

# INSECTS OF INDIANA FOR 1935<sup>1</sup>

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Following a year of extreme drought and high temperature, 1935 was quite the opposite with high rainfall and low temperatures. The fall months of 1934 were provided with an abundance of precipitation, following the dry summer, which was favorable to such insects as Hessian fly but somewhat unfavorable to others, as the chinch bug. The winter was reasonably mild and not severe on overwintering insects normally affected by cold winters. The weather of the season beginning with spring activities of insects was favorable for many insects as the Hessian fly, European corn borer and armyworm, but unfavorable to certain other potential pests including the codling moth and chinch bug. The accompanying table (Table I) gives an idea of the weather of the year, which, if compared with a similar table for 1934 accompanying the insect record published in the last proceedings, shows clearly the contrast of the two years.

## Field Crop Insects

At the beginning of the season the chinch bug (*Blissus leucopterus* Say) was the anticipated outstanding insect problem of the year, as it had been the previous season. Throughout the northern two-thirds of the State bugs went into winter quarters in enormous numbers in spite of the unfavorable rainy weather. In the spring of 1935 they were still in very large numbers, ready to fly from their winter quarters to small grain fields. Due to the damp conditions when they entered winter hibernation, a large winter mortality resulted because of the prevalence of the white mold fungous disease. The disease and resulting mortality was especially notable in the tier of counties bordering Illinois, where the bugs hibernated in unbelievable numbers and necessarily under very crowded conditions, and perhaps also in an emaciated condition due to a scarcity of food the previous season. Throughout the spring and early summer months frequent rains increased the normal mortality by favoring the fungous disease and by its actual mechanical action. Furthermore, excessive grassy growths in grain stubble, due to wet weather, prevented bugs from migrating from the stubble, as is usual. As a result of all these abnormally unfavorable conditions for the chinch bug, serious damage was not general, although appreciable damage resulted in a few localities, particularly in Jasper and Pulaski counties in the northwestern part of the state, and in several east central counties. Surveys have not yet been made to determine the present extent and abundance of overwintering bugs, but from all observations the past fall they are expected to hibernate in destructive numbers in most sections of the area infested in 1934, with some exceptions, notably the tier of counties bordering Illinois.

<sup>1</sup>This contribution is a continuation of an annual summary begun in 1926, with the idea of placing on permanent record the more important economic insect problems of the year. The ultimate goal in recording the problems from year to year, together with the influence of weather and other controlling factors, is a basis for predicting insect abundance and scarcity. The writer expresses his appreciation of the following who have provided records: C. M. Packard, Philip Luginbill, E. V. Walter, L. F. Steiner, G. E. Marshall, J. E. Starkey, H. K. Rippey, H. W. Gilbert, G. A. Ficht, G. E. Gould, H. O. Deay, and B. E. Montgomery.

TABLE I. COMPARATIVE MONTHLY WEATHER DATA FOR INDIANA, 1935

Month		Temperature		Precipitation		Number of Days		
		State Mean °F	Departure from Normal °F	State Average Inches	Departure from Normal Inches	Clear	Partly Cloudy	Cloudy
1934	Normal	42.4		3.05		11	7	12
November	1934	46.6	+1.2	2.87	-0.18	10	8	12
December	Normal	32.3		2.88		9	7	15
1934	1934	29.9	-2.4	2.00	-0.88	7	6	18
1935	Normal	29.1		3.09		10	7	14
January	1935	31.2	+2.1	2.79	-0.30	10	7	14
February	Normal	30.5		2.41		9	7	12
1935	1935	33.6	+3.1	1.00	-1.41	7	6	15
March	Normal	40.6		3.76		10	8	13
1935	1935	48.0	+7.4	5.05	+1.29	8	9	14
April	Normal	51.8		3.49		11	9	10
1935	1935	49.6	-2.2	2.44	-1.05	9	7	14
May	Normal	62.1		4.06		12	10	9
1935	1935	57.9	-4.2	7.01	+2.95	10	8	13
June	Normal	71.5		3.83		14	10	6
1935	1935	68.2	-3.3	4.75	+0.92	10	11	9
July	Normal	75.6		3.35		16	10	5
1935	1935	78.0	+2.4	3.57	+0.22	15	11	5
August	Normal	73.3		3.38		15	10	6
1935	1935	75.2	+1.9	3.12	-0.26	14	12	5
September	Normal	67.2		3.40		15	8	7
1935	1935	66.4	-0.8	2.62	-0.78	20	5	5
October	Normal	54.8		2.72		15	7	9
1935	1935	55.8	+1.0	1.84	-0.88	14	8	9

