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AND

PROCEEDINGS

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VOLUME XVI, 1905.

PHILADELPHIA:
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THE ACADEMY OF NATURAL SCIENCES,
LOGAN SQUARE.

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INDEX TO VOLUME XVI.

(Notes and articles on geographical distribution are indexed under the names of the States or countries concerned, and *not* under the species listed therein, except in the case of new or re-described species. New generic and specific names are marked with a *.)

GENERAL SUBJECTS.

ARACHNIDA.

COLEOPTERA.

DIPTERA.

HEMIPTERA.

HYMENOPTERA.

LEPIDOPTERA.

NEUROPTERA.

ORTHOPTERA.

THYSANURA.

AUTHORS.

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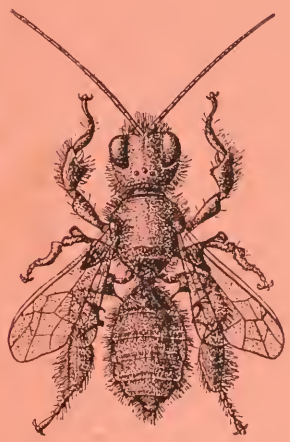

Cryptohalictoides spiniferus Viereck.

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EXOTIC BUTTERFLIES.

ENTOMOLOGICAL NEWS

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ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. JANUARY, 1905. No. 1.

CONTENTS:

Our frontispiece this month was made direct from specimens in the collection of the Academy of Natural Sciences of Philadelphia, by the Photo-chromotype Company of Philadelphia. This is one of the largest companies in America doing this line of work. The specimens represented are as follows: *Eronia phocæa* Felder, from the Philippines. *Cyrestis elegans* Boisduval, from Madagascar. *Catagramma cynosura* Doubl.-Hew., from Brazil.

Micro-Lepidoptera of Algonquin, Illinois.

By WILLIAM A. NASON, M.D.

The following list includes species of Lepidoptera of the families of Pyralidæ, Tortricidæ and other "micros" arranged in the order given in Dyar's "List of North American Lepidoptera." The list is interesting from the fact that it adds to our knowledge of the geographical distribution of species; and also from the fact that the place of capture is peculiar in its faunal relations.

The town of Algonquin is situated fifty miles northwest of the city of Chicago, and less than thirty miles, in a direct line,

west of the shores of Lake Michigan. It is located on the Fox River, which flows south, through the Illinois River, into the Mississippi. Hence the fauna partakes in character more of that of the Mississippi Basin than that of the Great Lake region—a fact which is proven by comparing the list as given below with the localities as given by Dyar in the work quoted above.

Mr. W. D. Kearfott kindly determined the species.

PYRALIDÆ.

Glaphria glaphryalis *Guenée.*
Desmia funeralis *Hübner.*
Evergestis straminalis *Hübner.*
Crocidophora serratissimalis *Zeller*
Nomophila noctuella *Denis & Schiff*
Phlyctænia ferrugalis *Hübner.*
Pyrausta æglealis *Walker.*
thestealis *Walker.*
penitalis *Grote.*
borealis *Packard.*
Nymphula badiusalis *Walker.*
obscuralis *Grote.*
obliteralis *Walker.*
Elophila magnificalis *Hübner.*
fulicalis *Clemens.*
Scoparia basalis *Walker.*
Pyralis farinalis *Linnæus.*
Herculia cohortalis *Grote.*
olinalis *Guenée.*
himonialis *Zeller.*
Schœnobius tripunctellus *Robinson.*
Crambus laqueatellus *Clemens.*
alboclavellus *Zeller.*
albellus *Clemens.*
hortuellus *Hubner.*
vulgivagellus *Clemens.*
ruricolellus *Zeller.*
interminellus *Walker.*
caliginosellus *Clemens.*
Argyria nivalis *Drury.*
Plodia interpunctella *Hübner.*

TORTRICIDÆ.

Exartema fasciatanum *Clemens.*
Olethreutes nimbatana *Clemens.*
hebesana *Walker.*
coruscana *Clemens.*
constellatana *Zeller.*
instrutana *Clemens.*
Eucosma strenuana *Walker.*
illotana *Walsingham.*
otiosana *Clemens.*
Thiodia signatana *Clemens.*
Proteopteryx deludana *Clemens.*
spoliana *Clemens.*
Ancylis comptana *Fröl ich.*
Cydia pomonella *Linnæus.*
Epagoge sulfureana *Clemens.*
Capua furcatana *Walker.*
Cœlostathma discopunctana *Clemens.*
Archips rosaceana *Harris.*
cerasivorana *Fitch.*
obsoletana *Walker.*
fervidana *Clemens.*
clemensiana *Fernald.*
Platynota sentana *Clemens.*
Pandemis limitata *Robinson.*
Tortrix pallorana *Robinson.*
albicomana *Clemens.*
fumiferana *Clemens.*

ŒCOPHORIDÆ.

Depressaria heracliana *De Geer.*
Semioscopsis packardella *Clemens.*

Two Elusive Dragon-flies.

By James G. Needham.

During three summers spent in Lake Forest I have been much afield, and have always kept a sharp lookout for dragonflies, which, after the first of June, are very common. Each year I have seen the shadowy form of one I could not capture. Sometimes I would flush it beside a woodland path, and it would disappear at single sweep among the treetops. Sometimes it would be seen speeding along high over head, apparently coursing for insect prey, but I never saw it at rest, and I could not distinguish its type of coloration. From its size and manner of flight I concluded it must be either a *Cordulegaster* or a *Macromia*, and there the matter rested for five years, with often a flash of wings and a vanishing shadow among the trees to remind me of a task of observation incompleted.

During the past spring I have collected from a number of the puny streams that enter Lake Michigan along the "North Shore," and in all of them have found nymphs of *Cordulegaster*. Grown specimens were repeatedly taken during May in a seine drawn for minnows, and on May 24th, while seining out a small pool in a stream, a single newly transformed adult was found upon the bank. It was *Cordulegaster obliquus* Say.

On June 26th I was surprised to see one sitting on a reed close to the ground in a wood in front of my house; I was still more surprised at being able to capture it *in my hat*. A careful bit of stalking and a good stroke did it. This was a a female that had wandered at least two miles from any stream suitable for the abode of its offspring.

As this specimen was fully mature I thought that perhaps, by visiting the stream in which I had found the nymphs most abundant, I might be able to make some observations on the habits of the adult. Such observations are much needed. So good an observer of dragonflies as the late Professor Kellicott wrote of the Cordulegasterinæ in his Odonata of Ohio, p. 74, "I have seen so few specimens on the wing that I do not feel justified in giving anything of their habits in the field," and among the few notes concerning *C. obliquus*, there are

chance remarks indicating that others have likewise found it elusive (see Williamson: ENT. NEWS, Vol. XIII. p. 110). So on the afternoon of the following day, June 27th, I betook myself to the largest of our north-shore streamlets, called by courtesy Pettibone Creek, whose south branch flows through a fine bit of native oak woods. In this south branch are many deep and shadowy pools overhung with spreading clumps of witch hazel, and the connecting streamlet is hardly more than a rivulet, winding among small moss-grown boulders or cutting under green banks of grass and sedge.

The pools are the home of the *Cordulegaster* nymphs. They lie on the bottom covered by the silt. They do not burrow, but descend into the silt by raking it out from beneath with their legs. Then when deep enough they kick it up over their backs and hide themselves absolutely against observation, having only the sharp upper angles of the eyes, the sensitive antennæ and frontal fringe, and the respiratory aperture at the tip of the abdomen exposed. Thus they lie in ambush, wholly inactive, unless the wandering near of some mayfly nymph (here *Leptophlebia pæpedita* Etn.) or gnat larva invites a thrust of the enormous grasping labium. They have competitors for this food, also dwelling in the pools, chiefly the red-bellied minnow, and the black-nosed dace.

I hoped this afternoon to discover cast nymph skins beside the stream, to find the male which had as yet escaped me, and to observe the female ovipositing, as well as to attend to another matter to be mentioned further on. On first approach I saw a fine male sitting upon a stout reed over the stream, at once he dashed off into the woods. Soon I saw another coursing low over the narrow part of the stream, here almost blocked with overgrown clumps of cowslip and water plantain. His beat was the narrow and sinuous lane which the stream cuts through the deep and bottom land herbage. I let him pass once and then took my place beside this lane; presently back he came, after the manner of his kind, directly over the water. A quick sweep of the net brought up from behind just as he was passing, and I had my first male specimen fluttering inside. I caught another on another beat, but the half dozen or more

that I flushed from sunny openings in the bottomland gave me no chance whatever of capture.

I found cast skins, also, half a dozen of them in all; but these were unusually hard to find, being heavily covered with bottom silt, which matches well the trash in which they lie. All were within a foot of the water's edge, and all but one lay flat upon the ground.

The nymph of *C. obliquus* is in general appearance very like those of half a dozen other species of the genus. It agrees with the brief description given by Dr. Hagen for a Texas specimen (from the collection of the late lamented Mr. McLachlan) which he referred to this species (Trans. Amer. Ent. Soc., XI, 291, 1885), except in size. The largest female nymph I found measures in total length 39 mm., abdomen 25 mm., hind femur 6 mm.; width of head 8 mm., of abdomen 10 mm. The whole body is densely clothed with stiff hairs, and these hold a complete investment of silt. When one cleans a nymph carefully with a soft brush (it is a prolonged and tedious operation), he finds beneath the silt quite as much of color pattern as is usually shown by dragonfly nymphs. The frontal fringe of stiff radiately arranged bristles comes out more clearly also, and a tuft of black bristles above each lateral ocellus. The "epaulets" of the prothorax are large, obliquely oval, and are fringed on their external margins with stiff bristles. The legs are short, yellowish, with interrupted apical and subapical rings of fuscous appearing on all the femora. The wing tips reach the base of the fifth abdominal segment. The abdomen is without dorsal hooks, but there are stout straight lateral spines on segments eight and nine, the one on the ninth segment slightly larger and equaling in length half the length of the segment. Dr. Hagen mentioned these spines, but he omitted to notice the other diagnostic characters, which are in the armature of the labium. There are six lateral setæ, and about thirteen setæ on the mentum each side, the outermost eight stronger and in a close set series. The bifid middle tooth of the labium is much as in *C. diastatops*.

