

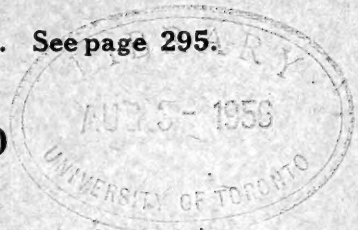
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DECEMBER, 1920



ENTOMOLOGICAL NEWS

Vol XXXI. No. 10

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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

THE ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XXXI.

DECEMBER, 1920.

No. 10.

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Hemipterological Notices I. (Tingidae).

By H. M. PARSHLEY, Smith College.

There is no more splendid instance of the scientific value of careful collecting than that afforded by the work of Mrs. Annie Trumbull Slosson. For many years specialists in every order of insects have made free use of her materials, and still the riches of her collection are by no means exhausted. The following notes on groups which have recently received general treatment are based for the most part on material which Mrs. Slosson has been kind enough to send, in spite of difficulties due to ill health; and I would express my sense of obligation for these and many other favors.

***Gargaphia bimaculata* sp. nov.**

Head, disc of pronotum with basal one-third of angulate process, and body black; antennae yellowish brown, the first segment except toward

apex and the fourth darker brown; frontal spines yellow. Median line of hood, anterior two-thirds of median carina, and antero-lateral margins of paranota dark brown; reticulate portions of pronotum otherwise yellowish. Costal and most of sutural areas of hemielytra with hyaline, iridescent areoles, the veinlets largely yellow, a few brown; subcostal area, discoidal area, and two rows of sutural areoles next to discoidal area, opaque white; apical one-third of discoidal area largely occupied by a depressed, triangular, dark brown spot, on each hemielytron. Legs yellowish.

Frontal spines stout, crowded, about one-half as long as the first antennal segment; basal spines vestigial. Pronotum sparsely hairy; the carinae low, uniseriate; hood about one-half longer than broad (14-10), well inflated, almost as high as median carina; paranota moderately reflexed, acutely angulate, at most three areoles wide, anterior margins slightly concave, posterior margins convexly rounded and nearly vertical above bases of hemielytra; width across paranota almost equal to entire length of pronotum (48-50). Costal area of hemielytra triseriate for a short distance (about equal to three areoles) at widest part, otherwise biseriate; subcostal area biseriate; discoidal area one-half as long as hemielytra, about four areoles wide at most.

Length 2.7 mm.; width 1.2 mm.

Holotype ♀, Biscayne Bay, Florida (A. T. Slosson) in Mrs. Slosson's collection.

This species is especially distinguished by the hemielytral markings; it runs in Gibson's key¹ to *iridescens* Champion, from which it differs in the structure of the head spines, width of pronotum, and most other details, in addition to coloration. This is the first species of the genus to be recorded from Florida. I am indebted to my friend Gibson's kindness for the opportunity of examining certain related species not represented in my own collection.

Corythucha cyrta Parshley.²

Having had occasion recently to determine a good many specimens belonging to the genus *Corythucha*, I am more than ever impressed with the difficulties involved in the study of the group. Gibson's review is a most creditable pioneer work, but there are certain aspects of the subject which re-

¹The genus *Gargaphia*, Trans. Am. Ent. Soc., XLV:187-201, 1919.

²In Gibson, The Genus *Corythucha* Stal, Trans. Am. Ent. Soc., XLIV: 86, 1918.

quire³ further investigation, especially the determination of the limits of variation within the species, and there are some synonymic adjustments to be expected, as in the case under consideration. Through the kindness of Professor Drake I have had for study a long series of *C. betulae* Drake,³ and I find that it is identical with *C. cyrta* Parsh., as we have suspected for some time. The latter was described from a considerable number of specimens, collected in various parts of New England where birch is abundant, but none of them bore a food-plant label, and the former has been found in Maine as well as in New York. The lack of data in the case of one series, together with a moderate degree of variability characteristic of the species, should probably be held accountable for the original failure to appreciate the relationship involved.

Corythucha salicis Osborn & Drake.⁴

Through the kindness of Mr. W. Downes I have recently received a long series of this species collected on *Salix*, at Vernon, and at Mission, British Columbia. Comparison of this new material with specimens of *salicis* O. & D. from the type locality in Massachusetts and with the type specimens of *canadensis* Parsh. shows conclusively that the latter cannot be maintained as a distinct species and must stand as a synonym of *salicis*. In this species the hood is always at least twice as high as the median carina, according to my observations, and hence the species is not correctly located in Gibson's key. The markings vary considerably in distinctness. Mr. R. F. Hussey has sent me specimens of *salicis* which he collected in Michigan and the species is now known to occur across the northern part of the continent from Maine to British Columbia. How far its range extends southward has not been determined, but there is a Florida record, which, I believe, requires confirmation. The dis-

³*Id.*, pp. 86-87.

⁴*C. salicis* Osborn & Drake, Ohio Jour. Sci. XVII: 298, 1917.

C. salicis Gibson, Trans. Am. Ent. Soc., XLIV: 85, 1918.

C. canadensis Parshley, Occas. Papers Mus. Zool. Univ. Mich., No. 71: 18, 1919.

tinctive characteristics and relationships of this species are discussed in connection with my proposal of the synonymous name, *canadensis*.

Alveotingis grossocerata O. & D.

Osborn and Drake described this remarkable species from a brachypterous example⁵ and later⁶ I published an account of the macropterous form, although the specimen lacked the characteristic antennae, except for the basal segments. It is, therefore, a pleasure to record another example of this long-winged phase, which still retains its antennae, shaped just as in the brachypterous form, and which agrees in every particular with the mutilated specimen formerly described. This individual, labeled probably by Uhler with the MS name "Rhombodia areolata Uhl.," was collected by Mrs. Slosson at Franconia, N. H., and is preserved in her collection.

Melanorhopala clavata Stal.

During the summer of 1919 I met with numerous specimens of this species, the sexes occurring together and in approximately equal numbers. In every case the male individuals exhibited the characters on which I based *M. obscura*, and thus the synonymy proposed in a recent paper⁷ of mine is corroborated. No material variation tending to obliterate this unusual sexual dimorphism has been observed.

Melanorhopala infuscata Parshley.

Gibson has recently sent me for determination an example of this species, which merits notice since it is the only known specimen beside the type series. It was taken by R. C. Shannon near Plummer's Island, Maryland, August 5, 1914, at "tulip poplar sap." The scant evidence at hand indicates that this species, unlike most Tingids, lives on the bark of *Liriodendron*, subsisting, perhaps, on sap from the trunk rather than from the leaves.

⁵The Tingitoidea of Ohio, Ohio Biol. Surv., II: 245, 1916.

⁶Notes on North American Tingidae, Psyche, XXIV: 25, 1917.

⁷Note on . . . *M. clavata*, Bull. Brooklyn Ent. Soc., XIV: 102-103, 1919.

The genus *Aspistes* Meigen in North America (Diptera, Scatopsidae).

By J. R. MALLOCH.