An unprecedented outbreak of the Hessian fly (*Phytophaga destructor* Say) occurred this past spring throughout the state with the center of most severe infestation in the central and north central counties. In some localities wheat was killed outright, as in Boone County where perhaps one-third of the wheat fields were practically destroyed. This outbreak, the first serious outbreak for perhaps twelve years, may be attributed to favorable host conditions last fall. The hot, dry summer was responsible for the shattering of much grain. This, together with the sowing of wheat ahead of the recommended date, and accompanied by moisture which insured early sprouting of grain and maximum emergence of flies, produced ideal conditions for a heavy infestation of overwintering "flaxseeds". These produced an abnormally large emergence of flies this past spring, which were sufficient to provide a heavy infestation in all sown wheat, regardless of the time it was sowed in the fall of 1934. The accompanying map (Fig. 1) gives the results of a survey made this past summer under the direction of C. M. Packard, in charge of the U. S. Cereal and Forage Insect Laboratory at Lafayette. Due partly to unfavorable weather and partly to the warnings issued by the Purdue University Agricultural Experiment Station, most wheat was sown this past fall after the "fly free" date, and we anticipate a marked reduction in fly abundance as a result.

Armyworm moths (*Cirphis unipuncta* Haw.) were commonly observed at lights at Lafayette and elsewhere the latter part of April and

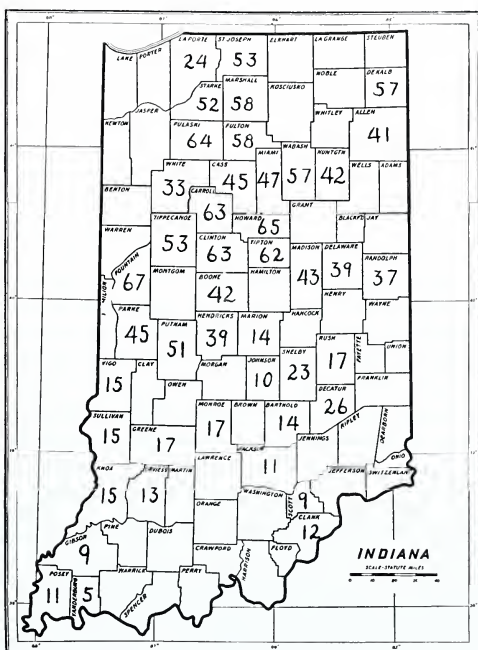


FIG. 1. Percentage of wheat stems infested, by counties, during summer of 1935, according to survey by the Bureau of Entomology and Plant Quarantine, U.S.D.A. State average for the 44 counties surveyed was 35.3 per cent.

throughout May, enabling us to predict armyworm outbreaks which later (during June) did occur in all sections of the state. In most cases the worms were attacking wheat heads, although in some cases they were damaging rye, timothy, and corn. The last report was received July 3, and all specimens sent in for identification showed a heavy tachinid parasitism.