I did not observe the female ovipositing, as I had hoped to do.

But I had another errand dragonfly at Pettibone Creek this afternoon. In May I had found a single nymph of a species of *Somatochlora* in the rapid portion of the stream between two pools. I took it home alive, and a visitor to my laboratory (who meant well), fed it to the fishes in the aquarium. I went again to the creek, and with considerable searching, found three more. All were clinging to matted sedge roots in the edge of the current, and were obtained by stripping the mats upward with a little sieve dipper. I had never seen a live imago of *Somatochlora* in Illinois and I thought this afternoon I might find one, or, more probably, find some empty nymph skins to supplement my scanty supply of the nymphs.

Dame fortune was kind. On the very bank that trailed in the undercutting stream the root mats from which I had taken the nymphs, there sat a fine male of *Somatochlora linearis* beside its recently abandoned skin ; a few feet distant sat similarly an equally fine female, and I took them both in out of the weather.

Within ten feet of the two imagos I found a dozen nymph skins of the same species, clinging to the grass up which they had climbed none of them more than a foot above the surface of the water.

These proved to be the same species as the nymph I have already described (in Bull. 68, N. Y. State Museum, p. 269), as *Somatochlora* sp. No. 2, a live specimen of which came into my possession at Ithaca eight years ago, and was lost through my own ignorance. They are older, and dirtier, and do not show the color pattern I there described ; but they are no doubt the same species ; no other imagos were seen. But I had enough for one afternoon. Any naturalist who has been long baffled in seeking acquaintance with some little resident of his own neighborhood will understand my feeling of satisfaction at having made some progress knowing these two shy favorites of mine. How delightful had been this afternoon. It had yielded me new life history material ; it had furnished the keys to long standing puzzles, and it had provided me choice specimens to be shared with my friends who love them, and who have generously shared their own treasures with me. Are not these the abiding pleasures of a naturalist ?

The Flat-bugs (Aradidae) of North Carolina.

By Franklin Sherman, Jr.
(Entomologist Dept. Agr., Raleigh, N. C.)

Although the following list is no doubt incomplete it is thought well to publish it at this time, as it represents considerable work that has been done in collecting the Aradidæ of this State. Two species are included on the authority of Bergroth; all the others have been collected in the last two or three years, the identifications having been made by Mr. Otto Heidemann, of the U. S. Department of Agriculture.

Mr. W. F. Fiske, of the Bureau of Entomology, has collected this family to a considerable extent in the vicinity of of Tryon, N. C., and Heidemann has recently described several new species from his material (in Proc. Ent. Soc. Washington). The author has collected considerably at Raleigh and on Cape Hatteras, and these three localities represent, respectively, the mountain, middle, and sandy coast regions of the State, and should make a good exhibit of the diversity of forms found.

I regret that I am not able to present this list entirely in the order of their natural sequence. The signs (W), (C), and (E), immediately after the name of the locality denote whether it is in the west, central, or eastern portions of the State.

1. **Aradus robustus** Uhl.

Cape Hatteras (E), January, 1903, F. Sherman.

2. **Aradus similis** Say.

Goldsboro (E), May 2, 1901, Sherman.

Tryon (W), April 9, December 14, 1903, under bark of girdled elm, W. F. Fiske.

3. **Aradus quadrilineatus** Say

North Carolina (E) Bergroth (see Proc. Ent. Soc. of Wash'n, Vol. II., p. 335).

4. **Aradus rectus** Say.

Raleigh (C), June 30, 1902, F. Sherman.

5. **Aradus falleni** Stal.

Raleigh (C), June 28, 1903, May, 1, 7, 1904, F. Sherman.

Tryon (W), May 30, 1903, at light, W. F. Fiske.

6. **Aradus niger** Stal.

Southern Pines (S. E.), January, 1904, F. Sherman.

7. **Aradus acutus** Say.

Southern Pines (S. E.), March, 1904, very dark specimens, F. Sherman.

Tryon (W), April 17, 1903, beneath bark of rotten oak, W. F. Fiske.

8. **Aradus crenatus** Say.

Tryon (W), April 4, 7, 17, 1903, under bark of dead tulip tree, W. F. Fiske.

9. **Aradus cinnamomeus** Panzer.

Tryon (W), 1903, common in spring and early summer, on large pine tree. Many caught in pitch from wound, W. F. Fiske.

10. **Brachyrhynchus lobatus** Say.

Raleigh (C), April 6, 1902, dead when taken, F. Sherman.

11. **Brachyrhynchus granulatus** Say.

Cape Hatteras (E), January, 1903, F. Sherman.

Littleton (N. E.), April 2, 1902, F. Sherman.

Tryon (W), March 6, April 9, 1903, numerous on yellow pine, dead some years, and under bark of dead maples. November 17, 1903, under bark of chestnut felled last spring, W. F. Fiske.

12. **Brachyrhynchus simplex** Uhler.

Cape Hatteras (E), January, 1903, many under bark of fallen log, F. Sherman.

Raleigh (C), March 17, 1902, under bark of fence post, F. Sherman.

13. **Brachyrhynchus mœstus** Stal.

Cape Hatteras (E), January, 1903, abundant under bark of fallen log, F. Sherman.

14. **Brachyrhynchus ovatus** Stal.

North Carolina (E) Bergroth (see Proc. Ent. Soc. of Wash'n, Vol. II., p. 336).

15. **Neuroctenus pseudonymus** Bergroth.

Mr. Heideman states that this species was originally described from North Carolina.

Saluda (W), May 20, 1903, beneath bark of decaying chestnut, W. F. Fiske.

16. **Neuroctenus elongatus** Osborn.

Tryon (W), April 3, 1903, beneath bark of decaying chestnut, W. F. Fiske.

17. **Neuroctenus hopkinsi** Heidemann.

Hendersonville (W), May 26, 1903, under bark of fallen white pine, W. F. Fiske.

18. **Neuroctenus simplex** Uhler.

Tryon (W), March 9, November 17, 18, 1903, beneath oak bark, W. F. Fiske.

Saluda (W), March 25, 1903, W. F. Fiske.

19. **Aneurus fiskei** Heidemann.

Tryon, May 21, 1903, W. F. Fiske.

Some American Hymenoptera.

By T. D. A. Cockerell.

Halictus armaticeps Cresson, var. γ.

Smaller than usual, and more or less reddened; sometimes the first two abdominal segments of the female bright ferruginous; head of the female large, broader than thorax.

Because of the large head, this cannot well be referred to var. *texanus* (Cresson). It has rather a distinct aspect, but I find no satisfactory characters for specific separation.

Hab.—La Cueva, Organ Mts., New Mexico, about 5300 feet, Sept. 3 and 4, both sexes (*C. H. T. Townsend*); Mesilla, New Mexico, June 24, one ♀ (Cockerell).

Monidia, n. n. (*Monia*, Westwood, Tr. Ent. Soc. London, 1875; not Gray, 1849). Type *Monidia grisea* (*Monia grisea*, Westwood). Mexico. Length about 8 mm.

Dianthidium parvum (Cresson).

A cell found at Las Vegas, N. M., consisting of resin and small stones, contained an immature but quite recognisable

D. parvum. This affords further support to the opinion that all species of *Dianthidium* make resin nests.

Exomalopsis verbesinæ Ckll.

Tempe, Arizona, one ♀ at flowers of *Heterotheca*, in October (Cockerell). This species is certainly not an *Anthophorula*; it is allied to *E. solani*, but smaller and narrower, with redder tegulæ and more brightly-colored antennæ. It is new to Arizona.

Exomalopsis solidaginis Ckll.

La Cueva, Organ Mountains, New Mexico, about 5300 feet, September 5, at flowers of *Lippia wrightii*, 3 ♂ (*C. H. T. Townsend*). These are a little larger than the type, with the hair averaging paler. It is not impossible that they represent the male of *E. solani*.

The three forms of *Exomalopsis* s. str. found in the United States may be separated thus:

Abdomen thinly but copiously hairy, the bases of the segments not contrasting, nor the hind margins with white bands; flagellum not brightly colored beneath; males . . . . . *solidaginis* Ckll.
Abdomen with narrow white marginal hair-bands; females. 1
1. Larger and broader; tegulæ piceous . . . . . *solani* Ckll.
Smaller and narrower; tegulæ dark brown or reddish, antennæ more brightly colored . . . . . *verbesinæ* Ckll.

All the others (*sidæ* Ckll., *coquilletti* Ashm., *texana* Friese, *bruneri* Crawf., *compactulus* Ckll.,) have in the male the light clypeus of the group *Anthophorula*.

Odynerus rufinodus Cresson.

I took this at Mesilla Park, New Mexico, June 14. The insect is closely allied to *O. bellulus* Cresson, and has been confused with it. The females of the two are easily separated as follows, the notes on *bellulus* being derived from Cresson's type in the U. S. National Museum.

O. rufinodus Cr. Second abdominal segment without the lateral yellow spots of *bellulus*; post scutellum black; mesothorax with a median black line; front without a yellow mark; clypeus black; head and thorax larger. New Mexico.

O. bellulus Cr. Second abdominal segment with a yellow spot on each side; post-scutellum ferruginous; mesothorax

without a median black line; front with a yellow mark; clypeus rufous, upper margin broadly yellow. Texas.

Both have ferruginous legs, a yellow patch on pleura just below tegula, and four-dentate mandibles, the innermost tooth rudimentary.

The Occurrence of a Tropical Butterfly in the United States.

By C. T. Brues.

During the month of October, 1899, while collecting insects along the bed of a dried up creek near Austin, Texas, I noticed among the large numbers of butterflies which frequent such places a peculiar species which later proved to be *Eubagis* (*Dynamine*) *dionis* Hubn.** ** (I have examined specimens of the species in the American Museum of Natural History, and there can be no doubt of its identity). This was the first and last time that I have observed it, although the three following years were spent collecting in the same vicinity. At the time there were numbers of them flying about the mud holes still remaining along the course of the stream, which annually dries up during the summer months. All were in fresh condition, and there can be no doubt that they had been breeding in the locality. What may have been their larval food plant I cannot suggest, as their normal one seems to be unknown.