In his paper on the dipterous family Scatopsidae* Dr. A. L. Melander has recorded the European species *Aspistes berolinensis* Meigen as occurring in North America on the strength of a specimen taken by Dr. Aldrich at Lafayette, Indiana. I had some doubt about the correctness of the identification as I had a number of specimens of an *Aspistes* from Illinois, some of which had been in the collection of the Natural History Survey for a number of years, which though appearing to agree with the description of *berolinensis* yet did not do so in every essential, while evidently the same as that recorded by Melander. I deferred publishing anything on the species until I could obtain authentic specimens of the European species for comparison. These I have now obtained through my colleague Dr. C. P. Alexander who received them from Mr. M. P. Riedel. After an examination of the two series I am of the opinion that the North American species is undoubtedly distinct from the European and describe it below.

Aspistes harti sp. n.

♂, ♀.—Glossy black. Legs black, tibiae and tarsi yellowish testaceous, apices of hind tibiae and tarsi usually infuscated. Wings clear. Halteres black.

Antennae in male 10-segmented, in female 8-segmented, the apical three segments fused; frons, face, and vertex less conspicuously punctate than in *berolinensis*; sides of head behind eyes not striate. The elevation on anterior half of mesonotum less closely punctured than in that species and without the central longitudinal raised line which is always present in *berolinensis*. Abdomen in male as in *berolinensis*, the eighth sternite less distinctly punctate, and more pointed at apex. In other respects as in *berolinensis*.

Length, 1.5-2.5 mm.

Type, male, and *allotype*, Havana, Illinois, data lost. *Paratypes*, Havana, Ill., data lost, one male and one female;

*Bull. 130, Div. Ent. Zool., State Coll. Wash., 1916, p. 5.

Havana, Ill., three males, June 3, 1918; Meredosia, Illinois, four males, May 28, 1917; Oregon, Illinois, two males, June 19 and 21, 1917.

The type and allotype were taken in copula, and the data were lost for them and the other two from Havana several years ago when the catalog containing them went amissing. These specimens were taken by Mr. C. A. Hart, the others were taken by the writer.

Aspistes analis Kirby.

This species differs from the foregoing in having the antennae 7-segmented in both sexes, the media leaving radius very close to the cross-vein and in being larger, averaging 3.5 mm. in length.

Localities, Iditarod, Alaska, two specimens, July 3, 1917; Beaver Mts., Alaska, five specimens, October 14, 1917 (A. H. Twitchell).

The difference in the antennal structure and in the form of the hypopygium, which is quite marked, would suggest the propriety of the retention of the genus *Arthria* for this species.

A Web-spinning Sarcophagid, Parasitic upon a Mantis (Dipt., Orth.).

At Wichita, Kansas, in the fall of 1919, a fly which was later identified by Dr. J. M. Aldrich as *Sarcophaga setigera* Aldrich, was reared from the female of *Stagmomantis carolina* Linn. The mantis was found upon a morning glory and clematis arbor on the afternoon of September 25th. The observer noticed a wound upon the abdomen of the mantis and thinking it the result of a bird peck, took the mantis into her hand to put it out of its misery. Just as the head was severed from the body, the maggot crawled from the abdomen of the mantis onto the hand of the observer. The maggot was transferred to a covered glass dish with a morning glory and a clematis leaf in it. Upon the morning glory leaf, the larva wove an irregularly shaped tubular web about 27 mm. long and 7 mm. wide. This web was composed of broken strands of white silk making a dense mass, but one transparent enough for the larva to be seen within. After remaining quiescent for three days within this web, the larva pupated at one end of the tube and the adult emerged in fourteen days.

How or where this form normally spins a web is a question which cannot be answered from this observation. HAZEL ELISABETH BRANCH, Ithaca, New York.

Studies in the Genus *Myodites* Latreille (Coleoptera, Rhipiphoridae).

By W. DWIGHT PIERCE, Denver, Colorado.

The following studies are based upon a small series of specimens, loaned me by Mr. Warren Knaus. This series is especially interesting because it furnishes a new type of female. In all species hitherto examined by myself the female antenna is monopectinate, and the male antenna is biflabellate, with very long rami of which the tips are about even at apex. In the species *Myodites knausi* described below the female antenna is monoflabellate, with the rami longest at base, diminishing in length toward the apex.

Table of American Species of *Myodites*.

- | | |
|---|----------------------------|
| 1—First joint of hind tarsi elevated, obliquely truncate and emarginate at tip; elytra yellow..... | 2 |
| First joint of hind tarsi long, but slightly thicker, not obliquely truncate..... | 10 |
| 2—Female abdomen black, or partly black..... | 3 |
| Female abdomen yellow or red, male abdomen?; or female abdomen? male abdomen dark brown or black..... | 5 |
| 3—First joint of hind tarsi stout, not more than one-half longer than second; prothorax sparsely punctulate, smooth on each side and front; length 6 mm.; New York..... | <i>luteipennis</i> LeConte |
| First joint of hind tarsi long..... | 4 |
| 4—First joint of hind tarsi as long as fourth, slightly thicker than the second; prothorax sparsely punctulate behind, nearly smooth in front; female antennae black, pectinate; length 5 mm. Nevada..... | <i>nevadicus</i> LeConte |
| First joint of hind tarsi longer than the fourth, twice as long and thicker than the second and third combined; prothorax densely punctulate behind, nearly smooth on scutal area; abdomen of both sexes with considerable yellow. Female pygidium black; female antennae yellowish, flabellate; length 9 mm.; Utah | <i>knausi</i> n. sp. |
| 5—Prothorax sparsely punctulate or smooth on disc..... | 6 |
| Prothorax densely punctulate..... | 9 |
| 6—Prothorax smooth on disc..... | 7 |
| Prothorax partially smooth on disc..... | <i>vierecki</i> Fall |
| 7—First joint of hind tarsi stout and thick, not more than one-half longer than the second; vertex sparsely punctulate, obtusely rounded..... | 8 |

- First joint of hind tarsi long, thicker than second and more than twice as long; vertex sparsely punctulate, not carinate; female abdomen yellow; length 7.5 mm.; Maryland. *semiflavus* LeConte
- 8—Color honey-yellow; prothorax with sides, median line and base black; prothorax smooth; male unknown; female abdomen yellow; length 7.3 mm.; Colorado. *popenoi* LeConte
Color black; prothorax smooth on disc, coarsely punctulate at base on sides; male abdomen with dark brown luster; female unknown; length 4 mm.; Nebraska. *minimus* Pierce
- 9—Female abdomen red or yellowish-red; pygidium reddish; first joint of hind tarsi very long, very little thicker than the second; prothorax and vertex densely punctulate, the latter carinate; length 8 mm.; Oklahoma and Kansas. *scaber* LeConte
Female abdomen red, pygidium black; male abdomen black; first joint of hind tarsi stout and very thick, and more than twice as long as the second and the third joints together; male antennae honey-yellow (a variety from western Nebraska has the antennae orange color); length 8 mm.; Nebraska; plant host *Solidago* spp; insect host *Epinomia triangulifera* Vachal, *solidaginis* Pierce
- 10—Elytra shining yellow, or black only at base; head and prothorax densely punctulate. 11
Elytra alutaceous, more or less blackish or piceous. 13
- 11—Elytra entirely yellow; female black; hind tarsi with first joint as long as the others united, scarcely thicker, not emarginate at tip; length 5 mm; California. *californicus* LeConte
Elytra black at base. 12
- 12—Body black; length 6 mm; Pennsylvania, Illinois, and Missouri; insect host *Chloralictus pruinosis* Robertson. . . *fasciatus* Say.
Female abdomen dark brown; hind tarsi with first joint as long as succeeding three joints; about one and one-half as thick, and slightly emarginate, and obliquely truncate; length 6 mm. Nebraska. *fasciatus* Say, var. *brunneus* Pierce
- 13—Hind tibiae slightly compressed. 14
Hind tibiae strongly compressed; body black; elytra black with dark reddish-yellow spot; length 6 mm; Florida; insect host. *Augochlora pura* Say. ♂ *schwarzi* LeConte
- 14—Vertex strongly elevated and compressed; length 6.5 mm.; New York (*zeschii* LeConte). ♀ *schwarzi* LeConte
Vertex feebly elevated. 15
- 15—Pectus and abdomen densely punctulate; color black; antennae fuscous; legs fusco-testaceous; length 5 mm.; Illinois, New York and Massachusetts. *walshii* LeConte.
Pectus and abdomen more strongly, less densely punctulate; body black; antennae fusco-testaceous; legs obscurely testaceous; length 2.5 to 3 mm; Canada, New York, and District of Columbia. *stylopidis* Newman.