European corn borer (*Pyrausta nubilalis* Hbn.), with favorable weather conditions for the first time in several years, made considerable headway in regaining the ground lost in 1934 because of exceptionally unfavorable conditions. The following figures, furnished by H. W. Gilbert, give a reliable index of borer increase in the northeastern region, where the species was first established in Indiana, and in a more recently infested county (Wayne). According to Fitch's observations, there appears to be a definite tendency for the one-generation borer to establish itself as a two-generation borer as it moves southward and that the borer population has increased at a greater rate distant from the region influenced by the Great Lakes. Even more than ever before, the potentiality of the corn borer as a destructive pest in the corn belt is emphasized by the observations of the past season (Table II).

TABLE II. PERCENTAGE OF HILLS PER ACRE INFESTED

County	1928	1929	1930	1931	1932	1933	1934	1935
Allen.....	.03	.31	.57	1.56	7.43	7.26	2.88	8.99
Dekalb.....	.06	.74	1.75	8.9	11.52	17.36	7.39	7.71
Steuben.....	.11	.67	3.31	11.01	14.34	13.39	2.14	7.15
Wayne.....					.969		.823	9.17

Corn seed maggot (*Hylemyia ciliatruva* Rond.) was reported very destructive to planted corn seed in Tippecanoe, Tipton, and LaPorte counties the first few days in June. All infestations, so far as known, were found in early planted corn which did not germinate promptly because of cool, wet weather.

Cutworms were reported abundant in a few isolated localities. In one instance, at Greenfield, May 21, they damaged sweet clover.

Sod webworms (*Crambus* spp.) were destructive to corn in central Indiana, and as far north as LaPorte County, the last two weeks in June. Later in the season (late July and early August) they were damaging golf greens in several localities in the northern half of the state.

The garden or alfalfa webworm (*Loxostege similalis* Gn.) was seriously damaging young alfalfa at New Paris and Goshen, August 8. Unauthentic reports indicate a rather general and scattered infestation in the northern counties of Indiana.

Corn earworm (*Heliothis obsoleta* Fab.) which was abnormally abundant and destructive to both corn and tomatoes in 1934, was only moderately abundant in sweet corn the past season and caused scarcely any damage to field corn and tomatoes.

Corn leaf aphid (*Aphis maidis* Fitch) was exceedingly abundant on corn, especially the tassels, during August, throughout central Indiana.

The aphids were apparently responsible for infections of soft rot which accompanied and followed aphid abundance.

Wheat midge (*Thecodiplosis mosellana* Geh.) was abundant in threshed wheat at Goshen, August 13.

Clover leaf weevil (*Phytonomus punctatus* Fab.) was damaging clover at Goshen, Decatur, Fort Wayne, and South Bend, all in the northern third of the state May 14-15. At the time all specimens submitted showed mold fungus infection, and, since the weather continued wet, no further trouble was anticipated, although on May 29, this insect was reported as destructive to sweet clover at South Whitley.

Clover seed chalcid (*Bruchophagus fovebris* How.) heavily infested clover seed received from a seed house at Goshen, the source of the seed undetermined. Adults began to emerge from this seed soon after it was received, June 20.

Common stalk borer (*Papaipema nitela* Gn.) was first reported from Campbellsburg on July 8, where it was damaging sweet corn. Full grown larvae were reported in corn from Marengo, August 8. These were the only reports received during the season, indicating a scarcity of the insect.

Springtails (Order Collembola) were reported as very destructive to 15 acres of alfalfa seedlings at Muncie, May 27. Details were not available.

### Vegetable Insects

Mexican bean beetle (*Epilachna corrupta* Muls.) was the major insect pest of garden crops during the past season and was more abundant than usual in all parts of the state. For the first time it was reported as very destructive in the extreme northwestern county (Lake) of the state. Reports of abundance were first received in June and continued throughout the season.

Colorado potato beetle (*Leptinotarsa decemlineata* Say) was reported abundant in several localities. At Vincennes, 30 acres of tomatoes were destroyed by the attacks of the adult beetles July 5.

Spotted cucumber beetle (*Diabrotica 12-punctata* Fab.) was common, beginning in June, in all parts of the state, especially the central area. They attacked a variety of garden crops. The larvae were common on corn roots, especially in the northern half of the state, and injury attributed by many to chinch bugs was evidently the work of these larvae.

