree borer *(Saperda candida* Fab.) damaged apple trees at Lafayette during September.

Pear-leaf blister mite *(Eriophyes pyri* Pagen.) was abundant on pear at Marion, August 4.

Pigeon tremex *(Tremex columba* L.) was observed as very common ovipositing in pear trees at Nappanee, September 28.

Oriental fruit worm *(Laspeyresia molesta* Busck) wintered over in large numbers, but the severe March weather killed about 90 per cent or more of the peach buds in Southern Indiana, which was unfavorable to this peach pest. Twig injury gradually increased until July 25, when the injury was severe, but after that date there was a decrease. There was a progressive increase in the numbers of moths caught in bait traps

from the first to 16th of August. In the Vincennes area Krummel peaches were very heavily infested and from 1 to 43 per cent of all the larvae in apples were this species. Sazama reports heaviest overwintering population in years. In spite of very unfavorable conditions for this pest it is wintering over in rather large numbers.

Cat-facing, caused by tarnished plant bug (*Lygus prataensis* L.), was severe for the few peaches that developed.

Plum curculio (*Conotrachelus nenuphar* Herbst) was reported abundant from several localities in the state. At Lafayette the first adults were jarred from trees May 1. In general, it was probably more destructive to apple, peach and cherry than in 1931.

Shot hole borer (*Scolytus rugulosus* Ratz.) was reported damaging cherry and plum from a number of localities. At Shelbyville on August 29, the adult beetles were injuring cherry leaf buds.

Tree crickets (*Oecanthus nigricornis* Walk.) were reported from several localities in Northern Indiana, where they were ovipositing in raspberry canes.

Rose scale (*Aulacaspis rosae* Bouche) was abundant on rose at Lafayette and raspberry at Terre Haute.

Grape filbert gall (*Schizomyzia coryloides* W. & R.) was received from Frankfort, August 1.

Strawberry leaf roller (*Ancylis comptana* Froh.) was abundant generally in Northern Indiana, reports coming in from May 24 to August 2. Not especially abundant in Southern Indiana, according to reports excepting in the vicinity of Princeton where it was quite destructive.

Strawberry rootworm (*Paria canella* Fab.) was destructive to strawberry at Aurora, according to a report received October 4.

Strawberry crown borer (*Tyloderma fragariae* Ril.) was reported from several localities in the northeastern part of the state and also from the western part.

Root knot nematode (*Heterodera radicicola* Greef) on strawberry was reported from two localities according to Ulman.

The 17-year cicada (*Cicada septendecim* L.) was authentically reported from Ashley and Bedford the first half of June. However, no injury was reported.

SHADE TREE AND SHRUB INSECTS

Bagworms (*Thyridopteryx ephemeraeformis* Haw.) was reported from Kingman, Lebanon, Crawfordsville, Indianapolis, Evansville, Sullivan and other points in Southern Indiana, the reports coming in throughout the season. Besides reports of abundance on apple they were observed on cedar, boxelder, maple, arbor vitae, cottonwood and blue spruce. Recently hatched larvae were abundant on young apple trees at Crawfordsville, June 6.

Catalpa sphinx caterpillars (*Ceratomia catalpae* Boisd.) were abundant and defoliating catalpa trees in many localities in the northern half of the state, as well as in Southern Indiana, during June and July. The second generation of worms began to appear at Lafayette, August 14, and at points farther north a few days later. A disease was responsible for killing many of the fall brood of worms in Southern Indiana.

Walnut caterpillars (*Datana integerrima* G. and R.) were very abundant in the southern half of Indiana. One correspondent reported that nearly all of the walnut trees in the southern third of the state were defoliated by July 18. Sazama states that not a single walnut, hickory or pecan within 100 miles of Vincennes escaped defoliation and that some walnut trees put out three sets of foliage.

Bronze birch borer (*Agrilus anxius* Gory) was reported as destroying cut-leaf birch at Seymour, June 29.