Myodites knausi n. sp.

The specimens on which this description is based are from the collection of Mr. Warren Knaus, and include four females collected at St. George, Utah, June 10, 1919, at an altitude of 2800 feet; and two females and one male collected at Hurricane, Utah, June 14-18, 1919, at an altitude of 3200 feet. I have chosen as types the male and one female from Hurricane.

♀: Length 9 mm.; Head shining black, depressed, finely and evenly punctulate, clad with dense yellowish white perpendicular pubescence; vertex prominent, broadly rounded; eyes shining black, minutely faceted. Antennae ten-jointed, nine-flabellate, pubescent; joints honey-yellow, darkening toward apex, the last joints almost entirely brownish; the flabellae diminishing in length toward apex, but the flabella of the tenth joint equals the basis of the three preceding joints. Mandibles with the exterior side black, punctulate, densely pubescent, beyond which there is a slight reddish tinge; apices shining glabrous, acuminate. Palpi yellowish, tinged with brown, pubescent.

Prothorax black, shining, more or less denuded in scutal zone, densely pubescent at base, sides and in scutellar sone; irregularly punctulate, not carinate. Elytra honey-yellow with brownish base. Metathorax shining glabrous. The thorax beneath and on sides is minutely punctulate and densely pubescent. Wings hyaline, with large fuscous cloud on costal margin and on disc beyond middle.

Legs honey-yellow, with joints darkened at base and apex, tarsal joints darker. Femora stout, densely pubescent, shining and minutely punctulate. Tibiae straight, slightly enlarged toward tip, bi-unguiculate, densely pubescent, and rather cosely and minutely punctulate. Anterior tarsi with first joint slightly longer than following three, fifth longer than first, claws almost as long as first joint, and strongly pectinate. Middle tarsi with first joint as long as fifth joint, claws strongly pectinate, but not as long as first joint. Hind tarsi with first joint elongate, enlarged, and apically diagonally truncate, almost twice as long as the two following joints, and longer than the fourth joint; claws two-thirds as long as the fourth joint, and strongly pectinate.

Abdomen with dorsum of first five segments black, but with intersegmental skins yellow. The venters of these same segments are also black with yellow inter-segmental skins. The pygidial area is yellow with infuscation beyond the middle. The entire surface of the abdomen is sparsely punctulate pubescent.

♂: Length 9 mm. Similar to the female, with the following exceptions: antennae honey-yellow, bi-flabellate, with the tips of the rami about even. The abdomen is black with the base and apex of the first ventral segment yellow, and the prepygidial area yellow, but with the pygidium black.

Myodites solidaginis Pierce.

A female specimen from Tempe, Arizona, collected October 22, 1919, measuring 6 mm. answers in all other respects to the description of this species, and cannot be separated with sufficient characters from a specimen of the paratype series.

Myodites scaber LeConte.

A normal specimen of the female of this species from McPherson, Kansas, collected by Mr. Warren Knaus, is at hand.

A small specimen from Hurricane, Utah, collected by Mr. Knaus, June 14-18, 1919, at an altitude of 3200 feet, answers in general to the description and compares quite closely to the Kansas specimen, but measures only 7 mm. in length, and has the wings hyaline, with only a dark fuscous clouding in the form of fascia beyond the middle. It also differs by having the vertex not carinate. This may be a different species, but it is inadvisable to so describe it without the other sex.

The Eggs of *Boletotherus bifurcus* Fab. (Col).

While collecting fungi in a swamp at Union, New Jersey, on August 4, our attention was attracted by numerous, small, oval, discolored blisters on the upper surface of a specimen of *Fomes applanatus*. These blisters or egg capsules were composed of dark excrement-like material, each being oval or suboval in outline, about 3.5 mm. long, 2.5 mm. wide and from 1 to 1.5 mm. high in the centre, sloping toward the edges. The average thickness of the wall of a capsule was about 0.5 mm. Each capsule contained either a recently hatched larva or a single egg resting on its side. The translucent eggs were cylindrical with broadly rounded ends and varied in length from 1.7 mm. to 2 mm. and in width from 0.8 mm. to 1 mm. Several eggs were found which were only three-fourths of the above measurements. The outer covering of each egg was whitish and marked with slightly raised dots. Upon hatching, the larva bores directly into the fungus and in time, the capsule weathers away. Many of the capsules were placed in crevices or irregularities on the upper surface of the fungus.

HARRY B. WEISS and ERDMAN WEST, New Brunswick, N. J.

The Santa Marta Region of Colombia from an Orthopterological Viewpoint, with Deductions relative to Tropical American Collecting.

By MORGAN HEBARD, Philadelphia, Pa.

In mid-July, 1920, Mr. James A. G. Rehn and the author landed at Santa Marta, Colombia, for a month's intensive collecting of Orthoptera. The conditions occurring in that region were studied as far as was possible in the time available, including intensive examination of the different types of environment found in each. The total number of specimens secured was over 3600, including 241 species.

The conditions examined may be roughly characterized as follows:

I. Vicinity of Santa Marta. Arid lowlands, generally covered with a low open forest, of which acacia and tree cactus are two conspicuous components. In this area irrigated meadowlands and cultivated shrubs and trees, many of which bear rich foliage, were also examined.

II. Vicinity of Aracataca. Hot and humid lowlands. In this region uncleared forested areas occur, which due to the very porous soil, are semi-arid, while in other parts a similarly semi-arid but low and heavily matted scrub is encountered.

In one extensive section of rich soil a magnificent and very high forest of huge macundo, ceiba and other trees is found, the undergrowth in some places high and thick, with scattered guarumo (*Cecropia* sp.), heavy stands of platanillo and a thorned palm.

Far reaching irrigated meadowlands of rich rank grasses and banana plantations are on all sides, while about the town are many vine-covered fences, groves of palma de vino, balsa, almond and other trees.

III. Vicinity of Hacienda Cincinnati, situated at an elevation of 4500 feet on the northeastern slopes of San Lorenzo, Sierra Nevada de Santa Marta. Comparatively open but lofty mountain forests with a dense and tangled undergrowth.

Here the well-kept coffee plantation and open areas of rank grasses and sugar cane were also explored, as well as the cut upper faces and surfaces of the trails through the forest.