Striped cucumber beetle (*Diabrotica vittata* Fab.) was very abundant in July and August throughout the state and was especially difficult to control because of frequent rains, requiring frequent insecticide applications.

Sweet potato beetles (*Metriona bicolor* Fab. and *Cassida bivittata* Say) damaged sweet potatoes at Connersville and Terre Haute the latter half of June.

Cabbage curculio (*Ceutorhynchus rapae* Gyll.) was apparently responsible for injury to cabbage at Nashville June 1. The insects themselves were not seen but the plants received were characteristically injured.

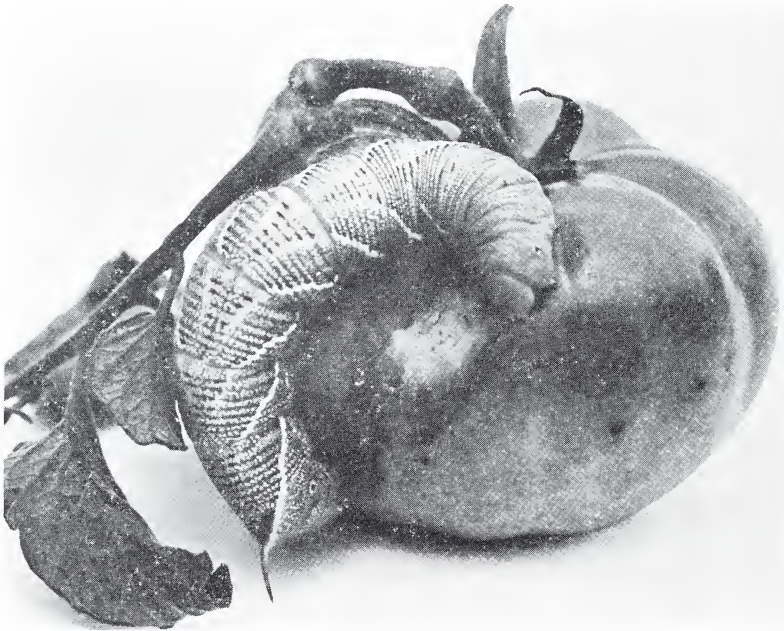


FIG. 2. Green tomato worms (*Protoparce quinquemaculata* and *P. sexta*) were unusually abundant in some regions, not only feeding on foliage, as is their normal habitat, but causing serious losses by eating into green fruits.

Rhubarb curculio (*Lixus concavus* Say) damaged rhubarb at Indianapolis and Lafayette the last of June.

Northern and southern tomato worms (*Protoparce quinquemaculata* Haw. and *P. sexta* Johan.) were very abundant in many tomato growing areas of Indiana, especially in weedy fields. In some fields near Lafayette, August 1, about 20 per cent of the green tomatoes were destroyed as a result of feeding on the fruits (Fig. 2).

Cabbage worms were unusually abundant in many sections of the state. The imported cabbage worm (*Pieris rapae* L.) was most abundant the last of July and early August. Shortly thereafter the cabbage looper (*Autographa brassicae* Ril.) became the predominant species in many localities.

To moth caterpillars (*Automeris io* Fab.) were reported doing "considerable damage to sweet corn" at Richmond, August 12.

Cabbage maggot (*Hylemyia brassicae* Bouché) reported damaging cabbage at Bourbon, July 16.

Squash vine borer (*Melittia satyriniformis* Hbn.) damaged squash at Lagrange, June 4.

Tarnished plant bug (*Lygus Pratensis* L.) was abundant and destructive to celery and potatoes in northern Indiana, beginning the last of June and continuing until the latter part of August. According to observations by Gould, weediness of fields and surroundings is largely, if not entirely, responsible for the heavy infestations.

Potato leafhopper (*Empoasca fabae* Harr.) was normally abundant and destructive to beans in many localities during June and July. Apparently it was less destructive than usual to potatoes.

