

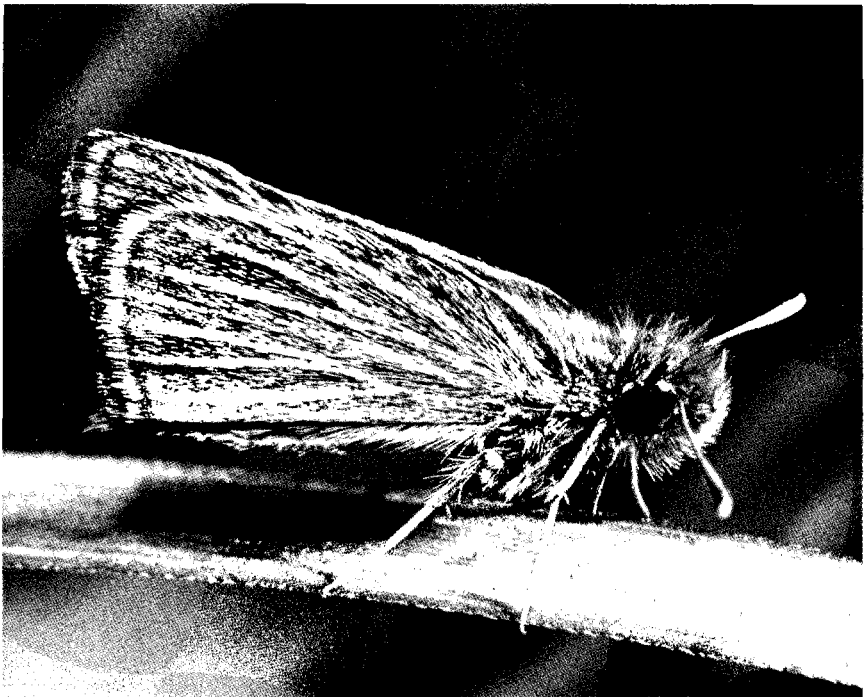
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COVER ILLUSTRATION

A male *Oarisma powesheik* (Lepidoptera: Hesperidae) in a typical rest position.

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EASTERN RANGE EXTENSION FOR *OARISMA POWESHEIK* PARKER (LEPIDOPTERA: HESPERIIDAE)

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According to Klotz (1951), the range of *Oarisma powesheik* Parker (Figs. 1, 2) extends from Montana east to Iowa, Wisconsin, Northern Illinois, and Michigan. The first Michigan record was in Kent County made in 1893 by Wolcott who found it at Lamberton Lake. Later *powesheik* was collected by Newcomb in 1930, McAlpine in 1937 and 1963, Nielsen (1970) in 1963 and 1964, and Warczynski in 1968 at the same area. It was also taken at nearby Button Lake which flows into Lamberton Lake. In his list of Michigan Butterflies, Moore (1960) gave the flight period as July 9-12, although, on the basis of present knowledge, 4-20 might be more accurate.

Oarisma powesheik has been considered rare in Michigan and limited to the Lamberton Lake Area which is now completely urbanized by the City of Grand Rapids. The continued persistence of the skipper in the small remaining undisturbed habitat in this area is doubtful as no specimens were located there either in 1969, 1970, or 1971.

Fortunately, I am able to report additional localities which are of interest because they represent range extensions considerably to the east of Lamberton Lake.

On July 5, 1970 I discovered a Michigan colony in Rose Township, Oakland County—105 miles east of Lamberton Lake. On July 15, the same year, Mogens C. Nielsen found an additional colony in Hartland Township, Livingston County, which is ten miles southwest of the Oakland County location.

When I first found the Oakland County colony, I was engaged in photography of various plants. I noticed skippers, but thought they were *Thymelicus lineola* (Ochsenheimer) as I had never seen live *powesheik* before, and, after all, I was over 100 miles east of the only known Michigan colony of that species. However, it soon became apparent that I was mistaken, for a close look and a bare-hands capture of a specimen revealed that the skippers were actually *powesheik*. I returned to my car for a net and subsequently captured eight immaculate males.

Unless resting, *Oarisma powesheik* was either feeding on flowers or making short flights from one blade of grass to another. The preferred flower was a Pale-spike Lobelia, *Lobelia spicata*, with occasional specimens on the flowers of Black-eyed Susan, *Rudbeckia hirta*. Other flowers in bloom at the time, but evidently not visited, were the Common Milkweed, *Asclepias syriaca*; Butterflyweed, *Asclepias tuberosa*; Colicroot, *Alettris farinosa*; and Common Elderberry, *Sambucus canadensis*.

The flight, in general, was slow and easily followed as the skippers skimmed over the grasses. Not very wary, they could usually be approached to within two feet. While in a resting or feeding position, the wings were always closed.

Observations on July 5 were made during the period, 3 to 5 PM. The day was perfect, a clear blue sky, temperature in the low 80s, fahrenheit, and the wind was gusting to ten miles per hour. Other butterflies observed in the same area were *Speyeria cybele*, *Phyciodes tharos*, *Boloria selene myrina*, *Harkenclenus titus*, *Lethe eurydice*, and *Lycæna dorcas*.

On July 6, I arrived in the late afternoon and observed the area from 6 to 8:45 PM. The activity of the skipper was similar to that of July 5. As the sun dropped into the horizon, *powesheik* became less interested in flowers and seems more prone to make more short flights above the grasses. After sunset, the skipper was found resting among the tops of grasses and other vegetation.

On July 8 and 12 the weather was generally poor. An afternoon shower and cool temperatures on the 8th reduced activity to short flights and rare flower visits. On July 12 wet and cloudy weather with low temperatures during the same period resulted in similar reduced activity. The first female was observed on July 12. Observations were made between 5 and 7 PM.



Fig. 1. A male *Oarisma powesheik* in a typical rest position.

On July 18 overcast skies prevailed after some sun earlier in the day. Individuals were noticeably worn and had an average flight speed much greater than previously seen. A few females were observed visiting flowers although only one was witnessed actually to oviposit. She flew slowly among the grasses and alighted on a single blade of Spike-Rush, *Eleocharis elliptica*. After a few seconds a single egg was deposited. The female then flew to a nearby Black-eyed Susan flower and remained there for five minutes before darting out of sight. No other active females were seen during one hour of observation from 11 AM to 12 Noon. Other Spike-Rushes in the immediate surroundings of the deposited eggs were examined and identical appearing eggs were located.

When I returned once again to the locality on July 31, no specimens of *powesheik* were seen.

The same Oakland County site was visited the following year on July 7 and 20, 1971. The activity of *powesheik* was similar to that of 1970 except for an approximately one week earlier flight period and a greater interest in flowers. In fact, every flower species in the area had at least one specimen visiting it, in contrast to 1970 when *Lobelia spicata* was the preferred blossom.

On July 7, 1971, I twice witnessed ova being deposited on an unidentified sedge in the same manner as observed July 18, 1970. Unfortunately circumstances again did not allow study of the larva.

