

SPIDERS AND INSECTS FOUND ASSOCIATED WITH SWEET CORN WITH NOTES ON THE FOOD AND HABITS OF SOME SPECIES*

I. ARACHNIDA AND COLEOPTERA

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During June, July and August, 1935, while engaged on some field work with the European Corn Borer Research at Toledo, Ohio, opportunity was presented to make a cursory collection of the spiders and insects found upon the corn plants, or upon the ground in the corn field.

The field in which the collections and observations were made was planted to sweet corn and contained approximately four acres. During the latter part of June, July and the early part of August, series of plants, scattered over the entire field, were examined daily. This factor contributes largely to the extensive and diverse numbers of species and makes the collections representative of the entire population.

The following list does not in anyway attempt to portray a complete picture of the Arthropod population of the corn field, but rather merely indicates the tremendous number of species present in a limited area during a limited season. However, the field where this collection was made can not be considered as a normal habitat, as it was part of the European Corn Borer Research Plots and of necessity was treated much differently than an ordinary field of sweet corn. In addition to the usual cultivation operations, the plants were subjected to almost constant disturbance, due to examinations for egg masses, tasselling and silking, and population dissections. Very few extraneous plants were present in the field as in addition to the horse cultivation, the plots were hoed several times, and any weeds found during the examinations of the corn plants were destroyed. Several other factors tended to operate in reducing the number of species collected in this particular case. The collections were made incidental to the routine work or after working hours and it was impossible to pursue specimens any

*The families under each order, the genera under each family, and the species of each genus are listed alphabetically. This facilitates the locating of any desired species by those unfamiliar with a phylogenetic arrangement.

distance. In addition bulky collecting equipment such as nets, boxes, etc., could not be carried. All specimens were taken either in small vials moistened with alcohol or in small cyanide bottles. Due to this fact many of the more delicate specimens were injured and could not be determined to species. Therefore it can be safely assumed that a collection made with proper equipment in a randomly selected corn field would yield far more species.

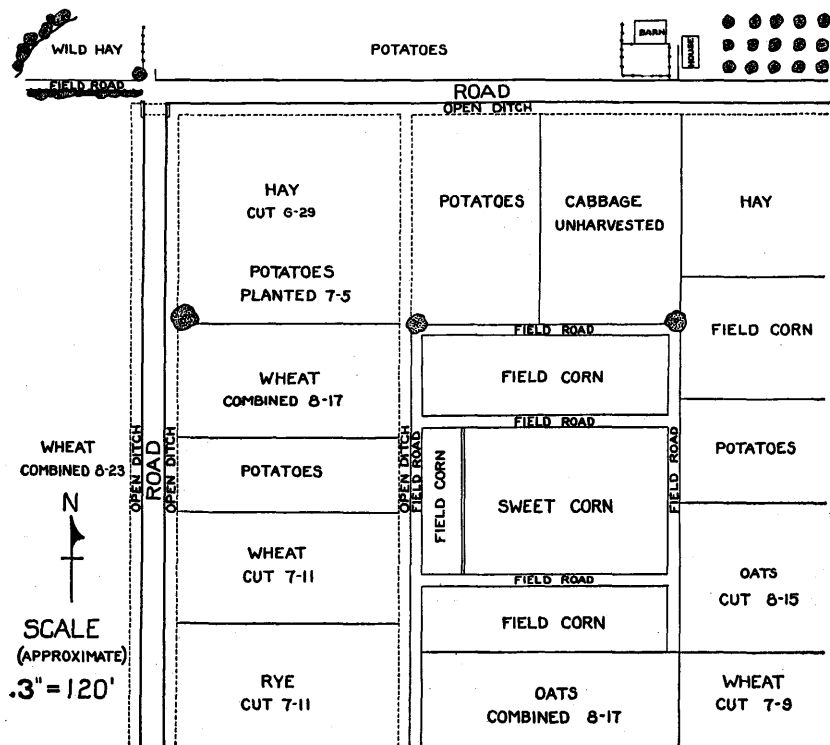


FIG. 1

This field of sweet corn was located just north of Maumee, Ohio, in Lucas County. The plots were surrounded by farmland of the intensive cultivation type, there being very few fence rows and little woodland. In the accompanying plan it will be noted that the only near place for hibernation and growth of extraneous plants were in the deep drainage ditches common to this section of Ohio. To the northwest of the field, approximately half a mile, was a small stream with rather heavily

wooded banks. Three oak trees grew within a few hundred yards of the field, and to the northeast of the field was a small apple orchard. Southwest of the field, approximately three hundred yards, was another older orchard and the farm buildings (see figure 1).