The genus *Eubagis* is strictly neotropical and is represented by some thirty species from Mexico, Central America and South America. According to a note under the species in question in the Biologia Centrali Americana, this form is restricted to Southern Mexico, Guatemala, Nicaragua and Costa Rica, and the opinion is held that it is peculiar to Central America.

Whence came the numerous specimens in central Texas would be hard to say, especially since they seemed to be breeding there. Apparently the summer had been very favorable for the development of insects as Hymenoptera and Diptera were more abundant than I have ever seen them in that part of the country. Among the butterflies, another southern spe-

cies *Mestra* (*Cystineura*) *amymone* which is usually restricted in its northern distribution to the extreme southern portion of Texas was very common about Austin. In fact dozens of them could be captured hovering about the bushes of *Eisenhardtia* on the University campus. In former years they were much less numerous although an occasional specimen could be found.

So far as I could ascertain no especially severe or protracted southerly winds had been experienced there during the summer, such as those which sometimes serve to carry large Lepidoptera for great distances.

Whether the *Eubagis* will ever establish itself as a permanent inhabitant of this locality remains to be seen.

Notes on Prionapteryx nebulifera Steph.

By Erich Dæcke, Phila., Pa.

(See Plate II.)

The stunted growth of an isolated patch of huckleberry bushes attracted my attention while collecting at Iona, N. J., May 26, 1902. The bushes were hardly eight inches high growing on a stretch of white sand so commonly found on the pine barrens of southern New Jersey. The partial absence of leaves on the bushes evidently indicated the work of some insects, and looking closer I found that almost every stem was thickened by a tube of white sand loosely spun together, leading from the ground and diverging to the various branches. Whenever a branch was defoliated the sand tubes were rather dilapidated and partly missing, but the sand tubes leading to fresh clusters of leaves looked as if they were of recent construction. I opened one of these tubes, searched downward, and reached a nest of minute black ants *Prenolepis parvula* Mayr., about three inches below the surface of the ground. It did not seem probable that these little ants could consume the leaves of huckleberry, and the fact that the sand of these tubes was put together by fine silken threads, left no doubt that some Lepidopterous caterpillar was responsible for the construction of these tubes, but I could not find a trace of a caterpillar that day. I visited the place again, and after searching diligently, found a very active and evasive cater-

ON PRIONAPTERYX NEBULIFERA STEPH. DAECKE.

pillar eagerly trying to conceal itself under the sand. Searching further I found one sand tube leading underground and terminating into a bag-shaped cocoon which contained a healthy Lepidopterous pupa, and from which emerged a fine specimen of *Prionapteryx nebulifera*, June 26, 1902.

The identity of the moth was established, but there remained one physiological question unsolved. Why do the ants and caterpillars live together in these sand tunnels? The caterpillars undoubtedly do the spinning, but it does not seem to be the nature of a caterpillar to carry sand, especially as it had to be done seven or eight inches in a vertical direction. An ant cannot spin, but is particularly adapted to carrying grains of sand. Here I was confronted with a strange and interesting proposition, namely: do these ants and caterpillars cooperate in the building of this structure?

To ascertain this I visited the place once more, but every trace of the colony had disappeared. I searched in vain for specimens all summer of 1903. At last, it was May 21, 1904, one more specimen was found at Brown's Mill Junction, N. J. This time the food plant was sand myrtle, *Dendrium buxifolium* Desv. The caterpillar was there and the ants were there. I carefully opened the burrow and found as before that it lead to a small cavity underground inhabited by ants, but close examination proved it to be nothing else but a chamber in which the caterpillar deposited its excreta and the ants acting as some sort of scavenger. This cavity is built on an angle, while the cocoon is built vertically from the tube as soon as the caterpillar is ready to pupate.

For further observation I secured the caterpillar and dug out a small bush of sand myrtle, which, reaching home, I planted in a flower pot, released the caterpillar thereon and covered the pot with a glass closely fitting to the edge of the pot. The caterpillar began to work immediately, and in two days had built a tube along the stem of the myrtle high enough to reach the nearest leaves for food. This proved

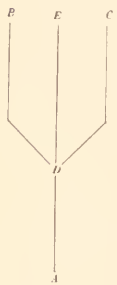
conclusively that the ants had nothing to do with the tube building. I observed the caterpillar for two weeks. The tube being added to only in the forenoon at the rate of one to two inches per day. At no time was the caterpillar visible, and it would build all around the leaves before feeding. One interesting fact seemed to me worthy of note, that when no twig was available to the nearest cluster of leaves, it would erect the tube free in a straight line towards it, though the sense of sight must be out of question. By some instinct the direction of the nearest food is known though the caterpillar is encased.

Ropronia, an anomalous Hymenopteron.

By J. Chester Bradley, Ithaca, N. Y.

In every natural scheme of classification in zoology one must expect to find intermediate forms between the groups that tend to link them together. Were all such forms that have existed still in existence, classification would be impossible. It is only by the loss of connecting links that we are able to define groups at all. This loss may occur in two ways, either by total extinction, or the link although in main preserved to us may itself have specialized at least along certain lines during the ages, so that the resulting form to-day may be very far different from what the original link was.

Let us consider a diagram in which A represents a type of animal in past ages. At D suppose a divergence in descent which by multiplication along successful lines of specialization has formed two large families, B and C. Then D represents a form which is a connecting link between these families. This may in rare cases be preserved to us at E without change, in which case the determination of its true relations becomes a comparatively simple matter. But suppose the link D has continued to specialize along unsuccessful lines so that it has not flourished as B and C have. Many characters of B, and many of C, may be retained, and others once characteristic of A, may be retained, but lost in B and C. These latter may



still be preserved in far distant groups. Other characteristics may be acquired different from either B or C. Let us suppose that the old form D and most of the line D–E has been so unsuccessful as to be entirely lost, and we find two large families, B and C, but along D–E only a single form left. Such a remnant is termed aberrant or anomalous, and it becomes a great problem to systematists to understand its peculiar relations. Such forms are found in every large group, and it is with one such that we have here to deal. The older systematists generally threw all such occurring in a group together, thus forming an unnatural heterogeneous sub-group, which is unquestionably the easiest way to treat them, although admittedly a temporary makeshift. This treatment has also been induced by the fact that such forms are apt to retain certain ancient characteristics in common which may have become lost by the groups to which they are really most nearly related. Another almost equally great, although less artificial mistake, is to include them as aberrant members of some family with which they have some character in common, or which they seem most nearly to approximate. It is far more apt to be the case that these so called aberrants, as in the case of E in the diagram, are the sole remnants of a perhaps never large or successful group, but equally distinct from B and C. To the objection that to recognize all such groups as distinct would multiply to unwieldly proportions our classification, we answer that the purpose of classification is not merely to act as a convenience for students in determining species, but to express conceptions of natural relationship.

The true relations of such anomalies as we have been discussing can only be determined, if, at all, by exhaustive study of the taxonomic value of all, or at least the most important characters of the animals forming the groups in question. Only in this way can a conclusion fairly be drawn. In the Hymenoptera it is probable that no character would shed such light as the wing venation. But so great is the complex in the Parasitica that it means years of labor before their classification can be properly worked out from that basis and correlated with other characters.

Some years ago Mr. W. Hague Harrington collected near Ottawa, Canada, a strange Hymenopteron which somewhat resembled an *Evania* with a red abdomen. This he sent to L'Abbe Provancher who described it as generically and specifically new to science under the name *Ropronia pediculata*. It was very evidently an anomaly, and Provancher in an attempt to account for it placed it in a group of Braconidæ which he called Flexitiventres. He considered it allied with the Ichneumons from its general appearance, and on account of the absence of the second recurrent nervure he placed it as a Braconid. But there is no known member of the Ichneumonoidea that has the costa and radius separate, thus forming a distinct costal cell, except Stephanidæ, and the small and peculiar family Evaniidæ, which has been generally used as a dumping ground for almost any anomalous Hymenopteron that would not fit elsewhere. Provancher felt that Braconidæ was not the right group, for a little later he changed its position to the Helorinæ in the Proctotrypidæ. This explained the presence of a costal cell. In fact the whole wing venation bears a superficial resemblance to *Helorus*. But when Dr. Ashmead seven or eight years later came to write his monograph of the Proctotrypidæ, he gave voice to the belief that it was a Braconid of the subfamily Pachylomatinæ. This conclusion was based on Provancher's description and figure of the wing. Later Dr. Ashmead described from males two new species and erected the family Heloridæ in the Proctotrypoidea, containing two subfamilies and three genera. The second subfamily, Monomachinæ, contained *Ropronia*, and also the highly anomalous South American Monomachus. That is what has been done with *Ropronia* to date, and that is where it is apt to stay for a while. But we all have a right to our own opinion, and I must confess to inability to agree with Dr. Ashmead.

My attention was first called to the insect in 1903 while collecting near Philadelphia. I was so fortunate as to take a ♀ of *garmani* Ashm. The description and figure of this appeared in the June, 1904, number of the "NEWS," the first figure of the genus ever published except Provancher's cut of the wing. Last July while collecting near Ithaca, N. Y., Dr. Mac Gilli-

vray took a ♀ of a species new to science which he has kindly permitted me to describe below.

There remains for *Ropronia* only a choice of the Ichneumonoidea or Proctotrypoidea or of a new superfamily between them. In the Aculeates and Proctotrypoidea the arrangement of the abdominal segments is such as to make the sting-like ovipositor arise from the apex of the abdomen; in the Ichneumonoidea it arises apparently from the ventral surface anterior to the apex, caused by a modification of the ventral segments. A study of the two ♀'s of *Ropronia* proves to my satisfaction, although not beyond the limits of doubt, that the arrangement in *Ropronia* is of the Ichneumonoid type, but other characters, such as the chitinization of the ventral segments, the nature and insertion of the petiole, the head and the wing venation are not like those of Ichneumonids, excepting perhaps Evaniidæ. It is evident to me that we have an old type perhaps greatly modified, as in the hypothetical case of E in the diagram. Its true relations will continue a matter of doubt until some one works out from exhaustive and systematic study the phylogeny of the parasitic Hymenoptera. Until this be done, I shall personally consider it as representing a distinct family,—ROPRONIIDAE between Ichneumonidæ and Evaniidæ. Of one thing I am certain, that it has no close affinities with *Monomachus* in which the type of abdomen is Proctotrypoid, and the shape utterly different; in fact there are no characters in common except a superficial similarity in wing venation, which may mean, so far as we know, perhaps much, perhaps nothing at all.