IV. San Lorenzo, slopes above Cincinnati, from 5000 to 7900 feet. In lower portion clothed with a denser and wetter forest than below. In some parts, however, composed of much lower and smaller trees.

In upper portions still more water-soaked, with much vine bamboo and many tree ferns, the gnarled and lower trees heavily laden with bromeliads, the wax palm overtopping these and giving an added beauty to the upper slopes.

Small areas, cleared at some time, were found on these slopes, overgrown with a dense mat of bushes and vines, in some of which dead saplings were numerous.

The forest above and below differs greatly in appearance and species represented, but the transition is very gradual and we would consider that but a single life zone is represented between these elevations.

V. San Lorenzo, summit bald, 7900 to 8500 feet. This is an area which is now practically destitute of trees. The ground is covered waist to shoulder high with a dense growth of raspberry vines, bracken and many low bushes and plants, among which a bromeliad, similar to those which flourish on the tree trunks in the forest below, is abundant and a most striking feature.

The lower north slopes of San Lorenzo were also examined, conditions rather similar to those at Hacienda Cincinnati being found at Hacienda Victoria, 4100 feet, and down to Cinco Bocas, 3500. The heavily forested ravines at Minca, however, at an elevation of 2500 feet, showed a decided change, being in fact more like the high rich forest at Aracataca.

For the region, the lowlands south and east of the mountains, and the Sierra Nevada from 8500 to 17500 feet remain to be studied, including the distinctive zones of the paramo and of the snows.

It was noted that a move from one distinctive area to another was of primary importance in securing additional

species. Of nearly equal value, however, was the careful examination of different local environmental conditions, such as wet forest, dry forest, grassy open, dry scrub and even the varied vegetation about habitations.

In this way a fair representation could be secured, but it was the intensive examination of immediate environmental conditions which added the majority of the forms of highest value.

Thus in the heavy forest at Aracataca the following investigations proved of the utmost importance.

1. Beating the low foliage.
 2. Beating the masses of vines occurring in small openings.
 3. Beating the rank grasses and plants growing in wet open spots.
 4. Close examination of tree trunks and peeling into beating net all loose patches of bark.
 5. Shaking vigorously in the net the dead dry leaves of trees, found hung in the undergrowth, particularly those of the guarumo, and similar treatment of the dead leaves hanging on the platanillo.
- Dead leaves on the ground were similarly treated but usually with much less success.
6. Close scrutiny and careful raking of the humus and leaf mould, particularly in the deepest recesses of the forest, in the twilight beneath the dense undergrowth.
 7. Peeling into the net the wet rotting stems of dead platanillo.

An additional factor of importance was found to be the use of a bright light at night. To our light were attracted twenty-five species not found during our field work. A hand flash lamp was also of great value, many fine specimens being secured by its aid at night, located by their stridulation or revealed resting on the trail, on logs, tree trunks or more often on the upper side of leaves in the forest undergrowth.

The species taken were found as follows.

1. forest foliage.....	46	10. in bromeliads.....	9
2. from dead leaves.....	29	11. domiciliary.....	7
3. attracted to light.....	29	12. low herbage in open.....	6
4. grassland.....	25	13. on tree trunks.....	4
5. vine tangles.....	22	14. bushes in dry areas.....	4
6. under bark.....	20	15. bare banks along trails.....	3
7. in leaf mould.....	18	16. tree foliage in open.....	3
8. in debris in open.....	15	17. within decaying platanillo....	2
9. on bare ground.....	14	18. in aloes.....	1

It is to be noted that of the forms secured as listed under numbers 2, 6, 7, 8, 10, 13, 15, 17 and 18, the majority, representing approximately one hundred distinct species, would not have been secured had not intensive work of particular character been undertaken. When we add to this total the twenty-five species secured only at light, the vital necessity for doing specialized field work is readily seen. The collector in the tropics otherwise can not hope to secure anything approaching a representative series, except as a resident, whose efforts have extended over many years at all seasons in the same locality.

From our observations we are convinced that, though it is of course a much longer process to secure a good representation of the species occurring at one locality in the tropics than in temperate regions, intensive collecting will be found to shorten enormously the time required for this. At Aracataca, much the richest locality examined, the number of species added each day to those previously secured was as follows: 35 (first half day), 29, 16, 16, 14, 8, 2, 4, 2, 2, 3, 5, 5. We believe that after two weeks, even at this exceedingly rich locality, great difficulty would have been experienced in finding additional species. The majority of those taken during the last week of our stay were secured only through most difficult and laborious intensive search.

As to seasonal diversity we have not had sufficient experience to say much. The rainy seasons in the tropics must be an important factor. However, in Cuba, Jamaica and Panama, just sufficient work was done to indicate that, as

in the Santa Marta region, Orthoptera would occur adult in the greatest diversity during the month of September. As a result we had difficulty up to mid-August securing any adults of a number of species of which immatures were numerous, while in the case of a half dozen rarer species immatures alone were found.

As would be expected, some species are apparently present as adults throughout the year, while the occurrence of others in the adult stage is variable in duration and time of first appearance, September being the month of maximum abundance of adults of the greater number of forms. This was somewhat of a surprise, as general insect collecting was said to be best at the beginning of the rains, and at Santa Marta the major rainy season usually begins in early July.

During our stay Lepidoptera were extremely abundant, but the butterflies were often rubbed or torn; light collecting at night brought in a great variety of small moths, though disappointing in that the larger moths were rarely attracted. Coleoptera were found in great numbers, but large and showy individuals were few and far between, while light collecting at night was as a rule poor. Hemiptera were likewise plentiful, but immatures of many species were more numerous than adults. Odonata were present in great diversity.

One factor we would emphasize. Comparing tropical with temperate regions, though the number of species which can be found in the former is much the greater, the numerical abundance of the great majority of species is vastly less. Very many tropical species are rarely encountered and the work necessary to secure individuals of these is very hard indeed.

Mosquitoes, ticks, plagas, leeches and other pests are ever present, while poisonous snakes, though in most regions seldom seen, must be considered, as well as the constant possibility of fever and other illnesses. Heat, reeking humidity and the constant attention necessary that the material secured be not destroyed, make the life of the collector in tropical lowlands a most arduous proposition. We fear that those who have spent the better part of their lives in such work are seldom fully appreciated by those at home.

New Predaceous and Parasitic Mites of the Superfamily Gamasoidea (Acar.).

By H. E. EWING, Bureau of Entomology, U. S. Department of Agriculture, Washington, D. C.

The gamasoid mites of America have received but little attention from mite specialists, although the group is represented by a fauna rich in species. Taxonomic difficulties, especially in regard to the genera have been largely responsible for this neglect. In the present paper eleven new species are described. The writer has followed largely Banks' interpretation of generic characters and his arrangement of the genera found in America. Some of the predaceous forms here described are of considerable benefit because of their attacks upon injurious insects.

Machrocheles bihastatus new species. (Text fig. 1).