Extraneous plants found most commonly in the vicinity of the corn field were in the drainage ditch which ran along the west side of the field. The more common plants in this ditch were Canada Thistle (*Cirsium arvense* (L.)), dogbane or Indian Hemp (*Apocynum cannabinum* L.), smartweed (*Persicaria* sp.), wild lettuce (*Lactuca* sp.), burdock (*Arctium minus* Schk.), several species of mints (*Mentha* sp.), teasel (*Dipsacus sylvestris* Huds.), white sweet clover (*Melilotus alba* Desv.), and yellow sweet clover (*M. officinalis* (L.)), many species of grasses (*Poa* sp.), butterfly weed (*Asclepias tuberosa* L.), bindweed (*Convolvulus* sp.), alfalfa (*Medicago sativa* L.), sour grass (*Oxalis* sp.), blue elderberry (*Sambucus canadensis* L.), poison ivy (*Toxicodendron radicans* (L.)), hackberry (*Celtis occidentalis* L.), wild rose (*Rosa* sp.), wild grape (*Vitis* sp.), and willow (*Salix* sp.). These wild plants and cultivated plants in the surrounding fields may account for many of the casual visitants taken upon the corn. In the corn field itself, dogbane, milkweed (*Asclepias syriaca* L.), black nightshade (*Solanum nigrum* Nutt.), and smartweed were most common, especially in the roadways of the plots in the late summer.

Assistance is hereby acknowledged to Mr. Morris Schlosberg and Mr. Ralph Mathes for specimens and some observations, and to Mrs. Laura W. Everly for mounting and labeling the specimens, for aid in the determinations of the Carabidae and for assistance with the manuscript. Particular thanks are due to Mr. C. F. W. Muesebeck of the Bureau of Entomology and Plant Quarantine for granting the facilities of his staff of specialists in the determinations of the bulk of the species. Credit for determinations are given under the respective families.

ARACHNIDA

The Arachnida are perhaps more representative of the population found in the cornfield than the insects as means of escaping capture were more limited. The jumping spiders and the crab spiders were abundant throughout the season. During the latter part of August the web spinning spiders were most

numerous, particularly *Tetragnatha laboriosa* Htz. The irregular webs of this species were to be found on practically every corn plant and individuals were commonly observed mating in the webs. The following list gives the species taken. Determinations were made by Professor W. M. Barrows.

Agelenidae

Agelena sp.? (young)—Taken July 31.

Argiopidae

Aranea sp.? (young)—Two specimens taken July 8 and 9.

Aranea (see *Epeira*).

Argiope aurantia Lucas—Taken August 7.

Epeira or *Aranea thaddeus* Hentz (young)—Taken July 11.

Eustala anastera (McCook)—Male taken July 15.

Mangora gibberosa Hentz—Two females, one male and a young specimen taken July 17 to August 9.

Metargiope trifasciata Forskal—Two females taken August 9 to 15.

Neoscona arabesca Walckenaer—Female taken July 30.

Neoscona pratensis (Hentz)—Male taken August 7. This is the first record for this species in the state.

Tetragnatha laboriosa Hentz—First specimens taken July 8. Common during August. One specimen taken as the prey of a young *Phidippus* sp. (Family Attidae) taken July 31.

Clubionidae

Castianeira descripta Hentz—Two females taken on July 28.

Clubionidae sp.—Two specimens taken July 25 and August 1, which could be determined only to family.

Attidae

Attidae sp.—Four immature specimens taken July 18 to August 3.

Derridyphrantes capitatus Em.—Three males taken July 17 to August 5.

Icius sp.—One specimen taken July 18, too poorly preserved for determination.

Phidippus sp.—Two young specimens taken July 31 and August 1.

(See Family *Argiopidae*, *Tetragnatha laboriosa* Hentz.)