Ropronia ashmeadii n. sp.

♀ Dull black, abdomen except petiole, front femora except basal third, front tibia and base of tarsi bright red.

Head seen from above transverse quadrate, the eyes prominent, the distance behind them considerable; occiput rather sharply angled; mandibles black, bidentate, clypeus evenly rounded; face in front slightly swollen mesally below the antennæ, very irregularly roughened by sharp irregular wrinkles, interspersed with shallow punctures of various sizes, in a row around the edge of the rather small eyes and on the temples and cheeks sub-regularly quadro-reticulate; above the antennæ the wrinkles are less irregular, drawn out into long reticulations, again shallow

and irregular on the occiput, with a tendency toward radiation from the ocelli; antennæ filiform, fourteen-jointed, scape shorter than fourth joint, second joint about half the length of the third joint, latter longer than fourth.

Collar rather broad, pronotum extending back to tegulæ; humeral angels rounded; mesonotum with large roundish punctures, almost reticulate with broad meshes, a small area in the middle of the front marginal portion with numerous very fine elongate punctures; parapsidal lines distinct; pleura rather similarly sculptured to dorsum, a hollowed area above the middle legs which is nearly devoid of punctures and smoothly polished; venter minutely and shallowly punctate; rest of dorsum and propodeum punctured about as mesonotum; post-scutellum mesally raised into a distinct peg-like vertical short spine, sides of post-scutellum more or less smooth polished; propodeum very convex, overhanging the insertion of the petiole; legs short, claws without more than one or two fine bristle-like pectinations, which are perhaps mere bristles.

Wings tinged slightly smoky, a darker spot beneath the stigma, venation as normal in the genus. Abdomen polished, ovipositor not exserted. Length 6.5 mm.

One female, taken by Dr. A. D. Mac Gillivray while collecting in company with the author along the side of a wooded road, in the Larch Meadow, just south of Ithaca, New York, July 9, 1904. I am much indebted to Dr. Mac Gillivray for permitting me to study this interesting specimen.

I take pleasure in dedicating this species to Dr. Ashmead, who has already made known to science two species of the genus. The species differs from *pediculata* Prov. most distinctly in the process of the post-scutellum.

Type in the collection of Cornell University.

It is possible that this species and *californica* Ashm. with elevated post-scutellum and non-pectinated claws are generically distinct from *garmani* and *pediculata*.

LEPTOGLOSSUS ZONATUS Dallas.—Professor R. H. Forbes has sent me a number of specimens of this species (kindly identified by Mr. Heidemann) which he collected at San Ignacio, Lower California. He also reports the insect from Santa Agneda, and concludes from his observations that it is a very dangerous pest. Its habits appear to be similar to those of the closely allied *L. phyllopus*; Prof. Forbes observed it to attack limes, oranges, watermelons, dates, and in one instance a green cotton boll. At the same time Prof. Forbes sent some insects which were said to be killing the orange trees at Hermosillo, Sonora. They are *Icerya purchasi* Maskell.—T. D. A. COCKERELL.

The Larva of Hepialus sequoiolus Behrens.

By Francis X. Williams, San Francisco, Cal.

The larva of this interesting moth has, so far as I know, never been found or described, so I give herewith the result of my observations upon the species.

Mature larva—Head slightly bilobed, rounded, partly retracted under segment 1, shining reddish-brown black towards mouth-parts; antennæ normal, spinneret slender. Ocelli 6 in two parallel rows. Width of head 4 mm. A few hairs arising from head. Body cylindrical, much wrinkled, slender; segments 2 and 3 somewhat swollen, 12 and 13 tapering. Larger abdominal segments subdivided into four distinct wrinkles, other segments subdivided less distinctly. Thoracic segments, first wrinkle of first abdominal and last half of segment 12, segment 13 and prolegs of a dirty white color, rest of body wood-brown. Body adorned with plates and tubercles, all bearing brownish hairs, and regularly arranged. The substigmatal tubercles are smaller than the superstigmatal. Thoracic legs yellowish, darker towards tips, and bearing a few hairs. A small hair caudad of each leg; prolegs normal. A large amber-colored dorsal plate on each thoracic segment, that of 2 and 3 smaller and darker on edges. Segment 1.—Dorsal plate roughly trapezoidal, extending laterad almost to stigma, stigma black, oval, larger than following. Above stigma on plate a large black piliferous spot. Directly between spot and stigma on plate, a small hair. On anterior portion of plate extending laterad a transverse row of five superstigmatal hairs, the two lowest close together. One substigmatal tubercle bearing two hairs. Segment 2.—Dorsal plate on wrinkle 2, oblong, pointed, bearing two hairs; behind dorsal plate two large bilobed subdorsal plates each bearing four hairs. Extending laterad, two rows of tubercles of two tubercles each; one, large and conical on fold, one on fold 2 and other two on fold 3. Segment 3.—Dorsal and subdorsal plates smaller than in segment 2, and two large tubercles between subdorsal plates; lateral arrangement same as in segment 2. Abdominal segments.—On each side of segments, except 13, four superstigmatal tubercles in two transverse rows on fold 2 and 3 respectively. On segments 6-9, two oblique rows of substigmatal tubercles of two and four tubercles each, the first row beginning almost on the stigmatal line, found also on segments 4, 5, 10 and 11; the second row encircling the outer base of prolegs. Between prolegs two hairs. One larger dorsolateral two-haired tubercle on segments 4, 5, 10, 11 and 12. Between tubercles, a transverse row of small ventral tubercles four on segments 4 and 5, two on 10, 11 and 12. On segments 5 and 10 an additional row of two very small flat tubercles. On segment 12 three lateral tubercles, a continuation of second superstigmatal row. Segment 13; anal plate roughly triangular bearing two pairs of subdorsal hairs and two anterior ones; a few ventral hairs, some on prolegs. Length of body 44 mm.

Width 5.90 mm. Described from one living larva and several alcoholic specimens. Measurements taken from a large specimen, some larvæ being only 34 mm. long when fully grown ; this is not surprising, however, as the imagos also vary greatly in size.

Have found the larva in the stems of *Eriophyllum stædifolium* and in the root of *Helenium puberulum* but most frequently in the large yellow lupine. The larva bores longitudinal passages just above ground or a little under, turning its burrow at right angles and usually closing its opening with excrement. I have taken from the same plant, *Hepialus* larvæ some about one-third and others full grown ; I should judge therefore that the larval life is about two years. Have found larvæ in last stage from June to this date, December. They are very active, moving backwards easily. They should be put in separate vials or receptacles when collected otherwise they will invariably bite off each other's thoracic legs, and otherwise mutilate each other. *H. sequoiolus* is not rare in the vicinity of San Francisco where I collected larvæ of the same ; it is also taken in Alameda and Mendicino counties.

A New Thrips from the Philippine Islands.

By William H. Ashmead, M. A., D. Sc.

Among some parasitic Hymenoptera sent me by Father Robert E. Brown, of Manila, I found a single specimen of a Thrips, and, since these insects are still unknown in the Philippines, there being none recorded in Uzel's Monographie der Ordung Thysanoptera, I submit below a brief description of it.

Genus **IDOLOTHRIPS** Haliday.

Idolothrips tibialis n. sp.

♀.—Length 2.4 mm. Coal-black, smooth and shining, but with all tibiæ and tarsi, except the pulvilli, yellowish-white ; the basal four joints of the antennæ are black, the three following joints whitish towards the base, but brownish at apex, the small terminal joint wholly brown. The head is very nearly three times as long as wide, the sides parallel ; eyes pale. The thorax laterally, in front of the insertion. The wings have a row of four or five short, spine-like bristles. The abdomen is elongate, pointed at apex, and has numerous long, bristly hairs above.

Type.—No. 8,132, U. S. N. M.

Manila, (Father Robert Brown).

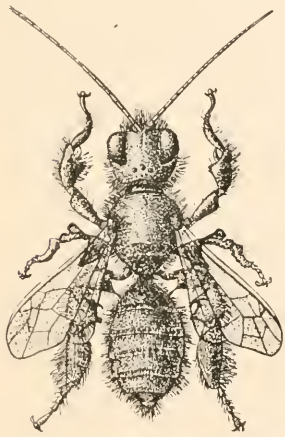
ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JANUARY, 1905.

*Cryptohalictoides spiniferus** ♂ is remarkable for the peculiar and elaborate production of the legs into processes and spines fairly well show in the illustration. It is on this account possibly farther removed from the usual than any other insect described during the past year. The structures are symmetrical and certainly serve some special purpose which it remains for some energetic biologist and physiologist to discover. There was almost no interest shown in the selection of an insect for the cover of the NEWS by our subscribers and we made the selection. In the January, 1904, NEWS we stated that the most remarkable insect described during the preceding year would be placed on the cover of each January NEWS and asked for suggestions from our readers.



A subscription blank has been placed in each number of this issue of the NEWS. It does not mean that you have not paid for 1905, but is a gentle reminder if you have not paid, and affords you an opportunity of promptly doing so if you have failed to attend to this very important matter.—TREASURER.

* Viereck, ENT. NEWS, xv, 261, 1904.

NEW TREATMENT FOR THE WOOLY APHIS.—Simply use Christian Science. There is no such insect; it is an invention of mortal mind. This is readily demonstrated by consulting Webster's or the Century. The proper spelling is *woolly*, and there is no word wooly,—hence no wooly aphis, and no need of bulletins on the subject. Missouri and Georgia entomologists, and all agricultural editors, please take notice.—MRS. EDDY (I don't think).

Entomological Literature.

RESEARCHES ON NORTH AMERICAN ACRIDIIDÆ. By Albert Pitts Morse. Publication No. 18, Carnegie Institution of Washington. 53 pp., 8 pls., 13 text figures.

In the presentation of this paper to the entomological world Prof. Morse has given us one of the most interesting and important papers published in recent years on American Orthoptera. The subject matter has been gleaned from a large series of specimens collected in the southeastern states by the author on a trip made in the summer of 1903, under the auspices of the Carnegie Institution. The territory covered extended from Norfolk, Virginia, to the vicinity of Pensacola, Florida, special attention being paid to the mountainous region of western North Carolina.