Squash bug (*Anasa tristis* De G.) was destructive at Goshen, Elkhart, and Terre Haute, during July and early August, according to reports of correspondents.

Cabbage aphid (*Aphis brassicae* L.) was especially abundant during June at Crawfordsville and Marengo and elsewhere in the state. During September it was excessively abundant on cabbage and kale in several southern Indiana localities.

Melon aphid (*Aphis gossypii* Glov.) was generally common and destructive throughout the state attacking melons and cucumbers during July.

Red spider (*Tetranychus telarius* L.) was destructive to beans and corn at Cedar Grove, June 27.

### Fruit Insects

The codling moth (*Carpocapsa pomonella* L.) is still and probably will be for many years the major fruit insect problem, not only to the apple growers of Indiana, but to those of the entire United States. The abnormally high temperatures of March stimulated early development of the overwintering larvae, and pupae were found by Steiner at Elberfeld as early as March 27. At Vincennes and Orleans pupae were not uncommon April 11, and the first adults were taken in the packing house May 9, three days earlier than in 1934. At Vincennes the first moths were taken in the orchard May 8, four days later than in 1934. The first eggs did not hatch, however, until about May 30, much later than usual. The cool, wet weather, beginning in April and extending through May and June, appreciably checked the development of the first brood and was definitely unfavorable to this brood of worms, so much so, in fact, that growers secured excellent control of the first brood worms. Although the weather was unfavorable to the codling moth, the scarcity of first brood worms in the fruit cannot be attributed to that fact alone. There is every reason to believe that the growers placed greater emphasis on the first brood sprays, and in addition there was a more general use of oils to increase adhesiveness of the arsenates, which in itself materially aided in worm control. There was a noticeable increase in the codling moth population during the second brood but the better commercial growers completed the season with very good control of this pest.

Oriental fruit worm (*Grapholitha molesta* Busck) was unusually abundant and severe the past season, resulting in very heavy infestations in marketed peaches. Our records show that the first adults appeared in the packing house at Orleans, April 25, but emergence and egg laying were checked by cool weather. However, by the latter part of May twig injury was common in southern Indiana, at which time the worms were half grown or older. Thereafter weather conditions were favorable for the development and increase of the insects.

Climbing cutworms (species?) were reported damaging apple buds at Notre Dame, June 4.

Cecropia larvae (*Samia cecropia* L.) defoliated unsprayed two-year-old apple trees at Silver Lake the first of August. The yellow-necked

caterpillar (*Datana ministra* Dru.) defoliated unsprayed young apple trees at Marion August 26. Such occurrences are not unusual, which emphasizes the importance of occasionally spraying trees even before they start to bear.

The green June beetle (*Cotinis nitida* L.) was reported abundant in a number of localities in southern Indiana, and at Terre Haute, on July 23, they damaged nectarine fruits.

Japanese beetle (*Popillia japonica* Newm.) which was first taken in Indiana at Indianapolis last year, was again taken in somewhat greater numbers in the same city. No records of its occurrence in Indiana outside of Indianapolis were taken.

Cherry and pear slug (*Eriocampoides limacina* Retz.) skeletonized cherry and pear in a number of localities, being especially prevalent in the northern half of the state.

Each year we receive reports of abundance and damage by the common peach tree borer (*Aegeria exitiosa* Say), although such reports are isolated and usually not in commercial orchards. The paradichlorobenzene treatment is so completely satisfactory and has been so generally adopted by commercial orchardists, that by such growers the peach tree borer is no longer feared.

Shot hole borer (*Scolytus rugulosus* Ratz.) was reported very destructive to peach and cherry in several regions of the state.

Flat-headed borer (*Chrysobothris femoratus* Oliv.) was a serious pest of hard maple and apple in many localities throughout the state, more especially in the northern half. In fact, there is no doubt that it has been more severe than for many years. The severe heat and drought of 1934, resulting in more sun scald than usual, was probably an important factor. Gilbert writes that this borer has been a real problem to the nurserymen of northern Indiana, attacking especially apple.