Of prime interest in 1971 was the discovery of three additional colonies, two and seven miles southeast of the original Oakland County site and one and one-half miles south of the Livingston County site. All known Michigan localities for *powesheik* (Kent,

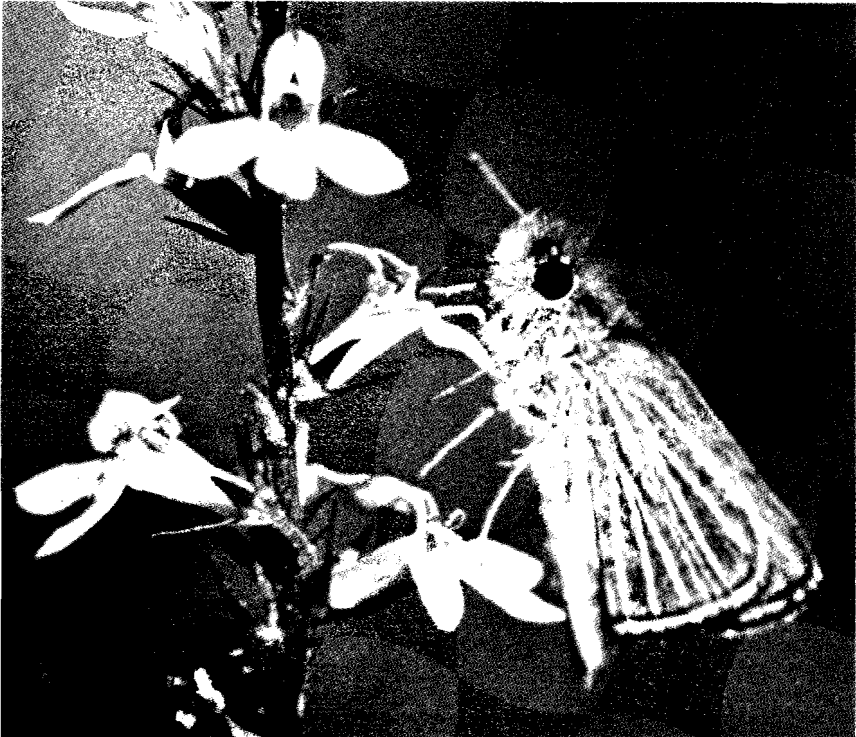


Fig. 2. A male *Oarisma powesheik* feeding on *Lobelia spicata*.

Livingston, and Oakland) are similar in that they are wet, marshy meadows with such dominant plants as Shrubby Cinquefoil, *Potentilla fruticosa*; Black-eyed Susan, *Rudbeckia hirta*; and Red Osier, *Cornus stolonifera*. A number of characteristic grasses, sedges, and rushes are present, giving the habitat the appearance of a wet prairie. *Powesheik* seemed to be restricted to this type of habitat as no specimens were found outside any particular flight area.

Five colonies of *O. powesheik* are now known in Eastern Michigan. Continued search may increase the number. An important question is how safe are these sites from urbanization? It is fortunate that the first Oakland County site is one of 26 nature sanctuaries across Michigan owned by the Michigan Nature Association. The other sites are less likely to remain inviolate as housing developments are very close because of the proximity of Detroit. Will the fate of these colonies be the same as at Lambertson Lake?

ACKNOWLEDGEMENT

I wish to thank Dr. Warren H. Wagner, Jr., Department of Botany, University of Michigan for identification of the plants and for assistance in preparation of the paper.

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NOTES ON THE BROWN WIDOW SPIDER, *LATRODECTUS GEOMETRICUS* (ARANEAE: THERIDIIDAE) IN BRAZIL

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Three species of the cosmopolitan genus *Latrodectus* were reported by Bücherl (1964) as occurring in Brazil: *L. mactans mactans* (Fabricius) from Recife, Pernambuco and from Pôrto Alegre, Rio Grande do Sul; *L. curacaviensis* (Müller) from the beaches of Guanabara and Bahia; and *L. geometricus* C. L. Koch from the city of Pôrto Alegre, Rio Grande do Sul and from the states of Minas Gerais, Bahia and Rio de Janeiro. Levi (1959) cited records of *L. geometricus* from the states of Paraíba, Pernambuco, Minas Gerais and Rio de Janeiro. In the United States *L. geometricus* has been reported as an introduced species from both Hawaii (Levi, 1967) and Florida (Levi and Levi, 1968). The present paper contains observations on *L. geometricus* in the state of Espírito Santo and in the city of Manaus, Amazonas, Brazil in 1969 and 1970.

MORPHOLOGY AND COLORATION

The brown widow males are about half as long as females and the sexes differ in body shape. The abdomen of males is elongate whereas that of females is globose.

In contrast to most other species of *Latrodectus*, color patterns of juvenile *L. geometricus* do not differ from the adult patterns. Adult males, although appearing solid black from afar, have the basic color patterns typical of the females. Four atypical males, one from a beach and three from yard walls, had feminine shapes and coloration.

In both sexes the brown carapace is bordered with a dark band and has a dark stripe down the entire midline. The sternum is brown and is bordered with a dark band.

The tarsus of the pedipalps in both sexes is darker (brown) than the proximal segments.

The legs are brown to tan with dark brown bands at the joints. The dark bands are distal on the femur, patella, tibia and metatarsus and also proximal on the patella.

Abdominal background coloration varies. It is white, tan, brown, reddish-brown or aqua in females and is black, brownish-black or white (rarely) in males. The three midline spots on the abdominal dorsum vary from simple white spots with black, line-borders to multicolored bull's-eyes. Bull's-eye colors include orange, tan, white, yellow, reddish-brown, aqua and gray. The single open-ended posterior spot is similar to the bull's-eye spots. Some females also have dark lines extending posteriorly and/or anteriorly from the midline.

Between each lateral abdominal stripe is an orange island. There is a black spot between the origin of each lateral stripe.

A ventral abdominal hourglass is complete on all ages and sexes of the brown widow spider. Generally, the hourglass is orange and has a thick and complete yellow border. The hourglass of juveniles is lighter in color compared to those of adults.

HABITATS

Latrodectus geometricus was observed in two habitats—on ocean beaches and around buildings.

With few exceptions the brown widow spiders collected on the beaches¹ were found in webs on runner plants, *Ipomoea biloba*, which were abundant from the high tide mark

¹Praia do Jucu, Praia da Costa, Praia do Camburi; all are in the vicinity of Vitória, Espírito Santo.

to a kilometer or more inland. The spiders were collected in a 20 meter wide strip of beach between the high tide mark and a road. *Ipomoea biloba* was the predominant vegetative form in this strip.

Most female brown widow spiders were collected from their resting area which was a sturdy pup tent-like web in the natural fold of an *I. biloba* leaf (Fig. 1). Irregular, tangled webbing extended up to about 30 cm from the tent area. Some lines extended about 80 cm between plants or between portions of the same plant. Rarely, webbing extended to the ground.

Most males were taken from webs that were occupied by females. The one exception was a lone male found on an exposed leaf of an isolated *I. biloba* runner. The spider was removed from a tight-fitting, open-ended, cylindrical web casing which was fastened along the leaf axis.

Invertebrate species (number in parentheses) observed on the beaches include spiders (9), flies (2), lepidoptera (3), "bumble bees" (2), "honey bees" (1), wasps (2), ants (3), orthoptera (2), coleoptera (2), aphids (1), homoptera (1) and crabs (1). The only potential vertebrate predators of *L. geometricus* observed on the beaches were one or two species of gray lizards (the smaller one, perhaps juveniles of the larger, had a pink tail ventrally).

L. geometricus was observed around buildings in Manaus, Amazonas and in three locations² in the vicinity of Vitória, Espírito Santo.



Fig.1 A *Latrodectus geometricus* female hangs inverted in her web in an *Ipomoea biloba* plant growing on an ocean beach.

²a) CALiR (Centro de Aperfeiçoamento do Lider Rural): located south of Vitória on highway BR-101 near the Viana-Cariacica border. b) Sta. Cecília: yard of a private home on Rua Sta. Lucia located several km east of downtown Vitória. c) Bento Ferreira: Rua Afonso Sarlo located about 100 m from the harbor channel and about 3 km east of downtown Vitória.