A medium-sized, yellowish-brown species. Epistoma broad, rounded and concealing the chelicerae when the latter are held in repose; on its anterior border provided with a very long, sharp, central cusp and two small, sharp, inconspicuous lateral teeth. Hypostome consisting of two large, sword-like cusps that considerably surpass the central cusp of the epistome. Chelicerae stout, heavily chitinized, ventral arm of chela surpassing the upper arm and hooked around its distal extremity; both arms provided with well-developed teeth. Body oval, evenly rounded behind, and with shoulders well marked; clothed above with moderate setae, a rather conspicuous pair being situated on the shoulders. Anterior legs long and antenna-like; second pair stoutest and each provided with a conspicuous spine which is situated on the outside of tarsus near its tip; third pair distinctly smaller than adjoining legs; last pair extending slightly beyond the tip of body and with trochanters enlarged, being much stouter than the femora and almost as large as the same. Posterior coxae situated at the middle of the body. Length, 0.85 mm.; width, 0.50 mm.

From near Lake Keuka, New York; in leaf mold from gorge; by C. R. Crosby.

Description based upon the type, a well-preserved female specimen in the writer's collection. This species is quite distinct from our other described American forms on account of the large two-cusped hypostome.

Laelaps bermudaensis new species. (Text fig. 2.)

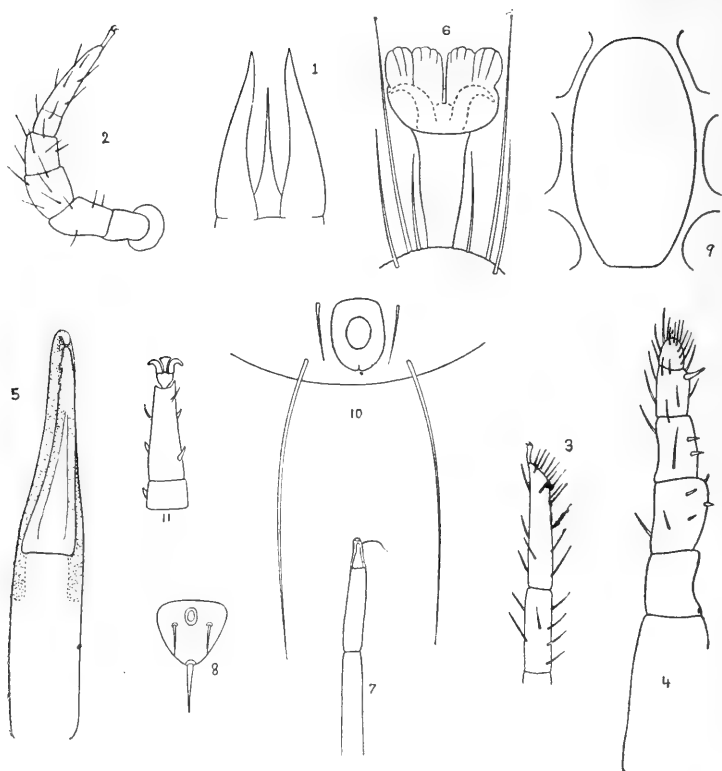
An oval-shaped, smooth, straw-yellow species. Chelicerae stout, with with upper chela almost straight and lower chela strongly curved and considerably surpassing the upper chela. Palpi prominent and about one-half as long as first pair of legs. Body broadest at its middle, evenly rounded behind, and sparsely clothed with rather long setae, a conspicuous one being situated at the median line along the posterior border. Peritreme extending slightly beyond the third pair of coxae, curved so as to follow the contour of the body margin and without sinuations. Anterior legs three-fourths as long as the body and antenna-like, tarsus scarcely equal to the tibia in length; second legs stoutest, trochanter stout, but not swollen; third legs the smallest, about four-fifths as long as the fourth pair; fourth pair reaching the tip of abdomen, trochanters swollen, much the stoutest of the segments and about two-thirds as long as the femur. Length, 0.54 mm.; width, 0.40 mm.

From Pembroke, Bermuda; collected in a banana orchard and cedar grove; by A. O. Gross.

Described from the type specimen, a female, in the writer's private collection. Of the species in the writer's collection this one is nearest *Laelaps flavus* Ewing. It differs from *L. flavus* in having a smaller and stouter body, in the possession of the large body setae and in several other details.

Seius safroi new species. (Text fig. 3.)

A small light yellowish mite. Chelicerae moderate, upper chela, which surpasses the lower, provided with two rows of teeth. The outer row is composed of fewer but slightly larger teeth than the inner row. Palpi about one-half as long as the first pair of legs, and each provided with a small spine on the inner side of the distal segment. Body with sides almost parallel behind the shoulders which are not pronounced; lateral margin in front of shoulders concave. Body sparsely clothed with moderate, simple setae, the pair on the shoulders and one of the pairs near the posterior margin being larger than the rest. All the legs about subequal in length except the third pair which is slightly shorter and smaller than the rest. Tarsus of leg I longer than the tibia, with its inner margin straight and outer margin curved near the tip; claws of tarsus I weak and borne on a small pedicel situated on the inner lower aspect of the tip of the segment. Segments of leg II stout, the trochanter and genual being equal to or broader than the femur. Last pair of legs extending beyond the tip of abdomen by about half their length; tarsi very long and tapering. Length 0.52 mm.; width, 0.25 mm.



EXPLANATION OF FIGURES.

Fig. 1. *Macrocheles bihastatus* new species; ventral view of hypostome and visible part of epistome, x 125.

Fig. 2. *Laelaps bermudaensis* new species; left second leg from above, x 125.

Fig. 3. *Seius safroi* new species; last two segments of right front leg from the inside, x 125.

Fig. 4. *Gamasus inarmatus* new species; left palpus of female from above, x 125.

Fig. 5. *Hologamasus quinquedentatus* new species; right chelicera from below, x 125.

Fig. 6. *Liponyssus setiger* new species; tip of tarsus I from above, x 500.

Fig. 7. *Liponyssus setiger* new species; right chelicera of female from above, x 125.

Fig. 8. *Liponyssus bermudaensis* new species; ventral view of anal plate of female, x 125.

Fig. 9. *Uropoda bermudaensis* new species; genital plate of female showing its relation to the last three pairs of coxae, x 125.

Fig. 10. *Uropoda longisetosa* new species; ventral view of tip of abdomen, x 125.

Fig. 11. *Cilliba robustiunguis* new species; last two segments of left second leg from above, x 125.

From Corvallis, Oregon; on bark of *Pseudotsuga taxifolia*; by V. I. Safro, in whose honor the species is named.

Described from several cotypes of the writer's private collection, all from Corvallis. This is the first species of the genus to be described from the North West.

Gamasus inarmatus new species. (Text fig. 4.)

♀: Medium sized, yellowish-brown species. Palpi fully one-half as long as the first pair of legs; next to last segment with a rather conspicuous spine on its inner aspect near the tip; the two segments proximal to this one, each with two smaller and less conspicuous spines on their inner aspects. Chelicerae large and when extended reaching or even surpassing the tips of palpi. Body somewhat pointed behind; sparsely clothed with inconspicuous setae above. Genital plate fully as broad as long with its base at the posterior margins of coxae IV, and apex, which is sharp and spine-like, at the level of the front margins of coxae of third pair of legs. Front legs slightly longer than the body; hind legs reaching slightly beyond the tip of abdomen, tarsi with prominent, long, spine-like setae. Length, 0.92 mm.; width, 0.50 mm.

♂: Male considerably smaller than female. Second pair of legs greatly enlarged, but without the tooth-like spurs found in other species of the genus. The setae or spines on all the legs somewhat stronger than in female. Length, 0.82 mm.; width, (about) 0.40 mm.

From Twin Falls, Idaho; on roots of red clover; by W. N. Birch, county agent.