The paper is divided into a number of sections, the most interesting and important of which are "Zonal Distribution, Locust Societies and Habitats, a Comparison of Campestral and Sylvan Locusts, Macropterous and Brachypterous Species of Locusts, Brachypterism in other Orthoptera," and finally an annotated list of species and localities for each.

Under "Zonal Distribution" (p. 13) by a rather peculiar lapse *Eritettix* is omitted from a list of genera of austral origin not restricted to the eastern states, and *Scirtetica* is said to be confined to the east while the reverse is true. The section on locust societies is worthy of special note as it furnishes a basis for future work in this intensely interesting field. The table of societies presented on page 14, while preliminary and tentative, is evidently the product of considerable study, and, while a consideration of these divisions is unnecessary, it may be remarked that to the few hygrophilous phytophiles given there should be added *Linocephalus elegans*, which species is typically halophilous in New Jersey.

After a discussion of the relation of brachypterous and macropterous species to their habitats, the author sums up his evidence in the statement that: "Brachypterism in locusts is a more complete adaptation to a leaping mode of progression brought about by life in situations where flight is difficult or impracticable, and consequently disadvantageous." While this appears to be more plausible than any theory hitherto advanced on the subject, it has numerous exceptions, one of the most striking of which Prof. Morse's limited stay in the south did not permit him to observe, namely the great abundance of the macropterous *Amblytropidia occidentalis* in typical sylvan surroundings.

Under the list of species the records of *Chlœaltis conspersa*, *Stenobo-*

thrus curtipennis and *Podisma glacialis variegata* from the mountains of North Carolina are extremely interesting. The remarks on the two "species" of *Schistocerca*, *S. alutacea* and *rubiginosa* are noteworthy, the former being considered an inhabitant of grassy swamps and the latter found in drier situations, while in New Jersey the two forms are found by the reviewer in the same surroundings, myrtle thickets on the beaches, and scrub pine and oak in the "barrens," seldom occuring in the swamps. Another interesting fact is that *Melanoplus impudicus* is in the south said to be an inhabitant of "dry, grassy fields," while in New Jersey it is a sylvan geophile, found in surroundings similar to those frequented by *Melanoplus luridus*. These remarks are not made in a derogatory sense, but merely to call attention to the fact that conclusions regarding a species in one section are not always true of it in another.

It is to be regretted that considerable more time for field work was not at Prof. Morse's disposal, as some of his remarks require a little modification when spring and fall observations are considered. The illustrations of the work are quite good and well represent the types of country studied, except that figure 2, plate 5 can hardly be considered "pine barrens," at least not such as the reviewer is acquainted with in Florida, Georgia and New Jersey.

For a very substantial addition to our knowledge of the Orthoptera of the southeastern, or rather eastern states, we must thank Prof. Morse, one which is also of great value as a work of reference to the working Orthopterist, and a material advance in faunistic and ecological entomology. J. A. G. R.

Doings of Societies.

A meeting of the Entomological Section of the Academy of Natural Sciences, of Philadelphia, was held November the 17th. In the absence of the Directors, Mr. Frank Haimbach presided. Eight persons were present.

Dr. Skinner made some remarks on mimicry or protective resemblance, and stated that the Academy had recently received specimens of the beetle *Lycus fernandezii* Duges, belonging to the family Lampyridæ and the moth *Triprocris constans* Hy. Edwards, belonging to the family Pyromorphidæ. When in their natural position with the wings unexpanded these two insects have a perfectly marvellous resemblance. They are taken to be the same species by nearly all observers until their attention is called to the difference in structure. It would be very interesting to find out the significance of any of these likenesses. Some naturalists think they are purely

accidental on the theory that there are so many forms in nature that it is not strange for some to resemble each other.

Mr. Viereck spoke of the distribution of *Culex aurifer*, and said it was abundant on the south meadows near Hartford, Conn. He said it was as abundant there as *sollicitans* is in New Jersey. Where trees were present, the larvæ were much more abundant in the shaded depressions. They flourish about the 20th of May, and none were found a month later nor through the remainder of the summer. *Sollicitans* is found on the coast but does not extend as far inland as in New Jersey, which is accounted for by the natural barrier of the hills. The possibility of an invasion into Connecticut from Long Island was mentioned. Some of the other species found in Connecticut were alluded to. Specimens of *aurifer* were exhibited.

Mr. Daecke said *C. triseriatus* appeared to take the place of *aurifer* in the vicinity of Philadelphia. The larvæ were found in shady places.

Mr. W. J. Coxey was elected an Associate of the Section.

HENRY SKINNER, *Secretary*.

At the meeting of the Feldman Collecting Social, held November 16, 1904, at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth Street, Philadelphia, thirteen persons were present.

Mr. Wenzel announced the death of F. G. Schaupp, and spoke of his personality and interest in entomology.

Mr. Dickerson spoke of the Newark Entomological Society and its recent anniversary meeting.

Mr. H. Wenzel stated he had been studying the insects infesting nuts, acorns, etc., especially *Balaninus*, and exhibited acorns from seven species of oaks. In only one kind of acorn had he been able to observe the ovipositing of the female, the acorn being punctured after it is well developed. He was not aware that the hibernation of the larva in the acorn was on record, but in the present instance it seems that the larva will probably pass the winter in the nut. The larva is small, either being undeveloped or belonging to a species even smaller than *confusior*.

In reply to Dr. Skinner, Mr. Wenzel said that the egg was

probably shoved into the nut by the proboscis of the female. When two larvæ inhabit one nut, they are separated by the median membrane or partition which divides the nut into equal parts.

Mr. Dickerson stated that in Northern New Jersey the chestnuts seem to have escaped infestation this fall.

Mr. Haimbach exhibited 76 species of Tineids, representing a portion of his collection.

Mr. Daecke stated that a nest of *Vespa germanica* recently examined near Delair, New Jersey, contained numerous females and males, with comparatively few workers, and the larvæ in all stages, with pupæ ready to hatch, all of which seemed to be hibernating. Dipterous larvæ were also present feeding on dead wasps.

Dr. Skinner reported that a nest of *Vespa maculata* collected in the dead of winter and brought into the house was found to contain live wasps.

Mr. Dickerson said that in a nest of *V. germanica* examined by him the nest was of temporary character, not being completely covered and was starting to decay.

He also showed specimens of *Ceracis sallei*, a small fungous beetle from Chester and Arlington, New Jersey, which was only recorded heretofore from the Northern part of the State.

On motion, a vote of thanks was extended to Mr. Haimbach for entertaining the members at the last meeting.

Mr. William S. Huntington was elected a member of the Social.

WILLIAM J. FOX, *Secretary.*

The October meeting of the Newark Ent. Society was held on the 13th, with Pres. Keller in the chair and 13 members present. The election of officers resulted as follows:

For Pres. Mr. Geo. J. Keller, re-elected; for Vice Pres. Mr. Geo. Stortz, re-elected; for Secretary Mr. Otto Buchholz, re-elected; for Treasurer Mr. S. H. M. Seib, re-elected; for Librarian Mr. Wm. Broadwell, re-elected; for Curators Mr. J. Angelman (Lep.), Mr. E. A. Bischoff, re-elected (Col.), Mr. A. J. Weidt (Dipt).

Mr. Broadwell reported the capture of the following Lepidoptera: *Semioscopsis merriccella*, *Hydria undulata*, *Hydriomena multiferata*, *Phlyctænia tertialis* and *Schœnobius mellinellus* at Denville, N. J.

Mr. Bischoff reported the capture of *Ptinus fur* Linn (Col.) in chamomile boxes, but was not certain whether the specimens were feeding on chamomile, as all were found between layers of paper. A vote of thanks was extended to Mr. Broadwell for an enlarged photograph of the membership.

Mr. Eugene Winship of Long Branch was unanimously elected to membership. The advisability of keeping a record book of local species was discussed at length, so that observations and dates in rearing and capturing of the rarer species might be entered for the benefit of other collectors; Mr. Buchholz volunteered to take up the Lepidoptera portion of it providing the members would deliver their experiences in writing. Mr. Bischoff agreed to take care of a Coleoptera book on the same lines.

The November meeting of the Newark Entomological Society was held on the 11th, with President Keller in the chair and 23 members present. Visitor Mr. J. Kuenzler of Paterson, N. J.

Prof. Smith promised to send two copies of his "Insects of New Jersey," and on motion it was decided to have the same bound with double interleaves for records of captures, observations, etc. Mr. Hy. Rummel presented a pair of *Cicin. unipunctata* (Col.) to the Society.

He also reported the capture of *Paria viridicyanea* (Col.) at Plainfield, N. J., in July, on wild morning glory.

Prof. Smith read an article written by Mr. Brehme in which the latter stated that the vicinity of Newark was by far the best collecting place of any part of the State that he had seen and worked over during the last two years while in the employ of the New Jersey Agricultural Experiment Station. He deplored, however, that collecting around this section was getting poorer every year, first, on account of the rapid building up of good hunting grounds, and second on account of vandalism exercised by some collectors while searching the plants for eggs

and larvæ, and urged the members to leave the food plants in as good condition as they find them.

He also asked the members to collect all larvæ unknown to them, blow one or more of each species and by rearing the rest of them find out what they are; then present some of them to the Society, and by placing them with the imagos give the collection a more scientific value.

Mr. Grossbeck exhibited some pieces of amber in which were imbedded different species of insects.*

The Sesiidæ (Lepidoptera) were brought up for comparison and discussion; they were pretty poorly represented, except with Prof. Smith and Mr. Engelhardt, both of whom had large series to show. Quite a number of specimens were named and corrected in different collections, and Mr. Engelhardt gave an interesting talk on the life habits of some species and stated that he had bred 21 species in one season. He also showed specimens of an unnamed variety of *Sciapteron simulans*, on which the abdomen was deep orange instead of yellow.

On motion it was decided to bring up the genus *Xylina* (Lepidoptera) for next meeting. Messrs. Brehme, Stortz, Seib, Dickerson and Bischoff were appointed a committee on field meetings.

Mr. J. Landrock of Hoboken and Mr. George Engelhardt of Brooklyn were unanimously elected to membership.