Phidippus insolens Hentz—Four males taken July 21 to August 2.

Phidippus sp.—Maybe *multiformis* of McCook female taken July 23.

Dictynidae

Dictyna sp.—One female specimen taken late in August.

Dictyna longispina Em.—One male and one female taken on July 10.

Linyphiidae

Bathyphantes sp.?—Close to *albomaculatus* Bks. taken July 9.

Ceraticelus formosus Banks—One male taken July 10.

Lycosidae

Lycosidae sp.—Immature specimen taken July 10.

Lycosa erratica Hentz—Female taken under corn debris on ground July 6.

Theridiidae

Theridium differens Em.—One male taken July 18.

Thomisidae

Coriarachne versicolor Keyserling—Female taken July 8.

Misumena sp.—Two young specimens taken July 11 and August 1.

Misumessus sp.—Probably *asperatus* Hentz young, taken August 7.

Tibellus oblongus (Walck.)—Taken July 24.

Thanatus sp.—Probably *lycosides* Em. young, taken August 5.

Thomisidae sp.—Too young for determination, taken August 5.

Xysticus sp.—Two immature specimens taken August 2 and 5.

INSECTA

COLEOPTERA

Anthicidae

This family occurred in fairly abundant numbers both on the corn plants and under corn debris about the field. Determinations were made by Mr. J. N. Knull and Mr. H. S. Barber.

Anthicus cervinus Laf.—Three specimens taken June 25, July 18, and August 2.

Anthicus (*Lappus*) *obscurus* Laf.—One specimen taken July 9.

Anthicus sp.—One specimen taken July 25.

Lappus (see *Anthicus*).

Notoxus anchora Hentz—Three specimens taken June 24 to 28.

Notoxus monodon Fab.—Five specimens taken June 26 to July 14.

Cantharidae

This family was not so abundant as some of the others. Determinations were made by Mr. H. S. Barber.

Cantharis carolina F.—One specimen taken July 13.

Cantharis sp. (immature)—One specimen taken July 15.

Podabris tomentosus Say—Very common in the field and upon the corn plants. Three specimens taken July 5 to 11.

Silis latilobus Blatch.—One female taken late August.

Carabidae

The family of Ground beetles was very abundant both on the plants as well as on the surface of the ground about the plants. Many were taken under corn and weed debris on the ground. Determinations were made by Mrs. L. W. Everly and R. T. Everly. Professor W. C. Stehr reviewed the Harpalini and his corrections are incorporated herein.

Abacidus sculptilis (Lec.)—One specimen taken June 24 under debris.

Agonoderus comma Fab.—Eleven specimens taken June 26 to August 2.

This species was abundant throughout the field, usually occurring under debris.

Amara fallax Lec.—One specimen taken June 27.

Amara polita Lec.—One specimen taken July 5 under debris.

Anadaptus baltimorensis (Say)—One specimen taken July 25.

Anisotarsus terminatus (Say)—Twenty-two specimens taken June 27 to July 28.

This species was quite common under debris of weeds and corn about the edge of the field.

Anisotarsus sayi Blatch.—Two specimens taken July 5.

Bemidion constrictum Lec.—Four specimens taken August 5 to 14 under debris where ground was moist.

Bembidion quadrimaculatum L.—Forty-nine specimens taken June 24 to late August.

This species was abundant throughout the season, especially after rains when the ground was still moist. Also taken on moist soil under corn and weed debris.

Blechrus glabratus Duft.—Forty-five specimens taken June 24 to August 9.

Very abundant throughout the field about the base of the plants and under moist debris. This genus was the most abundant of the Carabidae observed in the field.

Blechrus pusio Lec.—Fifty-nine specimens taken June 24 to August 14 in the same habitat as *B. glabratus*.

Bradytus exarata (Dej.)—Two specimens taken June 27, 28.

Bradytus apricarius (Payk.)—Two specimens taken July 5, under debris.

Casnonia pennsylvanica L.—Four specimens taken August 5 to late August. Not abundant, occurring under debris.

Chlaenius tomentosus Say—One specimen taken August 5, crawling on the roadway of the plot.

Clivina bipustulata Fab.—Two specimens taken August 7 and 12.