Described from two females and one male sent to me by A. C. Burrill who received them from Mr. Birch. The absence of the spurs or chitinous teeth on the second pair of legs distinguishes this species from all others in this country. Cotypes at present in writer's collection.

Hologamasus quinquedentatus new species. (Text fig. 5.)

♀: A large chestnut brown gamasid. Epistome very broad, but rather short, thus the chelicerae are not covered when in repose. Along its front margin the epistome bears five, almost equal, sharp cusps or teeth spaced at about equal distances from each other. Chelicerae powerful, fixed chela surpassing the movable one and apparently toothless; movable digit provided with a few backwardly directed teeth. Abdomen broadest at the level of the coxae of legs IV, evenly rounded behind, shoulders weak but provided with the usual pair of setae. Body clothed above with small, inconspicuous setae. Epigynum triangular, its base behind the coxae of legs IV. Anterior legs longer than the rest; tarsi with straight, parallel margins, and weak claws which are situated on long, slender and weak pedicels. Second pair of legs enlarged, the trochanter being the stoutest of the segments; tarsi each with a pair of spines situated near the tip but distinctly below the base of pedicel; claws

only moderate. Last pair of legs extending for the full length of their tarsi beyond the tip of abdomen; trochanters swollen, much stouter than the longer femora; claws weak and situated at the tips of long pedicels. Length, 1.70 mm.; width, 0.90 mm.

From Ithaca, New York; under a stone; by the writer.

Described from female type, in the writer's collection. Its large size and epistome with five subequal teeth are the most significant characters of this species.

Liponyssus setiger new species. (Text figs. 6, 7.)

♂. Species yellowish brown and strongly spined. Palpi rather small and not more than one-half as long as anterior legs. Chelicerae not very stout but long and with sharp chelae; upper chela about one and one-half times as long as lower and sword-shaped. Body broadest at its middle and pointed behind, shoulders prominent. Above the body is well clothed with prominent, long, straight, spine-like setae; a rather conspicuous recurved pair is situated at the apex of the cephalothorax, and a single straight seta is situated at tip of abdomen. Peritreme slightly sinuous and ending at a level between coxae III and IV. Legs stout; last pair longest. Second pair of legs larger than adjoining pairs. Last pair extending for fully half their length beyond the tip of abdomen; trochanter stoutest segment; femur equal to patella in width and but slightly longer. Length, 0.64 mm.; width, 0.38 mm.

♀. Stoutier than the male, with the setae of the body less conspicuous. Chelicerae of the generalized type; fixed arm with a rather conspicuous lateral seta. Posterior legs not enlarged as in male. Length, 0.68 mm.; width, 0.45 mm.

From Madison, Wisconsin; on a short-tailed shrew; by A. C. Burrill.

Described from several specimens all collected at Madison. The presence of the lateral seta on the fixed arm of chelicerae of female in this species is almost a unique character. In general appearance similar to *L. spiniger* Ewing, but without the enormous spines on the first and second pairs of legs. Cotypes in the writer's collection.

Liponyssus bermudaensis new species. (Text fig. 8).

♀. A medium-sized, light yellowish brown species. Palpi fully one-half as long as the anterior legs. Chelicerae moderate in size, not heavily chititized. Body broadest behind the posterior coxae, almost evenly rounded behind, shoulders pronounced. Peritreme following the body wall for about one-half its length, then extending backward in a sinuous course to the stigma which is located at a level between the third and fourth

coxae. Anal plate roughly triangular with a stout spine at the apex about as long as the plate itself and two smaller spines situated on either side and slightly behind the anal opening. Legs short and stout; first pair about as long as the body is broad; second pair not swollen; third pair the smallest; fourth pair extending to the tip of the abdomen, trochanters equal to the femora in length and much stouter, each with a conspicuous lateral spine and near it a smaller spine. Length, 0.51 mm.; width, 0.34 mm.

From Bermuda; on a wood rat; by A. O. Gross.

Described from three females; all from same host individual, and in the writer's collection. Similar to *L. crosbyi* Ewing but with body setae much more prominent, anal plate of a different shape and apical seta of same fully twice as long.

Uropoda bermudaensis new species. (Text fig. 9.)

A smooth yellowish brown species. Body broadest in the middle and somewhat pointed at each end. It is very sparsely clothed with very minute hairs. Peritreme forming a conspicuous transverse loop towards its anterior end, and behind this loop sinuous, and at one place thrown into a minor fold. Genital plate of female extending from the front margins of the second coxae to the rear margins of the hind coxae evenly and broadly rounded in front and truncate behind. Legs short and stout; when flexed, neatly held in their excavations and concealed from above. Tarsus of leg I fully twice as long as tibia; inner margin straight, outer margin curved toward the tip where it is thickly beset with setae; claws and tarsal pedicel weak. Length, 0.57 mm.; width, 0.42 mm.

From Pembroke, Bermuda; in a banana orchard; by A. O. Gross.

Described from the female type, in the writer's collection. Related to *U. illinoiensis* Ewing but larger, less chitinized, with stouter legs and with body differently shaped; also differs in the shape of peritreme.

Uropoda robusta new species.

♀. A large, conspicuous, dark brown or black mite. Body almost twice as long as broad, evenly rounded behind and somewhat pointed in front; almost naked above but observed to be provided with a few very minute setae. Peritreme with prominent anterior loop and a short, slightly sinuous posterior part. Genital plate extending from the anterior margins of the second coxae to between the posterior coxae, about twice as long as broad. Legs moderate. Anterior pair when extended reaching for one-half their length beyond the front margin of body, tarsus

about three times as long as tibia and provided at its anterior end with a tactile seta as long as the tarsus itself. Posterior legs when extended not reaching tip of body. Length, 0.92 mm.; width, 0.78 mm.

♂. Very similar to female. Genital opening situated between third coxae. Length, 0.90 mm.; width, 0.75 mm.

From Guayaquil, Ecuador; on palm seeds; collected upon entry into the United States by H. L. Sanford.

Described from one female and two males. Similar in a general way to *U. folsomi* Ewing, but at once separated from this latter species by the absence of conspicuous body setae. Cotypes will be deposited in U. S. National Museum.

Uropoda longisetosa new species.

♀. Medium-sized, light chestnut brown species, with a pair of very long setae on the posterior margin of the body. Mouth parts rather weak. Body broadest at the middle, and broadly and evenly rounded in front and behind. Body with minute hairs above and a single large pair, equal to the width of the body in length, situated almost on the posterior margin; genital plate very large, triangular, with the base at the posterior margin of the posterior coxae and the apex in front of the front margins of the second coxae. Legs stout and when flexed covered above by the body; tarsi of leg I about two and one-half times as long as broad; tarsi of last three pairs of legs each provided with one or more spines. Length 0.76 mm.; width, 0.48 mm.

♂. Similar to female. Genital opening rounded in front and behind, but with straight sides; situated between the level of the third and fourth coxae. Length, 0.74 mm.; width, 0.48 mm.

From Leland Stanford University, California; in galleries of *Monarthrum scutellare* in *Quercus agrifolia*; by O. J. Gilliland.

Described from a single female and male; both taken in the same situation, and in the writer's collection. This species differs from most, if not at all, of the other species in the genus in the possession of the long pair of setae situated near the posterior margin of the abdomen.