Ash borer (*Podosesia fraxini* Lug.) was abundant in ash at Muncie and Anderson. Adults were issuing at Anderson, May 21.

Locust borer (*Cyllene robiniae* Forst.) seriously damaged black locust at Gary, according to a report received June 28.

Flat-headed borer (*Chrysobothris femorata* Oliv.) was reported damaging maple at Kurtz, Delphi, Michigan City, Frankfort and Hagerstown and destructive to apple at Marshall.

Lilac borer (*Podosesia syringae* Harr.) was abundant on lilac at Fowler.

Oyster shell scale (*Lepidosaphes ulmi* L.) was reported abundant on lilac at Alexandria, Greenfield, Kendallville, Knightstown, Lafayette, Richmond, Terre Haute, Waynetown, Wheatfield, and Williamsport and on ash at Williamsport and Wheatfield.

Cottony maple scale (*Pulvinaria vitis* L.) abundant at Gary, Lizton, Marion, Peru, Portland and Shipshewana.

Pine leaf scale (*Chionaspis pinifoliae* Fitch) was abundant on blue spruce at Milroy and Madison, pine at Kendallville, and juniper at Aurora.

Tulip tree scale (*Toumeyella liriodendri* Gmel.) was abundant on magnolia at Pekin and on tulip tree at Eminence, Lafayette and Peru. The last locality is the most northern record we have ever had for this species.

Spiraea aphid (*Aphis spiraecola* Patch) was normally abundant on *Spiraea van houttei* throughout the northern half of the state.

Snowball aphid (*Anuraphis viburnicola* Gill.) was normally abundant at Lafayette and Knightstown and probably elsewhere throughout the state.

Linden aphid (*Longistigma longistigma* Wils.) was reported very abundant on linden at South Bend, October 24.

Common willow aphid (*Melanoxantherium smithae* Monl.) reported as very abundant on willow at Richmond and Madison early in October.

Boxelder bug (*Leptocoris trivittatus* Say) has been the subject of a great many inquiries, some because of their abundance and damage to boxelder trees but more often because of their annoyance in homes. Last winter and spring these insects, which had sought shelter in homes to pass the winter the previous fall, became quite active because of the mild winter. This past fall we received more inquiries than ever before and evidently they were more abundant and widespread than for many years. The first reports came the latter part of June when they were observed very abundant on boxelder trees. Later they were reported because of their persistence in entering homes and these inquiries continued up until cold weather. Reports of abundance were received from

practically every county north of Indianapolis, and from only two counties south of the center of the state, namely, Sullivan and Lawrence. One report of injury to strawberry plants was received but not verified.

Red Spider *(Tetranychus telarius* L.) was normally abundant out-of-doors. Reports of notable damage were received from Aurora, Anderson, Bedford, Clinton, Jamestown, Lafayette, Linden, Marion, Shelbyville, Sidney and Thorntown and the plants reported attacked included ornamental juniper shrubs, arbor vitae, cedar, spruce, hard maple, soft maple, raspberry, phlox and dahlia. Most of the inquiries were received the latter half of June and about the middle of July.

Elm cockscomb gall aphid *(Colopha ulmicola* Monl.) was reported as quite abundant on elm from many localities in the northern half of the state.

Flower Garden, Greenhouse and Lawn Insects

Io moth caterpillars *(Automeris io* Fab.) reported attacking gladoli at Milton, August 1.

Gladiolus thrips *(Taeniothrips gladioli* M. and S.), a new pest of gladiolus appeared in the state and was a pest in several localities, including two places in Dekalb County and one in each of the counties of Allen, Elkhart, Carroll and Marion. In Carroll County, near Delphi, it caused considerable loss, the insect apparently being introduced on bulbs purchased in one of the eastern states this past spring. The infestation was very heavy and resulted in almost complete loss of flowers in at least two of the other localities referred to.

Onion thrips *(Thrips tabaci* Lind.) damaged pompons and cyclamen at New Albany early in January.

Chrysanthemum lace bug (*Corythuca marmorata* Uhl.) was abundant on chrysanthemum out-of-doors at Lafayette during August.