This species occurred under debris. One individual was very light colored.

Clivina ferrea Lec.—Four specimens taken June 29 to August 5. Agrees with key and description but much lighter in coloration. Found under debris in association with *Clivina impressifrons*.

Clivina impressifrons Lec.—Twelve specimens taken June 27 to August 7. Very common under debris when ground was slightly moist.

Curtonotus pennsylvanicus (Hayw.)—One specimen taken June 28.

Eumolops furtiva (Lec.)—Three specimens taken June 27 to late August under debris.

Galerita janus Fabr.—One specimen taken August 2.

Harpalus caliginosus Fab.—Six specimens taken July 8 to August 7.

This species was quite abundant under debris in the field. Generally found in burrows about three to three and one-half inches deep, at an angle of approximately 45 degrees to the surface of the soil. Two of the above specimens were much smaller but agreed with the descriptions in other respects.

Harpalus compar Lec.—Two specimens taken June 25 to July 5 under debris.

Harpalus erraticus Say—One specimen taken June 28.

Harpalus herbivagus Say—Six specimens taken June 27 to late August. Quite variable in size and for the most part taken under moist debris.

Harpalus pennsylvanicus DeG.—Nine specimens taken July 5 to August 5. Quite common under debris.

Harpalus longicollis Lec.—One specimen taken August 5 under debris.

Harpalus erythropus Dej.—Twelve specimens taken June 25 to July 19. Common under debris.

Harpalus viridiaeneus Beauv.—Three specimens taken June 27 to late August, under weed and corn debris.

Lebia bivittata Fab.—Nine specimens taken June 25 to late August.

This species generally occurred on the ground at the base of the plants or under moist debris. Several specimens were observed upon the leaves of the corn plants.

Lebia scalpularis Dej.—Eleven specimens taken June 26 to August 2. Generally found under debris or around base of corn plants.

Lebia viridis Say—One specimen, bright blue in color, taken on leaf of corn plant.

Poecilus chalcites Say—Twenty-four specimens taken June 25 to August 5, very abundant under debris and running on surface of ground.

Poecilus lucublandus Say—One specimen taken July 30, under debris.

Platynus placidus Say—Fourteen specimens taken August 1 to late August. Found under moist debris, generally after rains.

Scarites substriatus Hald.—One specimen taken August 5.

Scarites subterraneus Fab.—One specimen taken June 28.

Both of the above species occurred fairly common throughout the season under moist debris.

Stenolophus conjunctus Say—One specimen taken July 5 under debris.

Stenolophus humidus Ham.—One specimen, a female taken, June 28, under debris.

This specimen had been placed as a *conjunctus*, but Professor Stehr called my attention to the fact that the scutellar striae were practically obsolete and the striation of the elytra is very different from *conjunctus*.

Tachys incurvus Say—Twenty-seven specimens taken June 25 to August 5. Very common on moist soil after rains and under moist weeds and corn debris. One pair taken mating on August 5.

Tetragonoderus fasciatus Hald.—One hundred forty-one specimens taken June 24 to August 7. A very abundant species.

This species was observed not only under debris but actively running over the surface of the soil among the plants. One specimen was observed feeding upon the leaves of black nightshade *Solanum nigrum* Nutt., on July 22. This specimen, while under observation, ate a small circular hole through the leaf. The light sandy soil of the field undoubtedly accounts for the abundance of the species, as previously *T. fasciatus* has been taken only in sandy locations.

Tachistodes partarius (Say)—Two specimens taken under debris on June 28.

Triplectrus rusticus (Say)—Thirteen specimens taken June 27 to August 12, quite common in field under debris.

Cerambycidae

This family was abundant upon the milkweed which grew in the cornfield late in the summer. Determinations were made by Mr. W. S. Fisher.

Parandra brunnea Fabr.—One specimen taken under corn debris upon the ground August 7.

Tetraopes tetrophthalmus (Forst.)—This species was common upon milkweed in the field. Frequently seen upon the corn plants. Two specimens taken July 14 and 21.

Chrysomelidae

One of the most abundant families in the field. Determinations were made by Mr. J. N. Knull, and Mr. H. S. Barber.