The single specimen observed in Manaus was found in a minute, irregular, tangled web under the overhang of a step in front of the Matriz Church. This was an adult female with dark, wine-red abdominal background coloration.

At CALiR numerous light brown females with egg cases were seen in webs on the east wall of the building. At the foot of this wall was a small frog-rearing pool which was illuminated at night to attract insects. A cursory examination of the other walls failed to reveal additional specimens.

In Sta. Cecília one large, light-brown female was collected from her web which was located about 60 cm from the ground in the northeast corner of a cement yard fence. The yard was about 70 m in altitude and was about 5 km west and 2 km north of the nearest seashores. Two tiny, unidentified spiders were found in close association with the outer surface of the web.

The remainder of the specimens were collected in Bento Ferreira. Several specimens were taken from small webs in tiny plants along the street curb. The webs were noticed only because of litter caught in the short lines fastened to the curb. Many others were taken from skimpy webs on a 1.8 m high brick wall and a 1 m high rough, cement wall. The resting area of the webs was usually located in deep and shallow holes in the brick wall and along the right angles of both walls. Single to multiple web lines extended up to about 1 m from the holes. Several males were taken from the angles of the rough cement wall. They were not associated with webs or females. Most of the specimens from Bento Ferreira were taken along the foundation of a building. The foundation was 3 m long and had a 5 cm overhang about 30 cm from the cemented ground. Large, dense, irregular, tangled webs were located in corners at each end of the foundation. Smaller webs were seen under the overhang. All sizes of females were present and most had white background coloration. Several atypical males (with white, globose abdomens) were taken along the overhang as well as were typical males (with dark, elongate abdomens). At this site there was an abundance of green-brown lizards and some geckos. These were the only potential vertebrate predators of the spiders observed at this site.

BEHAVIOR

The beach dwelling females usually hung inverted in the tent area of their webs. The tent webbing was very tough and tight woven and it did not have a rear exit. The spiders appeared to be non-aggressive. When disturbed the usual reaction of the female was to retreat to the depth of the tent and retract her legs. Further provocation caused the spider to flee, usually to just under the tent leaf surface. If provoked further she would flee deep into the plant or on occasion would drop to the ground and retract her legs which resulted in excellent camouflage (both on the beaches and on cemented surfaces). As a last alternative she would flee along the ground seeking shelter or would reclimb plants or webs. The spiders were equally agile on the ground, in the plants and on the webs. Some females refused to leave the tent area and clung so tightly to the web that they were either dismembered or the webbing was stripped from the leaf. The females on walls usually retreated to their holes, to the depth of their webs or they dropped to the ground. One female made an outward leap of about 25 cm from a wall to escape. Males rarely tried to escape by dropping to the ground. They usually fled along the webbing or along the walls. Perhaps the sexual difference in coloration influenced this behavior.

On the beaches males were found in the tent area of webs occupied by females as well as in the peripheral, tangled webbing. Two males per web was not uncommon and three males were found in the web of one female. Males often lacked one to several legs, especially when there was more than one per web.

White, tufted, spherical egg cases were often found in the tent areas. Three egg cases were found with one female. Old empty egg cases, found in various portions of the web, were often encased in a dried leaf, presumably a former tent area. Only once was an egg case observed near the ground. It was found with a large female under an old board beneath a plant in an area of regrowth. The beach had been cleared by burning several months earlier.

Several webs were frequently encountered in close apposition but most were a meter or more apart.

Females were not observed capturing or consuming prey. Remnants of prey found in and around webs included small click beetles, "saúva" ants, a caterpillar and ichneumonid wasps.

DISCUSSION

The *L. geometricus* on the beaches were capable of fantastic repopulation. One beach (Camburi) had been totally cleared by burning and was devoid of spiders except for five specimens of other species found near the periphery of the burn zone. Three months later this beach was well covered with the usual plants and *L. geometricus* was there in abundance, almost equal to the preburn level as judged by ease of collection.

It was intriguing why *L. geometricus* on the beaches was found only in the *I. biloba* plants. There was plenty of driftwood, coconut shells, paper and other debris to provide cover and burrows. However, a near relative, *Steatoda ancorata* (Holmberg), was frequently observed in this debris type habitat as well as under sand level leaves of plants occupied by *L. geometricus*.

Webs were easily located from a distance since the tent area was generally well exposed. Less exposed webs were detected by observing reflected sunlight from solitary web runners. Initially a lepidopteran nursery web was mistaken from afar as a *L. geometricus* tent. The lepidopteran web was closed and loosely woven in contrast to the tightly woven, open-ended spider tents.

In contrast to other widow spiders, *L. geometricus* has a tufted egg case. Only one non-tufted case was seen and it appeared to be under construction. Twice, other objects on the beaches were mistaken for the egg case. One was a small clover-like flower head of a low-growing plant. The second was a plant burr which had many long, sharp spikes. Perhaps this was valuable mimicry since a lizard would hesitate to eat an egg case if it had prior experience with a burr.

ACKNOWLEDGEMENT

Thanks are extended to Dr. Richard J. Sauer of the Entomology Department at Michigan State University, East Lansing, Michigan for confirmation of spider identification and aid in preparation of this paper.

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**THE NEUROPTERA—SUBORDER PLANIPENNIA OF WISCONSIN
PART III—MANTISPIDAE, ASCALAPHIDAE,
MYRMELEONTIDAE AND CONIOPTERYGIDAE**

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This part concludes the Neuroptera—Suborder Planipennia of Wisconsin. In Parts I and II (Throne 1971a, b) no keys to the species were included because satisfactory keys were readily available. However, keys are included in Part III either because satisfactory keys are not available or because simpler keys than those available prove adequate for the few Wisconsin species. Whenever possible I have used macroscopic structural characters. In order to separate two species of Coniopterygidae I found it necessary to use male genitalic characters. I have made free use of the keys of Dr. Martin Meinander (1972) in constructing the key for the genera and species of Wisconsin dustywings.

With the exception of the Coniopterygidae which have been ably documented by Dr. Meinander, I am able to find but few recent distribution records for the species of the families here considered.

Family MANTISPIDAE

This family is represented in the Wisconsin fauna by two genera *Climaciella* and *Mantispa*. Because of their mantis-like appearance and actions they are variously called mantisflies, mantispas or false rear-horses. They are relatively rare in Wisconsin although at times, in restricted areas, they may be rather numerous.

I have 42 specimens and have examined 85 from the University of Wisconsin at Madison, and six from the Public Museum at Milwaukee. Of these 133 specimens 47% are males and 53% females. Twenty percent were collected during June, 61% in July, 15% in August and 4% in September. All of my Wisconsin specimens were taken by sweeping but I have frequently taken them in light traps in Kentucky.