Mexican mealy bug *(Phenococcus gossypii* T. and C.) has in the past few years become one of the most serious of all greenhouse pests, being especially destructive to chrysanthemum. On October 19, John Amos, a graduate student at Purdue, found it common on the following plants out-of-doors at Lafayette: *Amarantus* sp. border or fountain grass *(Rennisetum ruppelii), Canna* sp., egg plant *(Solanum melongena), Lantana* sp., and flowering sage *(Salvia* sp.).

The common greenhouse mealy bug *(Pseudococcus citri* Risso) was reported common on house fern at Logansport, house plants at Lake Cicott, *Asparagus sprengeri* at Anderson, cactus at Terre Haute, and Coleus at Bedford, Elwood and Hammond.

Phlox plant bug *(Lopidea davisi* Knight) was a serious pest of perennial phlox at Bloomington and Columbus the last of August and early in September.

Fern scale *(Hemichionaspis aspidistrae* Sign.) was commonly reported as abundant on house ferns from many localities.

Hemispherical scale *(Saissetia hemisphaerica* Targ.) was occasionally reported infesting house fern.

The soft scale *(Coccus hesperidum* L.) was abundant and destructive to begonia at Fairmount.

A camel cricket *(Tachycines asynamorus* Adelung, Caudell det.) was reported damaging flowering greenhouse plants at Indianapolis early in November.

Rose beetle *(Macrodactylus subspinosus* Fab.) was reported very abundant from June 9-23 in a number of northern Indiana localities, including Claypool, Crown Point, Denver, LaPorte, Michigan City, Peru and Warsaw. The crops attacked included all kinds of garden plants, those specifically referred to being rose, peony, strawberry and grape. At Peru they were responsible for the death of many chickens and at Claypool for the death of young ducks.

Rose slug *(Cladius isomerus* Nort.) injured rose at Albion, Henderson and Lafayette early in July.

Large green rose aphid *(Macrosiphum rosae* L.) was a pest of rose about the middle of June at Franklin, Gary, Griffith and Rome City.

The pea aphid *(Macrosiphum pisi* Kalt.) was abundant on sweet pea at Gary early in June.

Silver spotted skipper *(Epargyreus tityrus* Fab.) reported common on wisteria at Muncie, July 5.

Fungus gnat maggots *(Sciara* sp.) were reported several times early in the spring as abundant in soil of potted plants. In most cases the reports originated because of an abundance of the adult flies.

Sowbugs were reported abundant in greenhouses from several localities. At New Albany they were definitely reported attacking seedling petunias; at Brazil potted plants; at Portland, mushrooms and defoliating flowering plants; at Anderson pansy plants; and at Fort Wayne, "flowering plants", while at Anderson they were reported as annoying in the basement.

Webworms *(Crambidae)* damaged golf greens at Franklin and Greencastle the middle of June. However, they were not generally or severely damaging as the previous two seasons.

The grubs of the green June beetle (*Cotinus nitida* L.) were abundant and destructive in lawns at Evansville, September 23.

Cutworms (chiefly *Agrotis ypsilon* Rott.) were responsible for material damage to golf greens at Lafayette and probably elsewhere in the state. Experiments by Packard indicated proper application of arsenate of lead, kerosene emulsion or pyrethrum extracts to be effective control measures.

PESTS OF STORED PRODUCTS

Grain weevils and grain beetles of various kinds have been more prevalent and destructive than for many years, due no doubt to the fact that much old grain has been held over. As early as last June reports were received from central and southern Indiana of infestations in old grain. During July the inquiries became more frequent. The cadelle *(Tenebroides mauritanicus* L.) appeared to be the chief offender, although the confused flour beetle *(Tribolium confusum* Duval), saw-toothed grain beetle *(Oryzaephilus surinamensis* L.) and true grain weevils *(Sitophilus* sp.) were numerous in grain and stored products such as flour and meal. The cigarette beetle *(Lasioderma serricorne* Fab.)

and cadelle were heavily infesting a patent dairy feed according to one report.