Altica sp.—One specimen taken July 30.

Chaetocnema denticulata (Ill.)—One specimen taken July 23.

Chaetocnema pulicaria Melsh.—Fairly abundant upon the corn plants. Fifteen specimens taken July 9 to August 7.

Chaetocnema sp.—Three specimens taken July 18.

Chrysomela interrupta Auct.—Two specimens taken July 5 to 8.

Chrysomela obsoleta scriptoides Schaeff.—One specimen taken July 5.

Chrysopus auratus Fab.—Three specimens taken July 6 to 8. One specimen was very dark and with a bluish cast to elytra, probably immature. This species was very abundant upon dogbane growing in isolated spots among the corn plants. Specimens were frequently observed upon the corn leaves although never feeding.

Cryptocephalus quadruplex Newm.—One specimen taken July 5.

Diabrotica duodecimpunctata (F.)—Four specimens taken July 8 to August 7.

This species was very abundant. On July 7 an adult was observed feeding upon the anthers of wild rose, growing along the drainage ditch. On July 24 an adult specimen was seen feeding upon the new silk of an ear of sweet corn. It had evidently cut through about one-third of the silks when observed.

Diabrotica longicornis (Say)—This species was not nearly as abundant as the above and occurred much later in the season. Three specimens taken August 2 to late August.

Disonycha triangularis (Say)—This species was very abundant on black nightshade. Taken quite frequently on corn leaves. Three specimens taken July 9 to 13.

Epitrix cucumeris Harris—This species was very abundant upon the corn plants. Two specimens taken July 28 to 30.

Gastroidea polygona (L.)—One specimen taken July 18.

Glyptina abbreviata Gentn.?—Three specimens taken July 11 to 19.

Lema lecontei Clark?—Very abundant upon black nightshade growing in roadways of plots. Specimens taken upon corn leaves of plants adjoining areas of nightshade. Pair taken mating on August 5. Taken July 24 to August 3. (Six specimens.)

- Lema trilineata* Oliv.?—One specimen taken July 22. A larva of this species, determined by Dr. A. G. Boving, was taken as the prey of a nymph of *Perillus bioculatus* (Fab.) (*Hemiptera-Pentatomidae*), on August 22.
- Leptinotarsa decemlineata* (Say)—Taken August 5. Probably a casual visitant from the adjoining potato fields.
- Orthaltica copalina* (F.)—One specimen taken July 15.
- Paria* sp.—Three specimens taken July 5 to 22.
- Phyllobrotica decorata* Say—One specimen taken June 27.
- Phyllobrotica discoides* Fab.—One specimen taken June 25.
- Phyllotreta* sp.—Six specimens taken July 9 to 15, common upon corn plants.
- Psylliodes* sp.—Two specimens taken July 10 to 17.
- Systema blanda* (Melsh.)?—Six specimens taken July 9 to 14.
- Systema frontalis* (F.)—One specimen taken July 31.

Cicindellidae

Determinations were made by Mr. E. S. Thomas. Although very abundant in late July, only one species of this family was taken. This was *Cicindela punctulata* Oliv. Five specimens were captured from August 5 to August 31. One was observed to capture and devour a small Carabid beetle, probably *Tachys incurvus* Say, which were abundant in the field, especially after rains and on the moist soil under plant debris. One specimen was observed resting upon a corn leaf.

Coccinellidae

This family was probably the most important group of predators in the field and undoubtedly played an underestimated part not only in the reduction of the numbers of corn borer larvae but other insects as well. Approximately eighty to ninety per cent of the corn plants harbored at least one individual of this group, while as many as six specimens were observed upon one plant. The following specimens were determined by Professor W. C. Stehr.