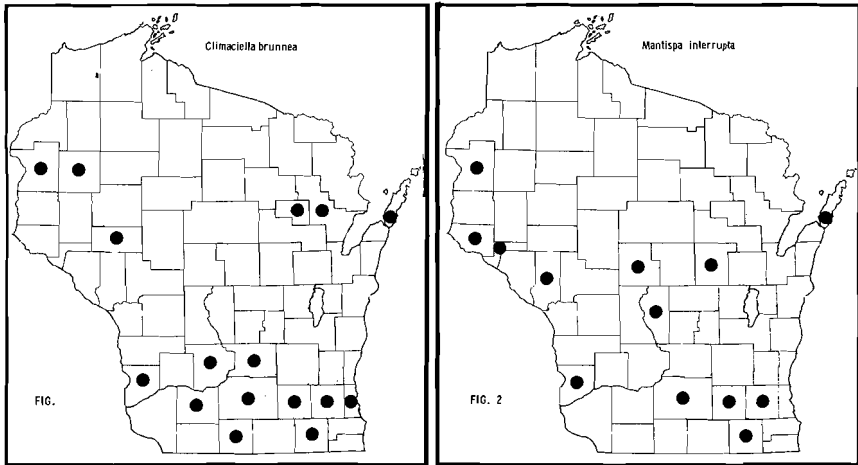
KEY TO THE SPECIES OF WISCONSIN MANTISPIDAE

1. Anterior portion of wings widely infuscated with brown or brownish-black *Climaciella brunnea*
- 1': Anterior portion of wings not widely infuscated 2
2. Color green or yellowish, wings unmarked *Mantispa viridis*
- 2': Color brown or blackish with some wing markings 3
3. Only the costal or subcostal areas of wings brown or blackish *M. uhleri*
- 3': In addition to the brown or blackish costal or subcostal areas, a brownish spot at the apex of wings and one or two below the radius *M. interrupta*

Genus CLIMACIELLA Enderlein

brunnea (Say). (Fig. 1). June 19 to August 26. This is the most abundant Wisconsin mantispid and the one most widely distributed. Hagen (1861) lists it from Florida, Georgia, Pennsylvania, Illinois, Washington, Mexico and Central America; Brimley (1938) from North Carolina; Froeschner (1947) from Missouri; Smith (1925) from Kansas; Banks (1904) from New Mexico; Montgomery and Trippel (1933) from Indiana and Wheeler (1889) from Nebraska. Banks (1911) records the species from Washington, Nevada and Colorado and Parfin (1952) from Minnesota under the designation *C. brunnea* var. *occidentis* Banks.

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I have seen 73 Wisconsin specimens most of which were taken on oak and pine in sandy areas.

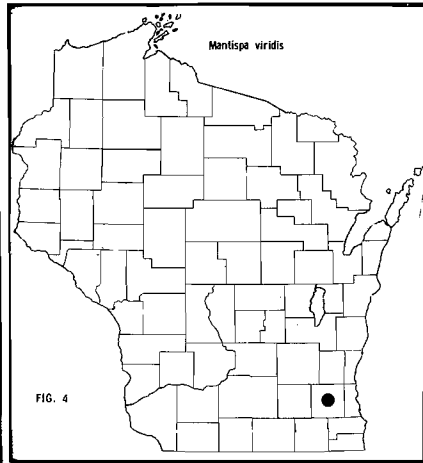
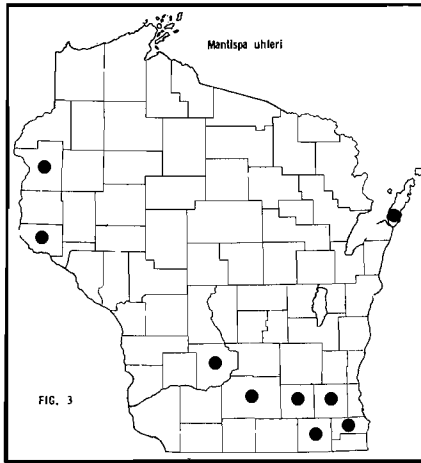
Genus MANTISPA Illiger

interrupta Say. (Fig. 2). June 13 to September 3. I have examined 46 Wisconsin specimens. *Interrupta* occurs mainly in the eastern half of the United States although it has been recorded from New Mexico (Banks, 1904). I have specimens from Texas and Arizona. Smith (1925) says it is very rare in Kansas. Bailey (1948) reports the species from as far north as Massachusetts in the east and Parfin (1952) from Minnesota in the west. Banks (1907) says it is found in the southern states. I have specimens from Florida and Kentucky.

This species has been swept from *Quercus* spp., *Juniperus virginiana* L. and *Pinus strobus* L.

About noon on June 22, 1967 I caught two females on oak in Waukesha County. One was approximately two centimeters long and the other about two-thirds as large. I put them in a jar 4 x 9 cm covered with nylon netting and both were still alive at 11:30 PM. When I looked at them about 8:00 AM the next day the abdomen and part of the thorax of the smaller one had been eaten by the larger one. I kept the remaining individual well supplied with a variety of living food. Stoneflies, mayflies and large tree-hoppers were completely disregarded and attempts to capture small beetles failed because she could not hold on to them. A gall wasp from a large oak leaf gall was repeatedly caught but the hard smooth body always slipped from her grasp. Several small moths were seized but the only individual she was able to eat was a soft bodied one that had just emerged from the pupa. Her favorite foods were spiders and Diptera of which she relished house flies, blue-bottle flies and a species of small Syrphidae. In all cases with the Diptera, the head was eaten first, then the thorax and lastly the abdomen; the legs and wings being discarded. With the spiders she bit into the abdomen and ate the inside contents rejecting all the rest. She lived nearly a month after being caught, dying July 20 without laying any eggs.

uhleri Banks. (Fig. 3). July 13 to September 10. The only records I can find of this species are from Pennsylvania, Illinois and Wisconsin cited by Banks (1943). I have examined 13 specimens from nine Wisconsin counties. I am inclined to believe that some of the specimens collected in the more northern states and recorded as *M. sayi* Banks will upon closer examination prove to be *uhleri*.



viridis Walker. (Fig. 4). July. This is a southern species. Banks (1907) lists it from Texas and Parfin (1958) from Virginia. I have specimens taken in Florida. Dr. Ludwig Pauly, Professor of Zoology at the University of Wisconsin, Milwaukee caught a male *viridis* in Waukesha County in July 1967. Although it is an easily identified species, I sent it to Dr. Oliver S. Flint, Jr. of the Smithsonian Institution for conformation and he verified my identification. Whether it is indigenous to Wisconsin and very rare or an accidental introduction I do not know.

Family ASCALAPHIDAE

The ascalaphids, or owlflies as they are sometimes called because of the nocturnal habits of some species, are largely found in the southern and southwestern states. They are conspicuous insects and readily come to lights. To my knowledge only three specimens have ever been collected in Wisconsin so they may not be indigenous to the state. The specimens are in the collection of the University of Wisconsin at Madison. The labels bear no collector's name. Years ago in conversation with Professor Charles Fluke at the University, he told me he had caught several ascalaphids in the apple orchards at Gays Mills, Crawford County. Thus I assume that the Wisconsin specimens are those collected by Professor Fluke.

KEY TO THE WISCONSIN SPECIES OF ASCALAPHIDAE

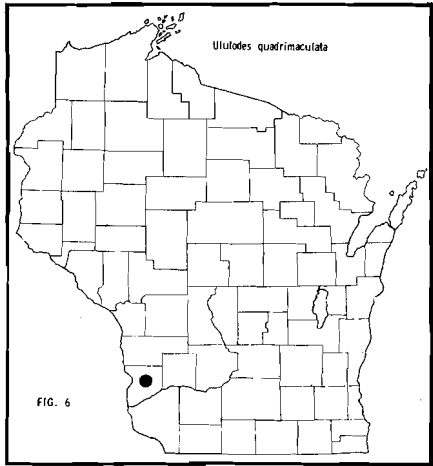
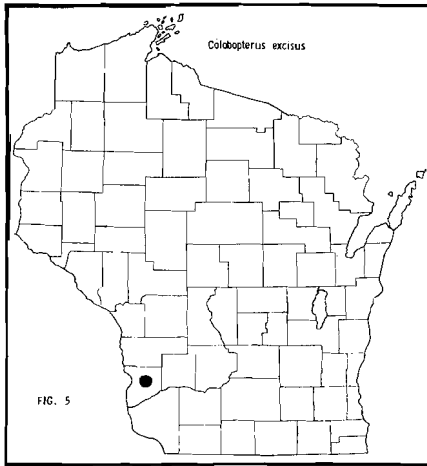
- 1. Posterior margin of hind wing sharply and deeply emarginate at the base *Colobopterus excisus*
- 1'. Posterior margin of hind wing not sharply and deeply emarginate but gently sloping to the base *Ululodes quadrimaculata*

Genus COLOBOPTERUS Rambur

excisus Hagen. (Fig. 5). Two specimens both caught at Gays Mills, Crawford County, one in 1939 and the other in 1940.