San Jose scale (*Aspidiotus perniciosus* Comst.) appears to be on the increase in apple and peach orchards in all parts of the state but especially in northern Indiana. Although seasonal conditions in southern Indiana are more favorable to the increase of this scale, the notable increase in the northern part of the state may be attributed to lack of insecticide control in contrast to southern Indiana where thorough, dormant spraying is now recognized as essential to prevent increase and damage by this scale.

Although the 17-year cicada (*Cicada septendecim* L.) was supposed to appear in a few isolated regions the past season, only one report was received and that from near Crown Point in Lake County, June 13. In 1936 this insect will be prevalent throughout the state and presumably in large numbers.

Tentiform leaf-miner (*Lithocolletes malifoliella* Braun) which was abundant in southern Indiana about three years ago, is again building up to destructive numbers.

#### Small Fruit Insects

Strawberry leaf-roller (*Ancyliis comptana* Froh.) occurred in destructive abundance in all parts of the state and apparently was more abundant than normal.



Grape leaf-folder (*Desmia funeralis* Hbn.) was abundant at Mount Vernon, July 23, and Greenville, August 5. Marshall reports this species as bad as he has ever seen it in the vicinity of Orleans.

Grape leafhopper (*Erythroneura comes* Say) was abundant on grape at Jasper, August 14.

Grape berry moth (*Polychrosis viteana* Clem.) was fairly abundant in several sections.

Raspberry cane borer (*Oberca bimaculatus* Oliv.) was unusually abundant and destructive at Fort Wayne, August 28.

Dark-sided cutworms (*Euxoa messoria* Harr.) caused considerable damage in black raspberry plantings in northern Indiana.

Currant aphid (*Myzus ribis* L.) was abundant at Marion, May 21.

Boxelder bugs (*Leptocoris trivittatus* Say) were reported annoying in homes early in the season, indicating that it might again be a pest. However, during the season only very few reports were received, indicating that the species was breeding in much fewer numbers than usual. However, it was reported attacking raspberries at Howe, July 18, where it was sucking the fruits, an unusual injury according to our observations.

#### Shade Trees and Ornamental Shrubs

Bagworms (*Thyridopteryx ephemeraeformis* Haw.) were quite generally abundant and destructive to arbor vitae, hard maple, boxelder, and persimmon, not only throughout its usual distribution in the southern half of the state, but as far north as Delphi and Kokomo, the most northern occurrence in Indiana on record. At Lafayette the first hatched were observed July 12, at which time they were perhaps a week old.

Catalpa sphinx caterpillar (*Ceratomia catalpae* Boisd.) has been responsible for the defoliation of many catalpa groves from Lafayette south.

Yellow-striped oak caterpillar (*Anisota senatoria* A. and S.) was unusually abundant in Starke and Pulaski counties, where it defoliated the oaks, particularly pin oak. The first reports were received the last of August and continued until the end of September.

Walnut caterpillar (*Datana integerrima* G. and R.) defoliated walnut in many localities in central and northern Indiana early in July.

Fall webworm (*Hyphantria cunea* Dru.) has been unusually abundant throughout the state, elm and boxelder in particular being attacked.

European elm scale (*Gossyparia ulmi* L.) has been reported from a number of localities in the northern half of the state. From all records there is little doubt that this scale is becoming a very serious pest of our favorite shade tree in many localities.

Cottony maple scale (*Pulvinaria vitis* L.) is apparently returning as a pest of shade trees, particularly soft maple, reports of destructiveness the past season having been received from Elwood, Frankfort, and Lawrenceburg.

Oyster shell scale (*Lepidosaphes ulmi* L.) was normally abundant on lilac, ash, and other hosts in northern Indiana.