- Adalia bipunctata* (L.)—One specimen taken July 9.
- Brachyacantha ursina* (Fab.)—Two specimens taken July 5 and 24.
- Ceratomegilla fuscilabris* (Muls.)—This species was very abundant in June and again about the middle of August. On July 14 specimens were observed feeding upon corn pollen which had fallen and collected in the base of the leaves. On July 29 a specimen was taken preying upon *Trigonotilus ruficornis* (Geoffroy) (*Hemiptera-Miridae*.) On July 21, when the corn plants were manually infested with corn borer eggs, on wax papers, ready to hatch, on fifteen plants examined, one-half hour later, six specimens of this species were observed eating the eggs from the papers. To reach these papers the beetles had to climb or drop to the papers, as these papers were attached to the corn plants upon ordinary dress-makers pins. Numerous specimens were observed parasitized, (estimate about .5%). From two of these parasitized specimens *Dinocampus coccinellae* (Schrank) (*Hymenoptera-Braconidae*) were reared, one on August 7 and the other in late August. It was interesting

to note, that when forcibly separated from the cocoon of the parasite, these parasitized individuals were capable of considerable activity, although none could be induced to feed.

Chilocerus bivulnerus Muls.—One specimen taken July 5.

Coccinella novem-notata Hbst.—This species was fairly abundant about July 5, taken from June 26 to July 21.

Coccinella trifasciata L.—Two specimens taken July 12 and late August.

Cycloneda munda (Say)—Taken from July 5 to 26, not common.

Hippodamia convergens (Guer.)—Taken June 25 to August 5, most common July 5.

This species was observed feeding upon corn pollen which had collected in the base of the corn leaves. This species was not so commonly parasitized as *Ceratomegilla fuscilabris* (Muls.). *Dinocampus coccinellae* (Schränk), was reared from a specimen collected on a corn leaf in late August.

Hippodamia parenthesis (Say)—Taken July 9 to 30, common.

This species was not so commonly parasitized. *Dinocampus coccinellae* was reared from a specimen collected on a corn leaf on July 19.

Hippodamia parenthesis tridens Kby.—One specimen taken July 18.

Hippodamia tredecim-punctata (L.)—This species was very abundant and predominated in the field in late July. Taken July 11 to late August. None were found parasitized, nor were they observed to feed.

Hyperaspis binotata (Say)—One specimen taken July 25.

Hyperaspis undulata (Say)—One specimen taken July 31.

Cryptophagidae

This family was represented by two species in rather abundant numbers. Determinations were made by Mr. W. S. Fisher.

Anchicera ephippiata Zimm.—Twenty-four specimens taken August 1 to late August.

Anchicera ochracea Zimm.?—Six specimens taken August 1.

Anchicera sp.—One specimen taken August 1.

Cucujidae

This family is represented by only one species which occurred abundantly beneath corn debris on the ground. Specimens were determined by Mr. J. N. Knull.

Telephanus velox Hald.—Thirteen specimens taken August 1 to 5.

Curculionidae

This family occurred in rather abundant numbers upon the corn leaves, although none were observed feeding upon the corn. Determinations were made by Mr. L. L. Buchanan.

Amalus haemorrhous Hbst.—One specimen taken July 18.

Centrinapsis perscitus Hbst.—Two specimens taken July 13, 17.

Baris (near *subsimilis* Csy.)—One specimen taken July 8.

Ceutorhynchus neglectus Blatch.—One specimen taken July 18.

Cryptorhynchus lapathi L.—One specimen taken August 13.

Hypera punctata Fab.—Five specimens taken July 17 to August 7.

Odontocorhynchus sp.—One specimen taken July 8.

Rhinoncus pyrrophopus Boh.—Seven specimens taken July 11 to August 5.

Sitona hispidula Fab.—One specimen taken August 12.

Smicronyx sp.—One specimen taken July 15.

Elateridae

Species of this family were very abundant both on the corn plants and under debris on the ground. Determinations were made by Mr. J. M. Knull and Mr. W. S. Fisher.

Aeolus amabilis (Lec.)—Six specimens taken July 25 to August 1. Common about base of corn plants.

Aeolus elegans Fab.—Eleven specimens taken June 26 to 28, very common under debris and sheaths of leaves at base of plants.

Conoderes auritus Hbst.—Four specimens taken June 24 to 29 in same habitat as the above species.

Conoderes vespertinus (Fab.)—One specimen taken July 28.

Hypnoidius obliquatululus Melsh.—Twenty specimens taken June 27 to August 1, very abundant under corn and weed debris.

Hypnoidius pectoralis Say—Seventy-two specimens taken June 27 to August 7, same habitat as above species.

Limonius quercinus (Say)—One specimen taken July 5 on corn leaf.