Cilliba robustiunguis new species. (Text fig. 11.)

Medium-sized, yellowish brown. Body over two-thirds as broad as long, evenly rounded behind and somewhat pointed in front; above a few minute hairs. Legs short and not very stout. Tarsus I much weaker than tarsus II; the latter broader at its base and about four times as long as the tibia. This tarsus bears a few short spines and a large, conspicuous pair of claws that are rather strongly curved and have between them the moderate empodium or pulvillus. Genital plate of female almost as broad as long. Length, 0.95 mm.; width, 0.65 mm.

From Ithaca, New York; in dead grass collected in a Berlese trap; by the writer.

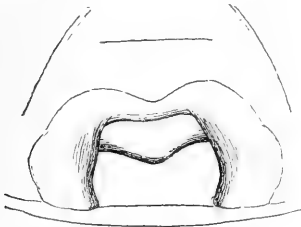
Described from a single female, in the writer's collection. This species is the first of the genus that the writer has reported from America.

A New American Amaurobius (Arachnida, Araneina).

BY RALPH V. CHAMBERLIN, Museum of Comparative Zoology, Cambridge, Massachusetts.

Amaurobius fractus sp. nov.

♀. Carapace, sternum, and legs fulvous, without markings, Abdomen above and at sides grey, a paler pointed mark at base and several indistinct chevrons behind, under the lens showing small pale dots and marks; venter dark in front of spinnerets, the other part lightened with larger yellowish marks. Eyes of the usual general relation. Anterior median eyes much smaller than the laterals. Posterior eyes subequal to each other and to anterior laterals; median eyes their diameter apart, two and two-thirds or more as far



Amaurobius fractus n. sp. Epigynum.

from the laterals. Clypeus narrower than diameter of an anterior lateral eye. Characterized by the epigynum which is wide open and much suggests that of *A. ferox* Bl., a much larger species. See accompanying figure.

Length 5.5 mm. Length of cephalothorax 2.8 mm.; width 1.8 mm. Length of tib. + pat. IV, 2.9 mm.

Locality.—California: Claremont. *Type*.—M. C. Z. 501.

Changes of Address.

Mr. William Beutenmuller has removed to Highwood, Bergen County, New Jersey. His postoffice box there is No. 258. Will correspondents please notice.

As from January 1, 1921, the permanent address of the Publication Office of the Imperial Bureau of Entomology will be: 41, Queen's Gate, London, S. W. 7. All communications respecting subscriptions to or exchanges for the *Review of Applied Entomology* and *Bulletin of Entomological Research*, or to the Bureau Library, should be sent to the Assistant Director at above address.

A New Species of *Dixa* from Argentina (Dixidae, Dipt.)

By CHARLES P. ALEXANDER, Urbana, Illinois.

Species of the family Dixidae from the South Temperate Zone are very uncommon. The only other species known is *D. chilensis* Alexander,* from Chile. The following species was taken in association with several interesting species of Tipulidae that are recorded elsewhere.

Dixa argentina, sp. n.

Rostrum obscure yellow; head black; mesonotum with three velvety black stripes, the anterior lateral margins yellow; pleura largely dark brown; knobs of the halteres brown; wings dusky, a conspicuous brown spot at *r-m*; abdomen brownish black.

♂.—Length about 2.3 mm.; wing, 3.2 mm. Rostrum obscure yellow; palpi dark brown. Antennae setaceous, black, the scapal segments slightly paler. Head black.

Mesonotum yellow on the antero-lateral angles; disk with three velvety black stripes, the interspaces dark brown; median stripe not reaching beyond midlength of the sclerite; remainder of the mesonotum black. Pleura yellow with a very broad brownish suffusion that covers all the sclerites with the exception of the sternum and the dorso-pleural membranes. Halteres dark brown, the base of the stem yellowish.

Legs with the coxae and trochanters light yellow; femora light brown, the tips narrowly blackened, most conspicuous on the posterior legs; tibiae and tarsi dark brown.

Wings with a strong dusky tinge, the costal and subcostal cells slightly more yellowish; a large brown cloud at *r-m*; veins dark brown. Venation: *Sc* ending just beyond the origin of *Rs*; *Rs* straight, very slightly sinuate, in direct alignment with R^{4+5} ; R^{2+3} only moderately arcuated, much shorter than either R^2 or R^3 ; *r-m* at the fork of *Rs*; *m-cu* opposite or slightly before *r-m*.

Abdomen brownish black, the sternites a very little paler.

Habitat: Argentina. *Holotype*, ♂, La Granja, Alta Gracia, Province de Córdoba, April 1-8, 1920 (Charles Bruch). Paratopotype, ♂. Type in the collection of the author; paratype in the collection of the Museu La Plata.

Dixa argentina bears a certain resemblance to *D. centralis* Loew of the United States but the details of coloration are very distinct. The types were collected by my friend, Dr. Charles Bruch, to whom I am indebted for many favors.

*Entomological News, vol. 24, pp. 176, 177; 1913.

ENTOMOLOGICAL NEWS

PHILADELPHIA, PA., DECEMBER, 1920.

Program and Price of the News for 1921.

In the October number we suggested raising the subscription price of the NEWS to enable us to increase the number of pages and possibly the illustrations. We have received a large number of replies from subscribers favorable to this suggestion. Unhappily, an increase in costs of printing for 1921 appears to be widespread and prevents us from enlarging the magazine to the extent to which we had hoped. We believe, however, that we are justified in promising thirty-two pages per month, instead of thirty, for the annual subscription of \$2.50, and this is our program and our price for 1921. We shall try also to give a few additional plates or illustrations.

We hope that all our subscribers will remain with us and help us as they have done in the past. All the income from the NEWS goes into its printing and illustration and the postage and stationery necessary for its maintenance. No one receives any salary or compensation for work done on the journal. Sooner or later—and we hope sooner—a decrease in costs of printing is probable, and when this happens we shall enlarge the NEWS step by step with lowered expenses.

Notes and News

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE

Meetings of Societies in the Christmas Holidays at Chicago

The seventy-third meeting of the American Association for the Advancement of Science and of the Associated Societies will be held at Chicago from December 27, 1920, to January 1, 1921. Dr. L. O. Howard, Chief of the Bureau of Entomology of the United States Department of Agriculture, is president-elect of the A. A. S. and will preside at the Chicago meeting. He has been permanent secretary for twenty-two years during which the membership of the organization has increased from 1,729 to over 12,000.

The Entomological Society of America will hold its annual meeting December 27 and 28.

The meetings of the American Association of Economic Entomologists will immediately follow those of the preceding society.

The thirty-eighth annual meeting of the American Society of Naturalists will begin on December 30; a symposium on "General Physiology" will be offered that afternoon and the annual dinner that evening.

The annual meeting of The Ecological Society of America will be held December 28 to 31, the annual dinner on the evening of the 28th.

Coleoptera Associated with *Pleurotus ostreatus*.

This fungus, commonly known as the oyster mushroom, appears to be more attractive to insects than any other member of the family *Agaricaceae* and for that reason it is desirable to call attention to it. It is an edible species and occurs from spring until late fall, either singly or in clusters on the limbs or trunks of dead or living trees. Patterson and Charles (U. S. Dept. Agric. Bul. 175, p. 13) give the following brief description by which it may be recognized, "cap either sessile or stipitate, shell-shaped or dimidiate, ascending, fleshy, soft, smooth, moist, in color white, cream, grayish to brownish ash; stem present or absent (if present, short, firm, elastic, ascending, base hairy); gills white, decurrent, somewhat distant, anastomosing behind to form an irregular network. Cap 3 to 5 inches broad; mostly cespitose, imbricated."