Genus ULULODES Currie

quadrimaculata (Say). (Fig. 6). One specimen taken at Gays Mills, Crawford County in 1939.



The published records indicate that the states nearest Wisconsin from which these two species have been reported are Indiana (Montgomery and Trippel, 1933) and Missouri (Froeschner, 1947).

Family MYRMELEONTIDAE

The so-called ant-lions or doodle-bugs of Wisconsin are represented by four genera: *Cryptoleon*, *Dendroleon*, *Hesperoleon* and *Myrmeleon*. The larvae of all species catch their prey in pits which they dig, generally in sand. In Ozark County, Missouri, May 14, 1971, I found numerous pits of *Myrmeleon immaculatus* in dry sawdust used as a mulch for a rose hedge. In Wisconsin the pits are usually found in sand protected from rain by overhanging sandstone ledges, buildings or dense pine cover. All species come to light traps but they also may be collected by sweeping vegetation in areas containing pits. The best time to sweep is at early dusk when they are easily disturbed and can be seen when they fly.

I have 114 Wisconsin specimens and have examined 48 from the University of Wisconsin at Madison and 25 from the Public Museum at Milwaukee, a total of 187 specimens. Of these specimens 62% are males and 38% females. Six percent were collected in May, 13% in June, 45% in July, 34% in August and 2% in September.

KEY TO THE WISCONSIN SPECIES OF MYRMELEONTIDAE

- 1. Both wings with conspicuous black or brownish-black circular spots or bars *Dendroleon obsoletum*
- 1: No conspicuous black or brownish-black spots or bars in wings 2
- 2. Tibial spurs not present 3
- 2: Tibial spurs present 4
- 3. Numerous costal cross-veins connected; sides of pronotum predominately black *Cryptoleon nebulosum*
- 3: Few if any costal cross-veins connected; sides of pronotum predominately yellow *C. signatum*
- 4. Tibial spurs slightly curved, equal in length to 2 to 2-1/2 basal segments of tarsus; pronotum with one pair of dorso-lateral brown bands, rest of pronotum yellowish *Hesperoleon abdominalis*
- 4: Tibial spurs nearly straight, equal in length to the basal segment of tarsus; pronotum without definite stripes or bands, uniformly grayish with a pair of indefinite, yellowish spots anteriorly *Myrmeleon immaculatus*

Genus MYRMELEON Linnaeus

immaculatus DeGeer. (Fig. 7). May 12 to September 16. This is the most widely distributed species of ant-lion in Wisconsin and also in North America. It has been recorded from New Hampshire to Florida in the east, Washington to California in the west, and from many states in between as well as in British Columbia (Banks, 1927). Banks (1901) reports it from Mexico and Green (1955) from Ontario.

Genus HESPEROLEON Banks

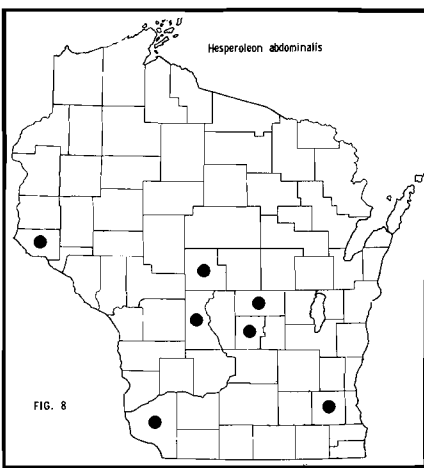
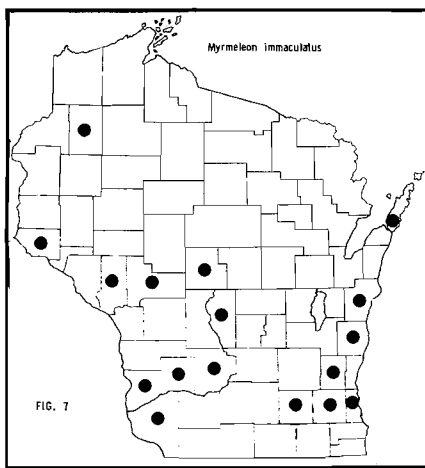
abdominalis (Say). (Fig. 8). June 23 to August 9. This species occurs all over the United States in favorable habitats for it has been reported by numerous authors from Massachusetts to Florida to California and Washington and many interior states. Banks (1927) records it from Manitoba and Ontario.

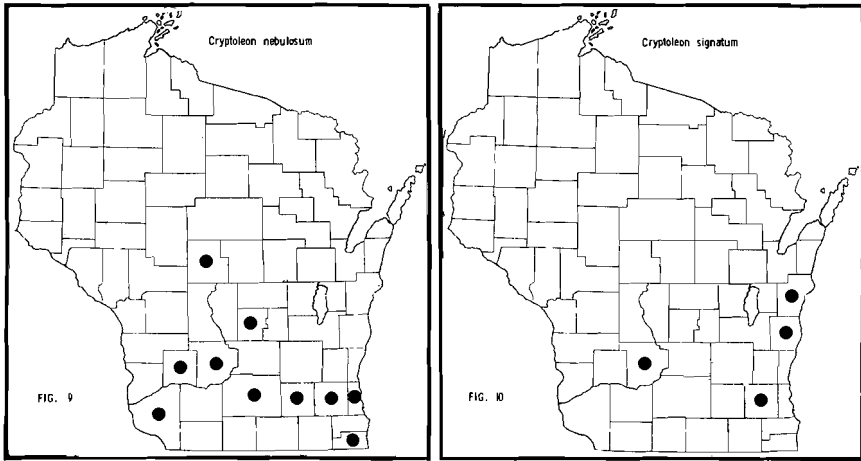
Genus CRYPTOLEON Banks

nebulosum (Olivier). (Fig. 9). May 31 to September 2. Wisconsin collections indicate that of the two species of *Cryptoleon* found in the state, *nebulosum* has a wider distribution in Wisconsin than *signatum*, as is also true for their distribution in the United States. Banks (1927) lists it from New Jersey, North Carolina, Georgia, Florida, Ohio, Michigan, Wisconsin and Ontario; Hagen (1861) records it as *Myrmeleon nebulosum* from New York; Smith (1934) from Kansas and Parfin (1952) from Minnesota.

signatum (Hagen). (Fig. 10). June 26 to August 21. This species apparently has a rather restricted distribution. Banks (1927) records it from Michigan, Illinois, Ohio, New York and Rhode Island; Smith (1925) from Kansas and Parfin (1952) from Minnesota.

While collecting at night in the sand dunes of Sheboygan and Manitowoc Counties using a gasoline lantern, I noted that specimens of *signatum* would come to the light for only a few minutes after I placed the light in a particular area. If I moved the light a hundred or so feet, again they came but for only a few minutes. I repeated the procedure several times with the same result. I concluded that the ant-lions were attracted to the light of the lantern from only a short distance. Thus it was profitable to keep moving the light from place to place throughout the dune area.