Histeridae

The species of this family were found under debris on the ground. Determinations were made by Mr. J. N. Knull and Mr. H. S. Barber.

Hister abbreviatus F.—Two specimens were collected on August 3 and 5.

Hister americanus Payk.—Three specimens taken August 1 to 7.

Phelister subrotundatus (Say)—Four specimens taken June 27 to August 5.

Hydrophilidae

Determinations were made by Mr. L. L. Buchanan.

Sphaeridium scaraboides L.—One specimen found under corn debris on the ground on July 17.

Tropisternus glaber Hbst.—One specimen taken July 21, lying on back on ground between the corn rows.

Lampyridae

Determinations were made by Mr. H. S. Barber.

Photinus pyralis (L.)—Two specimens taken July 13 and August 13.

Lathriidae

Determinations were made by Mr. W. S. Fisher.

Melanophthalmus cavicolis Mann.—Five specimens taken July 15 to August 1, very abundant under corn debris.

Melasidae

Determination was made by Mr. W. S. Fisher.

Deltometopus amoenicornis (Say)—One specimen taken on corn leaf on August 9.

Meloidae

Determinations were made by Mr. H. S. Barber.

Epicauta pennsylvanica DeG.—Three specimens taken in late August.

This species was quite numerous in late August feeding upon the corn pollen.

Macrobasis unicolor (Kby.)—One specimen taken July 18.

Melyridae

Determinations were made by Mr. J. N. Knull.

Collops quadrimaculatus Fab.—Eleven specimens taken June 27 to

August 3, very abundant upon the corn plants.

Mordellidae

Determined by Mr. H. S. Barber.

Mordella sp.—One specimen taken July 5.

Mycetophagidae

Determined by Mr. W. S. Fisher.

Typhaea stercorea Linn.—One specimen taken August 5.

Mylabridae

Determinations were made by Mr. H. S. Barber.

Chirida guttata Oliv.—One specimen taken July 9.

Chelymorpha cassidea (F.)—One specimen taken August 5.

Metriona bivittata (F.)—One specimen taken July 8.

Microrhopala vittata (F.)—One specimen taken August 2.

Nitulidae

Determinations were made by Mr. E. A. Chapin.

Glischrochilus quadrisignatus Say—Ten specimens taken July 14 to August 7.

One specimen taken on July 25 was feeding upon a larva of the European Corn Borer, *Pyrausta nubilalis* Hbn. The larva was still partly in a tunnel near a smut lesion when the specimen was collected.

Phalacridae

Species of this family were very abundant upon tassels and leaves of corn plants evidencing smut infection. Determinations were made by Mr. W. S. Fisher.

Phalacrus politus Melsh.—Very abundant, eighteen specimens taken July 9 to August 13.

Stilbus apicalis (Melsh.)—Five specimens taken July 13 to August 3, not quite as abundant as the above species.

Platystomidae

Determinations were made by Mr. L. L. Buchanan.

Brachytarsus sticticus Boh.—Nine specimens taken July 5 to August 7.

Scarabaeidae

Determinations were made by Mr. E. A. Chapin.

Anomala nigropicta Cst.—One specimen taken July 24.

Ataenius cognatus Lec.—Four specimens taken August 2 to 5 under debris on the ground.

Canthon pilularius L.—Pair taken July 13 shaping a ball of horse manure dropped during cultivation of the corn on July 10–11.

Ligyris gibbosus DeG.—Taken July 19, very abundant just under the surface of the soil under corn and weed debris.

Staphylinidae

Determinations were made by Mr. E. A. Chapin. All of the specimens except as noted, were collected under corn and weed debris upon the ground.

Atheta sp.—Three specimens taken July 15 to 28, on the corn leaves.

Barydoma sp.—One specimen taken July 28.

Coproporus sp.—One specimen taken on corn plant on August 5.

Leptolinus rubripennis Lec.—Taken on August 5, one specimen.

Mycetoporus sp.—Two specimens taken July 15 and August 1.

Philonthus sp.—Three specimens taken July 28 to August 8.

Tenebrionidae

Determined by Mr. E. A. Chapin.

Blapstinus metallicus Fab.—One specimen taken July 9.