A related species, *Pleurotus sapitus*, upon which were found only a few species of Coleoptera, resembles *ostreatus* closely but is distinguished by its lilac-tinged spores.

As shown by the following table, 26 species are listed representing 10 families. Those species marked with an asterisk were taken on a single specimen of *Pleurotus ostreatus* by Mr. K. F. Chamberlain at Cornwall, Connecticut, June 27.

According to the table, the *Tenebrionidae* and *Staphylinidae* appear to be the best represented families. The *Staphylinidae* are commoner on gill fungi than on polypores but the *Tenebrionidae* are equally at home on either polypores or agarics. All of the species listed, except those belonging to predaceous groups such as the *Carabidae* and *Histeridae*, are probably fungus eaters.

CARABIDAE: *Pterostichus lucublandus* Say.* SILPHIDAE: *Necrophorus pustulatus* Hersch.* STAPHYLINIDAE: *Staphylinus maculosus* Grav.,* *Oxyporus vitatus* Grav., *O. lateralis* Grav., *O. major* Grav., *O. stygius* Say. EROTYLIDAE: *Tritoma thoracica* Say,* *T. flavicollis* Lec.* MYCETOPHAGIDAE: *Mycetophagus flexuosus* Say,* *M. melsheimeri* Lec.,* *M. punctatus* Say.* HISTERIDAE: *Hister abbreviatus* Fab.,* *H. interruptus* Beauv.* NITIDULIDAE: *Nitidula bipunctata* Linn.* *Phenolia grossa* Fab.* *Ips quadriguttatus* Oliv.* *Cyllodes biplagiatus* Lec. CISIDAE: *Rhipidandrus*

paradoxus Beauv. TENEBRIONIDAE: *Scotobates calcaratus* Fab.,* *Xylopinus saperdioides* Oliv.,* *Diaperis maculata* Oliv.,* *Platydema subzostatum* Lap.* *Boletotherus bifurcus* Fab.* *Helops micans* Fab.* MORDELLIDAE: *Tomoxia bidentata* Say.*

HARRY B. WEISS, New Brunswick, New Jersey.

The Crop Protection Institute.

An organization has been effected under the auspices of the National Research Council, by which it is proposed to bring together manufacturers of insecticides, fungicides and allied commodities with the scientific men in entomology, plant pathology and agricultural chemistry. The title of the organization is The Crop Protection Institute.

The question of bringing about such an organization has been under advisement by a number of entomologists and has been studied at some length by the Committee on Policy of the Association of Economic Entomologists. It is explicitly not the intent to duplicate existing organizations or agencies. Rather, it is the thought that this Institute can serve as the vehicle for accomplishing some things for which there is not at present any machinery, and may supplement on occasion the work of existing departments or agencies.

The greatest care has been taken to safeguard the activities of the Institute from suspicion of commercial influence. All of its affairs are entirely in the hands of the Board of Trustees of thirteen members, nine of whom must be scientific men without commercial affiliations. Definite provision is made for general publication of the results of research. Scientific members of the Association will receive publications of the Institute from time to time, in addition to sharing in other activities and helping to guide the Institute into useful endeavors.—W. C. O'KANE, Durham, New Hampshire, Chairman Board of Trustees of The Crop Protection Institute.

Entomological Literature.

COMPILED BY E. T. CRESSON, JR., AND J. A. G. REHN.

Under the above head it is intended to note papers received at the Academy of Natural Sciences, of Philadelphia, pertaining to the Entomology of the Americas (North and South), including Arachnida and Myriopoda. Articles irrelevant to American entomology will not be noted; but contributions to anatomy, physiology and embryology of insects, however, whether relating to American or exotic species, will be recorded.

The numbers in HEAVY-FACED TYPE refer to the journals, as numbered in the following list, in which the papers are published.

All continued papers, with few exceptions, are recorded only at their first installments.

The records of papers containing new genera or species occurring north of Mexico are all grouped at the end of each Order of which they treat.

For records of Economic Literature, see the Experiment Station Record, Office of Experiment Stations, Washington. Also Review of Applied Entomology, Series A, London. For records of papers on Medical Entomology, see Review of Applied Entomology, Series B.

7—Annals of The Entomological Society of America, Columbus, Ohio.

8—The Entomologist's Monthly Magazine, London: 9—The Entomologist, London. 10—Proceedings of the Entomological Society of Wash-

ington, D. C. **12**—Journal of Economic Entomology, Concord, N. H. **15**—Insecutor Inscitiae Menstruus, Washington, D. C. **17**—Lepidoptera, Boston, Mass. **19**—Bulletin of the Brooklyn Entomological Society. **21**—The Entomologist's Record, London. **25**—Buletino della Societa Entomologica Italiana, Firenze. **26**—Boletin de la Sociedad Entomologica de Espana, Zaragoza. **33**—Annales de la Societe Entomologique de Belgique, Brussels. **52**—Zoologischer Anzeiger, Leipsic. **64**—Parasitology, London. **68**—Science, Lancaster, Pa. **76**—Nature, London. **79**—Bulletin of the Museum of Comparative Zoology at Harvard College, Cambridge, Mass. **85**—The Journal of Experimental Zoology, Philadelphia. **89**—Zoologische Jahrbucher, Jena. **103**—Biologisches Centralblatt, Leipzig. **104**—Zeitschrift fur Wissenschaftliche Zoologie, Leipzig. **106**—Anales de la Sociedad Cientifica Argentina, Buenos Aires. **113**—Transactions of the London Natural History Society. **114**—Entomologische Rundschau, Stuttgart. **115**—Societas Entomologica, Stuttgart. **116**—Entomologische Zeitschrift, Frankfurt a. M.

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EXCHANGES.

This column is intended only for wants and exchanges, not for advertisements of goods for sale. Notices not exceeding three lines free to subscribers.

These notices are continued as long as our limited space will allow; the new ones are added at the end of the column, and only when necessary those at the top (being longest in) are discontinued.

Wanted—For cash, or exchange, papers on insect biology, ecology or behavior (especially aculeate Hymenoptera). P. Rau, 2819 S. Kings highway, St. Louis, Mo.

Brachynus wanted for cash or exchange from any part of North America. J. W. Green, 520 McCartney St., Easton, Pa.

Lepidoptera Hesperidae wanted.—I will purchase or exchange and also name specimens. South American species particularly desired. Henry Skinner, Logan Square, Philadelphia, Pa.

For Exchange—Iowa Catocalae in A-1 condition. Wanted, Cocoons of *Actias luna* also other lepidoptera. Mrs. O. F. Hiser, Arnolds Park, Iowa.

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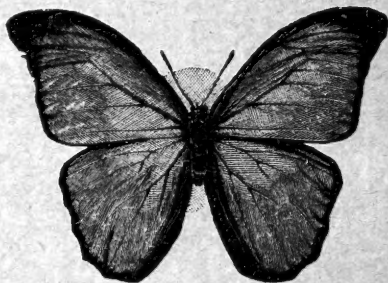
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