OTTO BUCHHOLZ, *Secretary.*

A meeting of the American Entomological Society was held June 23, 1904. Mr. H. W. Wenzel, Vice-President in the chair. Ten persons were present. Mr. Rehn exhibited the Tettiginæ and Eumastacinæ belonging to the Academy of Natural Sciences of Philadelphia, the U. S. National Museum and Mr. Morgan Hebard. There are a number of new genera and species in this material. Dr. Skinner spoke of the collecting possibilities of the swamp lands west of Essington, Pa., on the B. & O. Railroad. Mr. Rehn mentioned some experiences in collecting in that locality.

HENRY SKINNER, *Secretary.*

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* Rutgers College collection.

A meeting of the American Entomological Society April 28, 1904. Dr. P. P. Calvert, President, in the chair. Nine persons were present. The Executive Committee reported negatively to the Society in regard to the request for the loan of books from the library. Mr. J. A. G. Rehn exhibited an extensive collection of Orthoptera presented to the Academy of Natural Sciences by Dr. Henri de Saussure of Geneva, Switzerland, numbering 800 specimens, 50 genera and 300 species being new to the collection.

He also showed specimens of *Radinotatum brevipenne* described by Thomas. It remained unique for a long time. Mr. Rehn's specimens were obtained at Thomasville, Georgia. He stated that they are found among the pine needles, and that they resemble them in a remarkable manner, and can't be seen until they move. The species is a common one at Thomasville. Mr. Haimbach reported success in collecting Microlepidoptera. He had taken many species, among which were *Eulia triferana* and *Paralechia cristifasciella*. Dr. Calvert exhibited some Lepidoptera in Riker mounts especially prepared to show the neuration. He adopted a new plan, taking the wing and placing it in caustic potash solution for twenty-four hours, then washed in water for fifteen minutes, then in a watery solution of Bordeaux red for twenty-four hours, then washed in water and floated on cards and dried. Both sides of the head were also shown, to note the presence or absence of a proboscis. The following persons were elected correspondents of the Society. Prof. T. D. A. Cockerell, the University of Colorado at Boulder; Nicolas von Adelung, St. Petersburg, Russia; Hofrath Carl Brunner von Wattenwyl, Vienna, Austria, and Ignacio Bolivar, Madrid, Spain.

HENRY SKINNER, *Secretary.*

Minutes of meetings of Brooklyn Entomological Society, held at the residence of Mr. George Franck, 1040 De Kalb Avenue, Brooklyn, N. Y.

April 7, 1904.—Sixteen persons present, the Vice-President in the chair. Mr. John Landrock of Hoboken, N. Y., was elected a member. Mr. Franck presented a paper on "Notes on Anthocharis," illustrated by an extensive series of speci-

mens especially relating to the groups *ausonides*, variations *hyantis* and *coloradensis*, and *sara*, variations *reakirtii* (*stella*) and *julia*. While *hyantis* and *coloradensis* differ in size from *ausonides*, being rather less, the distinction between the variations only depends upon slight changes in maculation, viz., in *hyantis* the central spot on the primaries is larger than that of *coloradensis*, while the underside of the secondaries in *hyantis* is rather more richly decorated than in *coloradensis*. This would seem to confirm the propriety of the retention of only one of these names, *hyantis*, as Dr. Skinner has done. As to group *sara*, Mr. Edwards in his description of *reakirtii* states that there are no yellow females. This would appear to be erroneous, since among a large series of this variation received from sundry localities in California, Nevada and Utah, both white and yellow females of *reakirtii* were found, including white males of *julia*. As no other forms were taken, this would seem sufficient to obliterate the distinction between *reakirtii* and *julia* and these so called variations should be treated as identical, represented by white males and yellow females, the slight differences in maculation being insufficient to entitle either to be treated as a distinct variation. On the other hand, *stella* would seem deserving of recognition since in a series of some 300 specimens from Plumas County, California, only yellow males and females occurred, which corresponds with the statement in Mr. Edward's description that both sexes are yellow. This constancy of color certainly entitled it to be distinguished as a local variation of *sara*.

May 5, 1904.—Sixteen persons present, Dr. Zabriskie in the chair. Relation by various members of the circumstances which led them to become interested in entomology. Dr. Zabriskie stated that his attention was attracted among other things to a number of clay tubes, some six inches in length, pendent from the rafters of an old barn situated on the homestead in Flatbush, L. I. These, he subsequently learned, were constructed by termites. He knew of no record of a similar formation by these insects.

Mr. Weeks stated that he desired to correct some erroneous opinions published in the March Journal of the New York

Entomological Society and elsewhere concerning his paper on "Evolution of the Secondaries of the Catocala," which appeared in the Journal of December, 1903, in which opinions it was alleged that he had stated that the coloration had originated by reason of the pursuit of these insects by birds, which, it was asserted, could not possibly distinguish the colored secondaries to such an extent during flight as to be directed by them, and hence the theory that they had developed under such conditions and for such purpose was untenable. Mr. Weeks called attention to the fact that the article nowhere made such an allegation, and that he had repeatedly stated therein that these secondaries were only displayed as a diversion when the insect was *feeding* and therefore *at rest;* also that due allowance must be made for changed faunal conditions and environments to which these insects had been subjected through vast periods of time, when the forests swarmed with creeping enemies much more rapacious and numerous than any which now survived and when birds had not as yet developed, and that it was totally incorrect to base any deductions upon the premise that present conditions had always prevailed or contemporaneously existed.

June 2, 1904.—Six persons present, the Secretary in the chair. The members were entertained by the relation of the experiences of a collector who had recently returned from a year's sojourn at Obidos some 2000 miles up the Amazon River. The natives were hospitable and trusty. Mosquitoes made collecting almost impossible. Tarantulas swarmed in the huts of the natives and were captured with pincers and forked sticks. The narrator was blinded for several months by loose hairs from these creatures. Ticks and various insects gave great annoyance, and snakes were permitted to run at large within the huts to destroy the vampires, which were dangerous at night. Ants were a most formidable pest, sometimes locating in such numbers beneath the dwellings as to cause their abandonment. The height of the trees and parasitic vines and the density of their combined foliage at the top cast the surface beneath in deep shadow so that few insects could be there taken. At the top the trees and vines bloomed luxuri-

antly and here, far out of reach, gorgeous butterflies and other insects occurred in multitudes, and could only be induced to descend by various lures. One species, *Morpho hecuba*, one of the rarest of this genus, refused every enticement for a long time until, quite by accident, it was discovered that it could be attracted by the reflection of a small piece of looking glass lying upon the ground. Butterflies of various species occasionally congregated in such numbers in moist places that not even space remained to insert a finger between them. At such times one could sit down and select what he wished. Some of the tributaries of the Amazon were infested with poisonous weeds which impregnated the water to such an extent that dangerous and even fatal effects resulted from wading in them. During the dry season the river was lowered some thirty feet, having broad sandy shores on either side. Many of the Lepidopterous larvæ, instead of consuming an entire leaf, had the curious habit of biting out of it a series of holes of various sizes, but of constantly recurring form at regular intervals, so that the final effect was that of a lace pattern. The narrator exhibited a number of leaves thus bitten showing many interesting designs.

ARCHIBALD C. WEEKS, *Secretary*.

The October meeting of the Entomological Section of the Chicago Academy of Sciences was held as usual at the John Crerar Library on the 20th, eight members and one visitor being present. The recorder read a letter from Mr. John Comstock enclosing a specimen of *Terias mexicana* which he had taken October 9th at Williams Bay, Lake Geneva, Wisconsin. This is unusually far north for this species, but the recorder has since learned that Mr. Beer also captured two specimens this year, one October 9th within the Chicago city limits and one at Hessville, Indiana, south-east of Chicago, on October 16th. Mr. Higley announced the arrival of twenty Comstock cases for the Academy collection.

Mr. W. L. Tower gave a very interesting talk on his experiences while collecting in Southern Mexico about sixty miles south-east of Mount Orizaba. The locality was a fertile valley,

lying between high, forest-clad mountains, these in turn being surrounded by low-lying plains.

He found it a veritable zoological oasis, various species of Lepidoptera, etc., being taken, which had not been recorded farther north than Honduras. Mr. Tower's subject was "Insects in Tropical Forests," and he paid particular attention to the habits of the butterflies including Morphos, Papilios, Heliconidæ, Pieridæ, etc. Coleoptera were few and occurred principally at the edge of the forest. Here also, numerous mosquitoes congregated, especially near the river which skirted the base of the mountains. *Stegomyia* predominated in the morning and during the day, its place being taken by *Culex*, *Anopheles* and others at night. The Morphos and Papilios were found to roost low down in the dense forest between the buttresses of the trees, and upon awakening, at first fly low, gradually mounting higher as the day advanced. By ten or eleven o'clock they were high up, flitting about the flowers of the vines which formed a veritable carpet over the tree tops. This he was able to observe only from a projecting ledge, which overlooked a portion of the forest. He described the scene as extremely beautiful with hundreds of brilliant Morphos and Papilios to be seen within a comparatively limited area.

Mr. Tower also spoke of the difficulties to be met with on a trip to such a locality. Disease, including yellow-fever and malaria; vermin, wire-worms, bot-flies, chigres, etc., and frequent and unexpected electrical storms were discouraging features. He stated also that, although species and specimens were often numerous, they were by no means easily caught, as they were usually either inaccessible or of swift and deceitful flight.

He made several trips to this locality, but considered the beginning of the rainy season May 1st to July 1st as the best for collecting.

Those present expressed themselves as greatly pleased with the entertaining talk of Mr. Tower. The meeting adjourned at 9.50 P. M.

A. Kwiat, *Recorder.*

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FEBRUARY, 1905.

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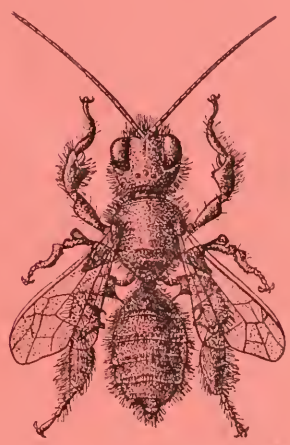

Cryptohalictoides spiniferus Viereck.

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EXOTIC BUTTERFLIES.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. FEBRUARY, 1905. No. 2.