Genus DENDROLEON Brauer

obsoletum Say. (Fig. 11). May 12 to September 16. This is undoubtedly the rarest species of ant-lion in Wisconsin. I have collected only four specimens, all in one location, and there are only three specimens at the University at Madison and none at the Milwaukee Public Museum. It is distributed throughout the eastern portion of the United States. Banks (1927) lists it from New Hampshire, Massachusetts, Connecticut, New York, Maryland, Virginia, North Carolina, Florida, Illinois and Michigan. Smith (1925) says it is quite plentiful in Kansas. Froeschner (1947) records it from Missouri; Montgomery and Trippel (1933) from Indiana; and Hagen (1861) from Alabama. I have collected it commonly in Kentucky.

This is Wisconsin's most conspicuously marked ant-lion with the large black wing spots. However, if one is caught which has very recently emerged from the pupa the black spots, though present, are very faint and will not darken if the specimen is killed while in the light condition.

Family CONIOPTERYGIDAE

The dustywings are covered with a whitish, powdery, waxy secretion which gives them both their common and family names. They are the smallest of all the Neuroptera averaging 3 mm long with a wingspread of from 4 to 6 mm. I have found few Wisconsin specimens in the collections I examined. There are three at the University of Wisconsin at Madison. I have 256 specimens. Of these 259 specimens 6% were collected in May, 16% in June, 44% in July, 29% in August and 5% in September. Four genera are found in the state: *Coniopteryx*, *Conwentzia*, *Helicoconis* and *Semidalis*. I have collected dustywings on *Acer rubrum* L., *A. saccharum* Marsh., *Carya ovata* (Mill.) K. Koch, *Fraxinus* sp., *Juniperus virginiana* L., *Picea glauca* (Moench) Voss, *Pinus* spp. and *Quercus* spp. Sex and collecting data are given in Table 1.

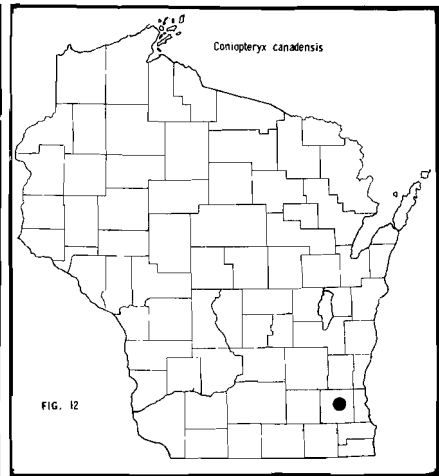
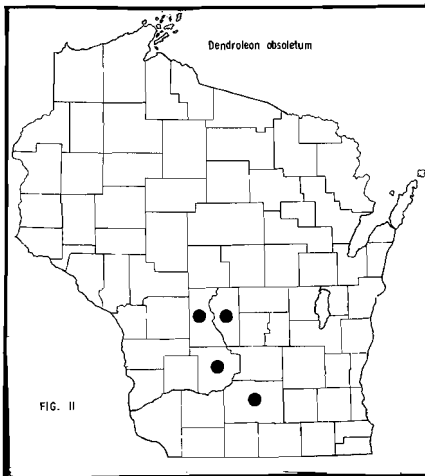
Dr. Martin Meinander of the Zoological Museum, the University of Helsinki has recently published a revision of the family Coniopterygidae which is the most complete study ever made of the family and contains a lengthy bibliography. Dr. Meinander has very graciously identified and sexed all of my specimens collected before 1972. With the aid of his excellent keys I have identified my 1972 specimens. The North American and world distributions which I give for the Wisconsin species have all been taken from Meinander (1972).

Table 1. Collecting data for Wisconsin Coniopterygidae.

Species	Males	Females	Light Trap	Sweeping	Number of Specimens
<i>Coniopteryx canadensis</i>	2	0	2	0	2
<i>Coniopteryx westwoodi</i>	16	11	4	23	27
<i>Conwentzia pineticola</i>	47	22	61	8	69
<i>Helicoconis walshi</i>	2	1	0	3	3
<i>Semidalis inconspicua</i>	53	95	128	20	148
<i>Semidalis vicina</i>	2	8	0	10	10
Total numbers	122	137	195	64	259
Percentages	47%	53%	75%	25%	

KEY TO THE WISCONSIN SPECIES OF CONIOPTERYGIDAE

- 1. Two radio-medial cross-veins in middle of fore wing *Helicoconis walshi*
- 1': One radio-medial cross-vein in middle of fore wing 2
- 2. Media of hind wing unforked 3
- 2': Media of hind wing forked 4
- 3. Head yellowish-gray; antennae 28-34 segmented; thorax without distinct shoulder spots *Coniopteryx canadensis*
- 3': Head brown; antennae 22-26 segmented; thorax with blackish shoulder spots *C. westwoodi*



- 4. Cross-vein M-Cu₁, at least in the fore wing, striking longitudinal veins at right angles and always the stem of M; hind wing reduced in size *Conwentzia pineticola*
- 4'. Cross-vein M-Cu₁ of both wings oblique, generally striking the posterior branch of M; hind wing not reduced in size 5
- 5. Uncini serrate and fused below parameres *Semidalis vicina*
- 5'. Uncini not fused, long and slender, apically bent downward, basally apparently connected by membrane to parameres *S. inconspicua*

Genus CONIOPTERYX Curtis

canadensis Meinander. (Fig. 12). July 16 to August 29. I have but two specimens, both males collected in a light trap at two localities in Waukesha County, 16-VII-1968 and 29-VIII-1972. This is a rare species for only five other specimens have been collected by various persons, all in Saskatchewan, Canada.

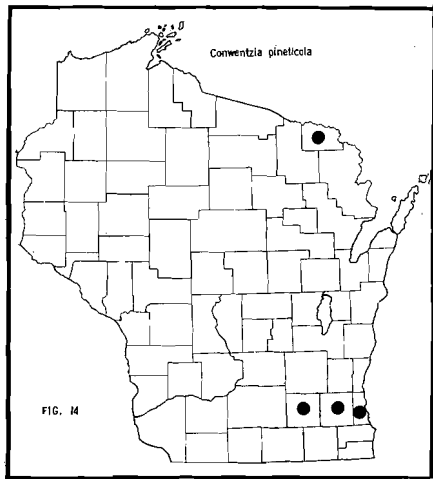
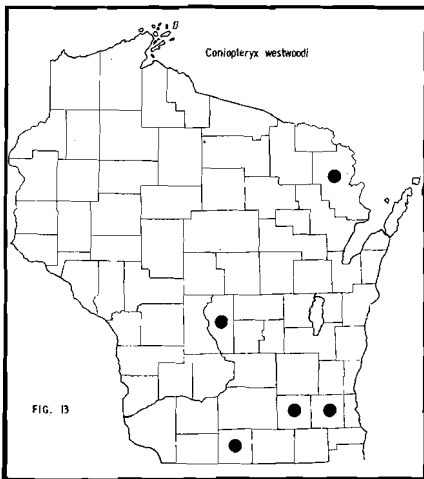
westwoodi (Fitch). (Fig. 13). May 25 to September 8. I have collected 26 specimens in the state. There is one specimen in the collection at the University at Madison taken by J. T. Medler in Green County. It has also been recorded from Michigan, Tennessee, New Jersey, Virginia, Florida and Texas.