The Angoumois grain moth (*Sitotroga cerealella* Oliv.) was more abundant than for many years in the southern half of the state, the most severe infestation occurring in the general vicinity of Vincennes where much of the corn in the field was infested before harvest. A report last winter from Decatur showed oats in the bin infested, the upper three or four inches showing a heavy infestation.

A great many reports were received from every section of the state, relative to bean weevils (especially *Mylabris obtectus* Say). It was apparently more abundant than for a number of years.

Buffalo beetle (*Anthrenus scrophulariae* L.) was reported from Anderson, Elkhart, Fort Wayne, Indianapolis, Logansport and Mishawaka.

Black carpet beetle (*Attagenus piceus* Oliv.) was destructive to clothing and carpet at Columbus, Elkhart, Fairbanks, Kendallville, Logansport, Oaktown and Walkerton.

Clothes moth (*Tinea pellionella* L.) damaged overstuffed furniture at Avon, Clinton and New Paris and woolen goods at Lafayette and Wolcottville.

Cigarette beetle (*Lasioderma serricorne* Fab.) reported as infesting furniture at Seymour.

Drug store beetles (*Sitodrepa panicea* L.) were reported breeding abundantly in a dog food and in dry mustard.

Silverfish (*Lepisma saccharina* L.) reported annoying and destructive at Bourbon, Elkhart, Kendallville, Kokomo, Lafayette, Marion, South Bend and Terre Haute. In one case they damaged curtains.

Termites (*Reticulitermes flavipes* Koll.) were reported as very destructive from every section of the state and were at least normally abundant. The first reports were received during April when winged sexual forms began to make their appearance. Aside from damage to buildings, these insects damaged geranium plants in one instance by tunnelling the stems and in another case tunnelled through stacks of stored printing paper causing a considerable loss.

Larvae of *Eburia quadrigeminata* were reported working in floors of a house at Parker in July.

Powder post beetles (*Lyctus* sp. and possibly others) have been destructive in all parts of the state, attacking old hickory furniture, timber in farm buildings and homes, lumber in commercial yards and implement handles.

A carpenter bee (*Xylocapa virginica* L., Sandhouse det.) was quite annoying tunnelling in wood of a log cabin at Lake Maxinkuckee.

ANNOYING AND MISCELLANEOUS PESTS

Bedbugs (*Cimex lectularius* L.) was reported as a household pest from many localities, probably more than usual. In one case at Huntingburg, they were pests in poultry houses.

Cockroaches (*Blattella germanica* L., *Blatta orientalis* L. and *Periplaneta americana* L.) were reported from many places in the state.

Clover mites (*Bryobia praetiosa* Koch) were annoying in a home at Pekin, April 15.

The usual number of inquiries were received regarding abundance of ants in homes and in lawns, every section of the state being represented.

Field crickets *(Gryllidae)* were annoying in basements at Hammond in August.

Mosquitoes were normally abundant in all sections of the state.

Fleas *(Ctenocephalus canis* Curt.) were normally abundant in homes and barns throughout the state.

Booklice *(Atropes* sp.) were irritating in bedding and elsewhere in a home at Evansville and Kouts during September.

Chiggers *(Trombicula irritans* Ril.) were abundant in lawns and elsewhere at various places, definite reports from Fishers, Lafayette and Richmond coming in during June and July.

Bloodworms *(Chironomidae)* were abundant in a well at Columbus in March.

Horse bot flies *(Gastrophilus,* probably *intestinalis* DeG.) were so annoying in parts of Tippecanoe County the first week in July that it was almost impossible to work horses.

Poultry feather mite (*Liponyssus* sp.) was abundant at Stilesville in May.

Poultry lice (*Mallophaga*) were common in some sections, but probably not as abundant as usual, judging from inquiries received.

Body lice were reported abundant on goats at Warsaw in January.

Hog lice *(Haematopinus suis* L.) was not reported frequently, although generally common throughout the state.