CONTENTS:

Our frontispiece this month was made direct from specimens in the collection of the Academy of Natural Sciences of Philadelphia, by the Photo-chromotype Company of Philadelphia. This is one of the largest companies in America doing this line of work. The specimens represented are as follows: *Eronia phocæa* Felder, from the Philippines. *Cyrestis elegans* Boisduval, from Madagascar. *Catagramma cynosura* Doubl.-Hew., from Brazil. The butterflies represented on Plate I, in the January NEWS were *Callosune zoe* Grandid, from Madagascar. *Callithea optima* Butl., from Peru. *Catagramma atacama* Hew., from Ecuador.

Two New Butterflies from Mt. Tamalpais, Calif.

By FORDYCE GRINNELL, JR., Palo Alto, Calif.

Satyrus behrii n. sp.

♂ expands 43 mm. Upper surface entirely Prout's brown, darker towards inner margin (probably somewhat faded from the age of the specimens). Primaries have two ocelli placed in the usual position, equally distant between the costa and inner margin; the upper ocellus is 2.5 mm. in diameter, of a very dark brown or black, has a small, distinct, white, central dot, and is surrounded by a ring of lighter color than the

adjacent area. The lower ocellus consists of a single black spot, rather indistinct, and without white central point and surrounding ring. A very faint, submarginal black line and a marginal streak ; secondaries same as primaries, an ocellus in the same position as the second one on primaries and resembling it.

Underside : primaries woodbrown but much mottled with other shades, many irrorations of darker color ; submarginal to the two ocelli is a wavy, distinct brown band formed into crescents toward the inner margin ; the upper of the two ocelli is like the one on the upperside; the lower is exactly like it only somewhat smaller. Between the ocelli and the margin is a comparatively broad, dark brown band ; a marginal and submarginal distinct lines close together.

Secondaries : more mottled with grayish than the primaries ; a very broad fascia in the center of the wing, extending from costa to base parallel to outer margin ; the row of six ocelli placed in the usual position, the first is rather small, with a minute white dot in the center ; next is much larger with distinct white central point ; next consists of a small, black point only ; next is a small one, with a distinct white central point ; next is as large as the second and like it ; the last one like the first. These ocelli are very constant, more so than in any other species. Between this row and outer margin is a brown band corresponding to that of the primaries ; a marginal and submarginal fine, distinct streaks. Fringes all brown.

♀ expands 46 mm. Resembles the ♂ in all particulars except the following : the two ocelli on upperside of primaries are exactly alike and are like the upper one of the male. The one on the secondaries is larger and with a distinct, white central point.

Underside : the two ocelli on the primaries are slightly large and of same size. The row of ocelli on secondaries are practically like those of the male.

Habitat : Mt. Tamalpais, Marin County, California. Right across the bay from San Francisco, collected by Dr. Behr many years ago, probably between 1860 and 1870.

Types, 2, ♂, 2 ♀, collection California Academy of Sciences. Several cotypes.

This species is readily distinguished from any other by its small size, darker color and very distinct markings. Named for Hans Herman Behr, the beacon light of Californian Lepidopterology, whose name will be held in strong remembrance as long as Californian butterflies are collected and studied.

Thanaos pernigra n. sp.

Upperside : primaries entirely blackish-slate, with a very thin sprinkling of grayish hairs ; three very small, white dots arranged diagonally, in the

costo-apical part of the wing. Secondaries: entirely seal-brown, with long hairs along the inner margin and basal part of wing. Underside of both wings entirely Van Dyke brown; the three costo-apical white spots visible through the wing. Abdomen and thorax same color as adjacent parts of the wings. Palpi clothed with long hairs. Antennæ entirely of same color as the primaries on the upperside.

Habitat: Mt. Tamalpais, Marin Co., California. Collected by Mr. F. X. Williams, May 19, 1904, in Mill Valley, on the slopes of Mt. Tamalpais. Only a few were captured but others were seen; the species is no doubt extremely local in distribution.

Type 1 ♂, to be deposited in the collection of the California Academy of Sciences.

This species is very distinct from any other by its small size, and very dark, almost uniform color. Owing to a curious asymmetry in the clasps of the single male I possess, the description of these organs will have to be deferred till more specimens are available.

Canadian Cerambycidae.

The species of the past season.

By G. CHAGNON, Montreal, Canada.

Acmæops proteus Kirby. Montreal, 14, vii. Entirely black.
Asemum mæstum Hald. St. Hilaire, Que., 24, v. under pine bark.
Callidium janthinum Lec. Val Morin, Que., common 10 to 25, vi.
Clytanthus ruricola Oliv. Common; vi and vii.
Cirtophorus verrucosus Oliv. St. Hilaire, Que. 24, v.
Callimoxys sanguinicollis Oliv. St. Hilaire, Que. ♂ and ♀ 24, v.
Criocephalus agrestis Krby. Montreal, vii, viii. They are generally taken at the electric lights.
Desmocerus pallialus Forst. Montreal, 48 specimens on Elder; 28, vi.
Euderces picipes F. St. Hilaire, Que., 1, vii.
Graphisurus fasciatus DeG. Montreal, A few chrysalids from beech.
Hoplosia nubila Lec. Montreal 18, vii. This species breeds in Linden.
Hyperplatys aspersus Say. Montreal, vi and vii. Taken several specimens on dead branches of willow, in which it must breed.
Leptura nitens Forst. Montreal, 27, vi.
Leptura exigua Newm. Common from 24, v to 15, vi.
Leptura hæmatites Newm. Montreal, 12, vi.
Leptura biforis Newm. St. John's, Que. 8, vii.
Leptura canadensis F. Common, vii.
Leptura vittata Germ. Common, vi, vii.

Leptura lineola Say. Common, vi, vii.
Leptura pubera Say. Common, vi, vii.
Leptura proxima Say. St. Hilaire, Que., St. John's, Que. vi, vii.
Leptura mutabilis Newm. Montreal, 10, vi.
Leptura chrysocoma Kirby. Val Morin, Que., common 19, vi.
Lepturges querci Fitch. Montreal, 25, vii.
Monohammus confusor Kirby. Montreal, 23, viii.
Neoclytus muricatulus Kirby. Lévis, Que., 12, viii. On spruce logs.
Oberea bimaculata Ol. Common on raspberry, 8, vii.
Obrium rubrum Newm. Montreal, 25, vii.
Parandra brunnea F. Montreal, 25, vii.
Pogonocherus mixtus Hald. Montreal, 14, vii, on dead branch of willow.
Pachyta monticola Rand. Val Morin, Que., 17, vi.
Pseuocerus supernotatus Say. Common on wild grape vine, 12, vi.
Phymatodes amœnus Say. Montreal, 12, vi. On wild grape vine.
Stenosphenus notatus Ol. Montreal, 12, vi.
Saperda puncticollis Say. Montreal. On woodbine 12, vi.
Saperda mutica Say. Montreal ; several specimens on willow, 14, vii.
Saperda lateralis F. Montreal, 12, vi.
Saperda vestita Say. Montreal, chrysalids from linden.
Tragosoma harrisii Lec. Montreal. One specimen at electric lights, 17, vii.
Typocerus velutinus Ol, Common, vii.
Tetraopes tetraophthalmus Forst. Common, vii.
Toxotus trivittatus Say. Montreal. Common, 12, vi.
Xylotrechus undulatus Say. Lévis, Que., 12, viii, on spruce logs.

The above species, which number 44, were all taken during the past summer.

I was at Quebec in August last and took advantage of my trip to examine the material in some local collections there. Amongst the most important species I saw, were the following :

Rhopalopus sanguinicollis Horn. This species seems to occur frequently at Quebec and Lévis.

Phymatodes maculicollis Lec? There is a specimen of *Phymatodes* in the collection of Abbé Roy, Lévis, which I think can be referred to *maculicollis*. I regret that I did not have the opportunity of studying it more fully.

Piodes coriacea Lec. This species is in the Provancher collection without locality label. I have seen specimens from Rigaud, Que.

Monohammus marmorator Kirby. I saw several specimens of this species in collections at Quebec and at Lévis. I noticed, in the Laval University collection, specimens of this species labelled *titillator* F.

Saperda cretata Newm. Two specimens in the Laval University collection without locality label.

Records of some Paraguayan Orthoptera with the Description of a New Genus and Species.

By James A. G. Rehn.

The following records have been made from a small collection of Orthoptera taken at Sapucay, Paraguay. The material is the property of Mr. Morgan Hebard of Chestnut Hill, Philadelphia.

Family BLATTIDÆ.

Ischnoptera marginata Brunner.

One female (December 20, 1901).

Giglio-Tos has recorded this species from northern Argentina and the Bolivian Chaco.

Ischnoptera vilis Saussure.

Two males (one November 30, 1901).

Family MANTIDÆ.

Brunneria brasiliensis Saussure.

One male.

Family ACRIDIDÆ.

Ossa bimaculata Giglio-Tos.

One male and one female. October 31, 1902 and January 27, 1903.

This species was described from Resistencia nel Chaco, Argentina.

Tropinotus discoideus Serville.

Two females.

These specimens agree with a female individual from Paraguay referred to *discoideus* by Giglio-Tos, and a male and female from Brazil and Rio Grande do Sul received from Dr. Saussure. One of the Sapucay specimens is blackish brown in color with the maculations rather faint, the other is wood brown, the anal area of the tegmina pale, the maculations of the tegmina barely visible. Originally described from "Bresil," this species has since been recorded from Buenos Ayres and the province of Jujuy, Argentina, Caiza in the Chaco of Bolivia and Asuncion, Paraguay.

Tropinotus regularis Bruner.

One male.

This specimen was examined by Prof. Bruner, who pronounced it a representative of a species at present undescribed and which he proposed to call *regularis*. In appearance it is quite distinct from the other forms of the genus, but I prefer to leave all remarks, however desirable, aside pending the description.

Elæochlora viridicata (Serville).

One female.

This is inseparable from females from Carcarana, Argentina, except that the caudal tibiæ and tarsi are not washed with pinkish red, but are uniform dull greenish in color.

Chromacris stolli (Pictet and Saussure).

One male, one female.

While this species has been recorded from a number of localities in northern Argentina, this is apparently the first record from Paraguay.

Zoniopoda omnicolor (Blanchard).

One male (February 18, 1902), one female.