Pine leaf scale (*Chionaspis pinifoliae* Fitch) was very abundant on Koster blue spruce at Fort Wayne, July 19, and as common on spruce and pine in other localities.

Red spider (*Tetranychus telarius* L.) was very abundant on hard and soft maples, elms, and perennials throughout the state during August.

*Chalepus rubra* Web. was skeletonizing linden foliage at South Bend, August 24.

A lecanium scale (*Lecanium fletcheri* Cock.) was reported by Rippey as occurring on arbor vitae as far north as the Michigan line.

### Flower Garden Insects

Gladiolus thrips (*Taeniothrips gladioli* M. and S.) was perhaps the most generally destructive flower garden pest in the state during 1935. It is now widespread throughout the state, and many of the infestations have been traced to shipments of gladiolus corms from eastern growers. Referring to his observations in the northern half of Indiana, Gilbert writes to the effect that perhaps as many as half of the "backyard" plantings of gladioli are bothered with this pest. He adds, "I feel that this pest could be brought under satisfactory control by cooperative effort on the part of all gladiolus growers, particularly the amateurs and so-called backyard gardeners. Large commercial growers effect control satisfactorily in most cases. I have never found the pest in the fields of any of the large commercial growers except one and he took measures to eradicate the pest and none were found there this year."

The tarnished plant bug (*Lygus pratensis* L.) damaged gladiolus and dahlia flowers in several northern Indiana localities. Gilbert advises that blister beetles and cucumber beetles were also damaging dahlia flowers in northern Indiana.

Leafhoppers (species not identified) are becoming increasingly destructive to Boston ivy in central Indiana. They cause an early whitening and dropping of the foliage.

Negro bug (*Thyreocoris pulicarius* Ger.) was reported attacking Buddlia at Portland, June 18. Both nymphs and adults were submitted with the inquiry.

Four-lined plant bug (*Pocilocapsus lineatus* Fab.) attacked "flower garden plants" at South Bend, June 26, the specimens received being mature.

Nasturtium aphid (*Aphis rumicis* L.) was abundant on nasturtium at Indianapolis, July 30.

Iris borer (*Macronoctua onusta* Grt.) was observed damaging iris at Noblesville, July 6, and at Lafayette and Logansport early in August.

Stalk borer (*Papaipema nebris* Gn.) damaged dahlia at Gary, September 4.

Carrot beetles (*Ligyrus gibbosus* De G.) were reported from Goshen, June 26, and LaPorte, July 6, attacking the roots and underground stems of flower garden plants, sunflower and marigold being specifically mentioned.

### Household, Annoying, and Miscellaneous Pests

Termites (*Reticulitermes flavipes* Koll.) continue to be one of the major pests in Indiana. Day after day dozens of inquiries are received

about this insect which is almost certainly one of the ten most destructive and most widely distributed pests in the state.

Powder post beetles (*Lyctus* sp.) were frequently reported from many parts of the state as attacking joists of buildings and timbers of log cabins.

Bedbug (*Cimex lectularius* L.) was reported on numerous occasions and from many places. Several of the reports referred to heavy infestations in poultry houses.

Common cat or dog flea (*Ctenocephalus felis* Bouché) has been quite common throughout the state, judging from the frequent inquiries received. In one case a party reported in person relative to a flea infestation in Daviess County. The fleas caused welts the size of one's thumbnail, which literally covered his body. The species was identified as the human flea (*Pulex irritans* L.).

Punkies (*Culicoides gutteipennis* Coq.) were reported exceedingly annoying at LaPorte, May 16, the insects having first appeared this year early in May. The correspondent stated that the same insect was very annoying a year ago.

Chiggers (*Trombicula* sp.) were annoying in many regions during July, especially in the southern part of the state.

Oats bug (*Anaphothrips striatus* Osb.) was unusually abundant and annoying as a human pest during July. It was common throughout the state but seems to have been more conspicuous in central and northern Indiana.