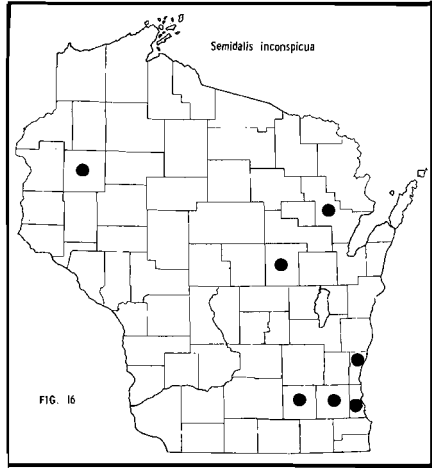
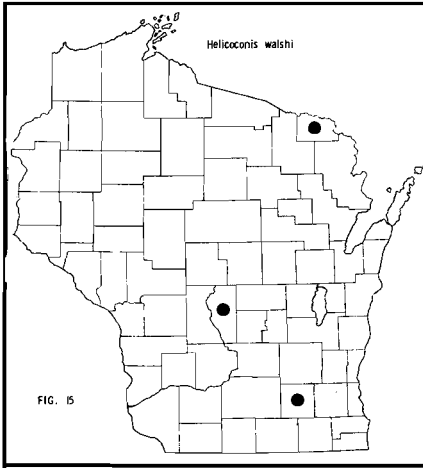
Genus CONWENTZIA Enderlein

pineticola Enderlein. (Fig. 14). June 27 to September 20. This holarctic species is common throughout Europe, Siberia, Mongolia, and North Africa. In North America it is found in Newfoundland, Nova Scotia, Ontario, Maine, New Hampshire, Massachusetts, New York, New Jersey, Pennsylvania, Maryland, Virginia, North Carolina, Florida, Ohio, Michigan, Wisconsin and I have specimens from Arkansas not previously reported.

Genus HELICOCONIS Enderlein

walshi (Banks). (Fig. 15). July 8 to July 25. Only three specimens have been collected in Wisconsin: a male, July 21, 1958 in Florence County by J. Kapler; a female, July 25, 1958 in Adams County and a male, July 8, 1959 in Jefferson County both by Throne. It has been captured in Maine and Michigan. Females, probably of this species, were collected in Newfoundland and Ontario.





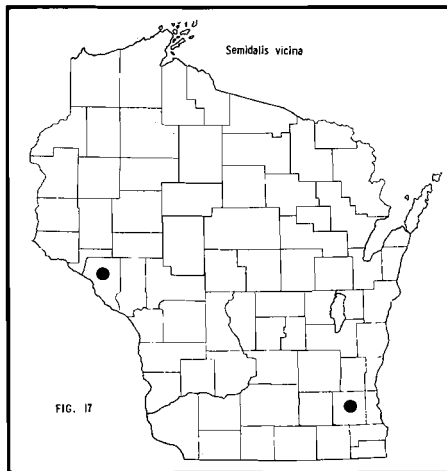
Genus SEMIDALIS Enderlein

inconspicua Meinander. (Fig. 16). June 14 to September 8. This nearctic species is the most abundant species in Wisconsin. It has been collected in Maryland, Virginia, Wisconsin, Oklahoma, Texas, Arizona and California.

vicina (Hagen). (Fig. 17). June 14 to August 6. This species occurs in France, Spain, Portugal, Yugoslavia, Morocco and Quebec. A female which appears to be *vicina* was collected in Alberta. In the United States it has been taken in 17 states east of the Mississippi River from Maine to Florida and Wisconsin to Mississippi. Two specimens are recorded from Douglas County, Kansas. I have ten specimens from Wisconsin.

ACKNOWLEDGEMENTS

In addition to the persons listed in Parts I and II of this paper Throne (1971a, b), I wish to thank Dr. Ludwig Pauly, University of Wisconsin, Milwaukee for giving me several



mantispid and particularly for the only specimen of *Mantispa viridis* collected in Wisconsin and Mr. Philip A. Holzbauer of Palmyra, Wisconsin for aiding me on numerous collecting trips. I especially wish to thank Dr. Martin Meinander of the Zoological Museum of the University of Helsinki for identifying my specimens of Coniopterygidae.

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A. A. GIRAULT AND HIS PRIVATELY PRINTED PAPERS¹

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Alexandre Arsène Girault was an eccentric Hymenopterist who specialized on taxonomy of the Chalcidoidea. It has been said that it is dangerous to study the parasitic Hymenoptera, for many of those who do end up in mental institutions, become alcoholics, or are, at least, a little odd. Girault was one of the odd ones.

He was born in Annapolis, Maryland on January 9, 1884 and died in Brisbane, Australia on May 2, 1941. He wrote of himself "I was always interested in Natural History objects but when a boy this did not become pronounced until I was about 15 years old At the age of 15, I dropped all of my former activities and commenced to pay attention almost solely to the study of insects. I have renounced not a bit of this study since. . ."—Girault, 1942. After receiving a B.S. degree from Virginia Polytechnic Institute in 1903, he worked for five years in the Bureau of Entomology of the United States Department of Agriculture and from 1909 to 1911 was assistant in entomology at the University of Illinois. He was resident in Australia from 1911 until his death in 1941 except for three years when he worked at the United States National Museum as an expert in the classification of the chalcids. He published about 325 papers, the largest a 900 page work on Australian Chalcidoidea. Mr. Carl Muesebeck is a gentle man and would have been as charitable as possible in the obituary he wrote after Girault's death. His summary evaluation of Girault follows: "Brilliant, industrious and a keen observer, Girault might have contributed vastly more than he did to sound progress in the Chalcidoidea. Unfortunately, he was erratic and not suited temperamentally for participation in undertakings that require co-operative effort. He worked alone, largely ignoring other investigators in the same field and apparently unmindful of difficulties he might be creating for future workers. This was, indeed, carried to the point of irreparably damaging type specimens of many species of chalcid flies in efforts to see certain specific structures to which he happened at the moment to attach special importance. Furthermore, his descriptions are mostly inadequate for the recognition of the genera or species to which they apply. Undoubtedly, however, these shortcomings are in large part ascribable to continuing ill health and it must be acknowledged that in spite of them Girault added appreciably to our knowledge of a large and exceedingly complex group of Hymenoptera."—Muesebeck, 1942.

From this description of his career it would appear that there is little reason to single Girault out from the host of capable entomologists. But when we examine the 63 papers that he printed privately (De Santis, 1961) in Brisbane, Australia and at the Hillmead Press in Maryland the impression is different. Some of the titles illustrate the unusual character of these publications—"Loves Wooded and Won in Australia" (Girault, 1923a), "Microscopitis, Womanitis, and New Hexapoda" (Girault, 1923b), "Some Gem-like or Marvellous Inhabitants of the Woodlands Heretofore Unknown and by Most Never Seen nor Dreamt of" (Girault, 1925a), "New Queensland Insecta Captured Without Any Reference to Use" (Girault, 1925b), "An Essay on When a Fly is Loveable, the Ceremony of Baptizing Some and Unlovely Hate" (Girault, 1925c), and "Some Beauties Inhabitant not of the Boudoirs of Commerce but of Nature's Bosom—New Insects" (Girault, 1933).

The contents of the papers fit the titles. He was a man of many prejudices and was continually involved in feuding. He printed these papers himself because of his battles with editors and with his Washington boss, L. O. Howard. "Most of the journals of entomology in these United States are in the hands of little tyrants who do acts like

¹Paper presented at the 1972 Toronto meeting of the Michigan Entomological Society.

these: hold manuscripts indefinitely after their acceptance (then returning them with some paltry excuse) which may cause long delays and is a sort of moral imbecility, making arbitrary restrictions as refusing to print more than one article a month for any one author, meaning that the prolific author is loaded with chains which he must drag long; changing titles, and omitting sentences."—Girault, 1917a. "Editors and other bully boys in authority now are becoming so difficult to deal with *sans* losing one's self-respect, that the following matter is withdrawn from them being that refused by orthodox journals. Discrimination and covert pretexts (as polite refusals, long delays, nonreplies, petty excuses, unauthorized changes, confiscations . . . and so forth) by these petty tyrants as well as my own resentment and impatience have effectually barred them. They ought to be printed if only in defiance of whim."—Girault, 1926a. "L. Ossian Howard told me these puny pamphlets were in bad taste. Replying I said that I knew not as to their being in bad taste but no doubt they had a bad taste."—Girault, 1917e. The editors surely had reason for turning the papers down. Besides descriptions of new species they contain excerpts of his poetry, rantings against people and working conditions, and wandering discourses on various philosophical and scientific matters, most of them critical and many irrational.