Saddle-back caterpillar (*Sabine stimulae* Clem.) was reported during the last of August and early September as occurring on pear and corn and causing irritation by "blistering the skin." Several reports from widely separated regions of the state were received.

Hag moth (*Phobetron pithecium* A. and S.) was reported from Paoli, September 4, as occurring on apple. The report stated that one of the apple pickers was "rendered in a serious condition" from the poisonous hairs of the caterpillar.

Silverfish (*Lepisma saccharina* L.) were frequently reported as annoying and in some cases as attacking wall paper and labels.

Cockroaches (*Blattella germanica* L., *Blatta orientalis* L. and *Periplaneta americana* L.) have been the subject of many inquiries from every section of the state.

Clothes moth (*Tinea pellionella* L.), carpet beetle (*A'tagenus piceus* Oliv.) and buffalo beetle (*Anthrenus scrophulariae* L.) were the subject of constant inquiries. The larvae of the buffalo beetle, although doing little damage according to our observations, are the subject of frequent inquiries in the fall. In several instances the larvae of the carpet beetle were reported as infesting felt insulation between floors.

Cigarette beetle (*Lasioderma serricorne* Fab.) has been frequently reported as breeding in the "stuffing" of furniture, and the emerging beetles are reported as annoying.

Indian meal moth (*Plodia interpunctella* Hbn.) caused severe losses to dry cereal dog food at Richmond during August.

Ants of various species infesting homes and lawns were the subject of many inquiries.

House fly (*Musca domestica* L.) and mosquitoes (Culicidae) were

perhaps more abundant than for several seasons in most regions of the state.

The black widow or hour glass spider (*Latrodectes mactans* Fab.) was the subject of an unusual number of inquiries the past season, many specimens being received from many places south of Indianapolis. Rippey reports finding the species at Anderson, our northernmost record during the year. At Orleans, Merle Troth took over 220 from apple baskets which had remained in his orchard over night.

Horse flies (Tabanidae) were much more abundant at Orleans, according to Marshall.

Screw worm (*Cochliomyia macellaria* Fab.) caused considerable damage at Orleans, according to Marshall.

### Honeybee Situation

J. E. Starkey, State Apiary Inspector of Indiana, has furnished the following information regarding beekeeping conditions during the past year:

Bees generally wintered well. The usual losses due to lack of care in providing the necessary fundamental factors in colony condition were noted. Early spring weather conditions interfered with colony manipulation and proper care and prevented the bees from getting their due share of the nectar in the early flowers. Only the strongest colonies were valuable for pollination under these conditions. In spite of the cool, cloudy weather in May and June, the overwintered colonies continued to build up in excellent shape where the food chambers were well stocked with honey and pollen, but the great number of cool, cloudy days kept the bees inside their hives, leading to a congestion of the brood nest, which brought about the most serious epidemic of swarming experienced in a number of years. Where there was a shortage of stores or excessive swarming, the clover honey flow caught colonies on the down grade or too weak to harvest a complete crop.

The honey crop in the state is estimated to be only about 50 per cent of the normal. The drought of 1934 had killed or greatly reduced the clovers in many sections of the state, particularly in the western part. Due to soil or weather conditions, or to a combination of factors not well understood, sweet clover and other chief nectar bearing plants did not bear the usual amount of nectar even where there was an abundance of bloom in the pastures. The flow was short. Much of the honey stored by the bees was thin, and in many regions where any comb honey was produced, the excess moisture or wild yeast stored in combs caused a bursting of the cappings or a "weeping" condition which spoiled its appearance and market value. Early extracted honey had a tendency to ferment in the containers if not well ripened before extracting and if not sterilized as soon as extracted.

The fall flow was generally sufficient to insure ample winter stores to carry the bees over into the season of 1936. A good crop of surplus fall honey of excellent quality consisting of buckwheat, heartsease, Spanish needle, goldenrod, and other fall sources was reported from the northwest section of the state.

The amount of American foulbrood found by state inspectors during the season was somewhat reduced, or 6.6 per cent.