He found his working conditions intolerable— "[I] was assigned to the U.S. National Museum, in a large supplies-room dominated by an innocent youth addicted to the Times and social gayety. Work was beneath him. My space here was 4 x 4; constant interruption, noise, boisterousness, whistling, and joking profiled."—Girault, 1917e. He wrote a poem with the note "Lines composed . . . in a heat after leaving my *study* in the insect division U.S. National Museum, where I had endured the usual daily abuse for presuming to work in this place of amusement and consequent noise and interruption."—Girault, 1917e. He had abundant criticism for the work of Ashmead, one of his predecessors who worked on the chalcids—"Think of 'idealistic' America allowing to be created without hindrance Ashmead's chalcid flies, a mountain of falsity! This because of moral weakness for we knew it was false and had not the courage to say so. Fools, adamantine fools! this is not being civilized but demoralized."—Girault, 1917a. The poem Girault dedicated to Ashmead is perhaps the most scathing of all—

False Captain! Ah! dark Error's pioneer,
Enthusiastic dunce and shamming seer,
Aching for a days applause;
Low scholar ever wishing us to laud
Ambition's wind-blown froth and sandy fraud,
Thus defying Heaven's laws.

Arise! Come, get thee from thy shelt'ring grave
Where, strongly walled, e'en thou couldst dare be brave
With Impunity's gaunt grace!
Ah, come, past coward, lily-livered liar,
Fair-tongued sweetmouthing unctious friar
Let's see what's writ across thy face!

—Girault, 1929a

His most sarcastic and critical remarks scattered throughout his works are addressed either obliquely or directly against L. O. Howard. The poem "The Entomologist" is subtitled "not a true one this time but he who is now called The Entomologist in the Nation's Dept. of Agriculture."

Didst think that I like those poor others could be sold?
My soul a slave to thee? 'Twas this no less!

Who taught the Fool truth could be bartered for gain?
Thou art lost, thy own high soul is lost, died
The day that for paltry things thy heart was slain—

—Girault, 1917e

Evidently the situation became intolerable both for Girault and for Howard—"Three years ago I returned to America with the hearty sanction of L. O. Howard who after greeting me and without necessity or occasion [said] 'He's a little man' . . . I was

deliberately persecuted under the guise of 'public opinion' . . . then I legitimately criticized these conditions, some work of these men. H. mistakenly used this for his excuse [Treason]; he imposed silly rules, dictated criticism at the form not the sense, got hopeless about confuting, got a democratic majority, got order of transferral through another and 'pon my refusing to substitute a mere 'job' for my beloved work he dismissed me."—Girault 1917e. Girault was off again to Australia and we can be sure that Howard breathed a sigh of relief.

But in Australia things were hardly better. The feuds continued and there is a poem titled "A song after the manner of Auld Lang Syne on some prominent 'Economic Entomologists' (who forsook insects for trade)." The first verse of this is:

Should A. L. Quaintance be forgot
And other childish men
Who their first love let go to pot
That they might fatten.

—Girault, 1919

and continues in the same vein. He named a genus *Shilling-worthia* dedicated to Dr. Johann Francis Illingworth and with a description "Like *Polynema* but petiole, head, abdomen, mandibles, absent. S. Shillingworthi blank, vacant, inaneness, perfect. Nulliebiety remarkable, visible only from certain points of view. Shadowless. An airy species whose flight can not be followed except by the winged mind. From a naked chasm on Jupiter, August 5, 1919."—Girault, 1920.

He was more vehemently anti-woman's lib than any outspoken critic of today. In the paper titled "Microscopitis, Womanitis and New Hexapoda" he pleads: "God save us who are subject to troubles in this world and here's such a one as might well end us. What is a special itch of paralysis to this not hitherto unknown scourge now come upon us as an epidemic? A water-blistar, a mere hookworm, Sirs. Let me tell you here's a serious disease which doth pock and burn, nay congeal our very hearts. Heaven help we poor hounded, sorely wounded and pitifully degraded men, since Woman the Giver, has betrayed us and will ruin us with her wild unnatural ideas."—Girault, 1923b. In another paper titled "Homo perniciosus and New Hymenoptera" he describes *Homo perniciosus* as an "Abnormal female (loveless, without offspring); heart functionless; mammae aborted; psychology novel (as supposed) but artificial; gay, high-colored, feral, brass-cheeked, shape lovely like Woman but nature hard (selfish, thoughtless, proud, unsympathetic, irresponsible, aggressive, irritant, insensible, luxurious, pugnacious, over-active, inquisitive, mischievous, voracious, and even carnivorous, antagonistic, ungentle, immodest, critical, competitive, poisonous); conduct unstable (even inclined to treachery), the lips compressed, body strong. Everywhere but rare in natural habitat.

From young adults, these commonest, 1923 Australia."—Girault, 1924.

With all of his prejudices, Girault took real delight in his chalcids, calling them "Stars that galaxy the fields." (Girault, 1917c), titling a paper "Descriptiones Stellarum Novarum" (Girault, 1917d), and writing one of his poems:

Eh, are not these the loveliest things
Nor jewels nor gold nor crown of kings
These me give to quench my soul
It's thirst for the beautiful.
Our pearls, our gems, our gold a useless ware
Beauty dwells but where God and Nature are.

—Girault, 1917b

Compilations of quotations on a variety of subjects could be assembled—on machines, on liberty, on the scientist, on the professor, on scientific labels. And many of the ideas would be in accord with those of the present under-thirty generation. The following excerpts are put together to form a more or less connected essay on commerce.

"These beautiful species are quite harmless yet they must be called pests in order to be respectable and in order to be paid. The entomologist is now a kind of lackey to Modern Commerce."—Girault, 1926b. "What a rattle and din Commerce makes in this world now? What's it all about?"—Girault, 1929b. "Commerce ought not to be allowed to have the power it does—crudeness is no word for it. It props up vice with law . . . It

will buy gain with corruption and is a disguised wolf. It means to eat the world up."—Girault, 1928. "Research is a labour of love. Strange then to find it all done now-a-days as a labour of wages . . . Nature is to be explored and known by mankind not only because she holds so much food and means for living but also and mostly because she is the expression of the majesty of the mystical All."—Girault, 1920. "Science for use induces or forces attempts at impossibilities, hastiness and falsehood. We serve convenience of a tyrant, not fact or truth. It is common in commercial-ruled countries, as in tragic America, where life is enslaved to business and sacrificed to the Baal. The soul of Science as of poetry is freedom"—Girault, 1926c. "Science and poetry ought to marry; the progeny would be sanity."—Girault, 1924.

A fitting conclusion is that used by Girault at the end of one of his papers. "Dedicated to all those who in the dress of a political party, or in active resistance in these present days, fought for the right, liberty, spirit, good, purity, the poor, the true Demos and not the false, Life and not death—in effect who opposed the domination of Commerce, a gross corruption and degeneracy."—Girault, 1928.

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