This beautiful species is here recorded from Paraguay for the first time. The Sapucay specimens are inseparable from individuals from Carcarana, Argentina.

Zoniopoda iheringi Pictet and Saussure.

One male (October 29, 1902), one female.

These specimens have been compared with an authentic female specimen from Rio Grande do Sul collected by Dr. Ihering and presented by Dr. Saussure. Except that the Paraguayan female is of smaller size, no important difference can be detected. In the male the caudal femora are obscurely bi-annulate with blackish fuscous.

Stenopola puncticeps (Stål).

One female (December 19, 1902).

This species has been recorded from Caiza and San Francisco in the Bolivian Chaco; San Lorenzo in Jujuy, Argentina; Resistencia in the Argentina Chaco and Rio de Janeiro, Brazil.

Aleuas vitticollis Stål.

One male (March 7, 1903).

This species was described from Sao Leopoldo, Rio Grande do Sul, Brazil, and Montevideo, Uruguay.

Aleuas gracilis Stål.

One male (March 7, 1903).

The difference between this species and *A. vitticollis* is very apparent on comparing them, the slenderer build, more produced and acute fastigium and the form of the pronotum are the principal characters which readily distinguish *gracilis* from *vitticollis*. The original locality was Brazil.

ZYGOCLISTRON* n. gen.

Allied to the *Aleuæ* and *Vilernæ*, partaking of characters of both, but probably more closely related to the former and the genus *Paraleuas* Giglio-Tos in particular.

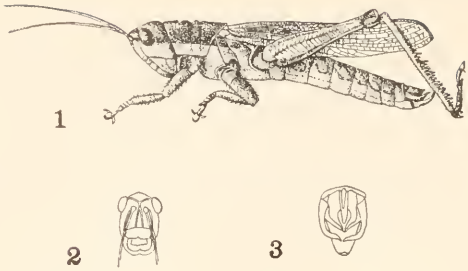
Form elongate, slender. Head with the fastigium acute, sharply carinate, excavated; frontal costa regularly expanding from the base of the antennæ to the clypeus; facial carinæ diverging to the same extent and parallel to the costa. Pronotum rugoso-tuberculate; median carina distinct, intersected thrice; ventral margin of the lateral lobes very slightly emarginate. Intervals between the mesosternal and metasternal lobes exceedingly narrow. Tegmina reaching the apex of the abdomen; area between the discoidal and ulnar veins with numerous transverse veins mesad. Posterior femora with very slight dentate points on the dorsal carina; tibiæ with eight spines on the external margin; second tarsal joint not quite half as long as the metatarsus. Subgenital plate compressed, produced into a moderately recurved process; supra-anal subequal proximad, acuminate distad: cerci long, slender, parallel in the proximal half, sharply incurved at the middle, the apex directed caudad and acute.

Zygoclistron trachystictum† n. sp.

Type: ♂; Sapucay. Paraguay. March 20, 1902. Hebard collection.

* Ζυγον *yoke*, πλειτσρον *bar*.

† Τραχυς *rough*, στικτον *punctured*.



ZYGOLISTRON TRACHYSTICTUM n. gen. and sp. Type, fig. 1, lateral view; fig. 2, cephalic view of head; fig. 3, dorsal view of abdominal appendages.

Head rather large, occiput rounded and slightly elevated above the pronotum; vertex slightly descending, interspace between the eyes distinctly exceeding the greatest width of the frontal costa; fastigium slightly descending, acute, the marginal carinæ sharp, shallowly and broadly excavated, foveolæ large, trigonal, facing dorsad; frontal costa a simple sharp carina immediately below the fastigium, dividing at a line with the upper base of the antennæ, carinæ regularly and very distinctly diverging to the clypeal margin, shallowly but wholly sulcate; accessory facial carinæ distinct and diverging at the same angle as the margins of the frontal costa; eye ovate in outline, quite prominent, very slightly shorter than the infra-ocular portion of the genæ; antennæ slightly exceeding the head and pronotum in length, slightly depressed. Pronotum narrow, subequal, rugoso-tuberculate except the ventral portions of the lateral lobes which are rugose; cephalic margin rotundato-angulate, caudal margin obtuse-angulate, the angle narrowly rounded and the margin slightly sinuate; median carina distinctly sub-cristate on the prozona and severed by each sulcus; no lateral carina present, a moderately marked shoulder present on the metazona; inferior margin of the lateral lobes slightly sinuate cephalad and caudad. Prosternal spine short, compressed, blunt, directed caudad. Interspace between the mesosternal lobes very narrow, the lobes sub-contiguous; interval between the metosternal lobes cuneiform, the lobes sub-contiguous at the narrowest (caudal) point. Tegmina not exceeding the apex of the abdomen, rotundato-truncate apically, discoidal field proximad irregularly reticulate, mesad with the portion between the discoidal and ulnar veins occupied by numerous parallel cross veins, those of the medio-discoidal area more numerous than those in the medio-ulnar section; no intercalary vein present. Wings equal to the tegmina in length. Last segment of the abdomen dorsal with triangular branches of the furcula; supra-anal plate equal proximad, acute and produced distad; subgenital plate produced, compressed, apical process recurved and exceeding the apical margin by a distance equal to half the length of the entire plate; cerci

elongate, narrow, straight and parallel proximad, at the middle with a short mesad curve, and near the apex with a distinct caudad bend, the apex acute and slightly depressed. Cephalic and median femora short, inflated, the tibiæ of the same limbs not exceeding the femora in length. Caudal femora slightly exceeding half the tegmina in length, tapering evenly but not gracefully to the genicular region, dorsal carina with several sub-obsolete dentiform serrations; tibiæ with eight spines on the external margin, ten or eleven spines on the internal margin, external apical spine present on one tibia and absent on the other; metatarsi over twice the length of the second tarsal joint.

General color ochraceous, the genæ, ventral part of the pronotum and the pleura gamboge yellow, a post-ocular streak, which is indistinct on the head and well marked on the pronotum and pleura, blackish; eyes and dorsal surface of pronotum tawny; antennæ with the apical half infuscate. Tegmina hyaline with a faint greenish yellow tinge, the costal region with the veins obscurely yellowish, the base of the discoidal field with several distinct quadrate spots of blackish, and the axillary field saffron yellow. Abdomen with the lateral face of each segment with a diagonal blackish marking, which in form is crudely oval. Limbs of the general color, the caudal femora with blackish blotches along the carinæ; tibiæ saffron yellow, washed with blackish at the very apex, spines blackish apically, those of the internal margin with the whole internal face blackish.

MEASUREMENTS:

Length of body,	39.	mm.
Length of pronotum,	7.5	"
Greatest width of pronotum,	4.5	"
Length of tegmina,	28.	"
Greatest width of tegmina,	4.5	"
Length of caudal femora,	16.5	"

The type only has been examined.

Schistocerca infumata Scudder.

One male (January 15, 1903), one female.

This species has only been recorded from Montevideo, Uruguay and Brazil. This species is closely related to *S. flavofasciata*, of which a pair from Demerara have been examined, and with it possesses a pale flavous bar of the proximal portion of the costal margin of the tegmina. The form of the cerci of this species is quite different from that seen in *S. flavofasciata*.

Dichroplus bergii Stål.

One female (January 27, 1903).

This specimen was compared with females from Rosario and

Carcarana, Argentina, received from Prof. Bruner, and one female (Resistencia nel Chaco, Argentina), received from Dr. Borelli.

Dichroplus exilis Giglio-Tos?

Two males (January 16, 1903, and March 9, 1902).

These specimens do not wholly agree with the original description of *exilis*, the caudal femora being greenish above and without any black except in the genicular regions, while the cerci are subequal in the incurved apical portion. They are readily separated from *D. elongatus* Giglio-Tos by the shorter and less produced subgenital plate, the broader fastigium and vertex as well as the coloration.

Scopas obesus Giglio-Tos.

One female.

This individual fully agrees with the original description. This species is only known from Paraguay, Asuncion being the type locality.

Osmilia violacea (Thunberg).

Two males (December 20, 1901 and February 20, 1903), and one female.

Recorded from Asuncion and Colonia Risso in Paraguay by Giglio-Tos.

Osmilia obliqua (Thunberg).

One female (July 26, 1901).

Recorded from Asuncion by Giglio-Tos, and also from Resistencia nel Chaco, Tala and San Lorenzo in Argentina, and San Francisco and Caiza in the Bolivian Chaco. Thunberg's original specimen was from Brazil, and the Stockholm Museum contains Rio Janeiro material mentioned by Stål.

Family TETTIGONIDÆ.

Isophya borellii Giglio-Tos.

One male (January 18, 1903).

This species has previously been recorded from Asuncion, Paraguay, and Santa Rosa, Salta, Argentina.

Hyperophora angustipennis Brunner.

One male (March 19, 1903), one female (March 20, 1902).

This species has been recorded from Salta and Cordoba provinces, Argentina.

Family GRYLLIDÆ.

Eneoptera surinamensis (De Geer).

One male (March 4, 1903), two females (May 9 and November 8, 1903).

Previously recorded from Guiana, Brazil and Peru.

On the Habits of Two Ichneumonid Parasites of the Bee Ceratina Dupla Say.

By S. Graenicher, Milwaukee, Wis.

During the summer of 1903 eggs and larvæ of an Ichneumonid were noticed in several nests of *Ceratina dupla*, a rather common bee in our region. I was thus enabled to study the life history of this parasite, and to obtain a number of mature insects, the latter emerging in the spring of the following year. Last summer while examining some nests of *Ceratina dupla* in search of additional material, a second Ichneumonid was found passing its larval stage in the nest of the bee, and of this species also mature insects were bred. These two Ichneumonids were sent to Mr. Henry L. Viereck, of Philadelphia, for identification, with the result that one of them was recognized as *Grotea anguina* Cress., while the other proved to be a new species, which Mr. Viereck has named and described as *Habrocryptus grœnicheri* (Ent. News, Vol. XV, p. 333.) My sincere thanks are due to Mr. Viereck for his kind assistance in this matter.

To my knowledge no Ichneumonidæ have as yet been reported from the nests of bees. Besides, one of the parasites under consideration, *Grotea anguina*, is still the more remarkable from the fact that its larva, during a certain period of its development, leads the life of a vegetarian, subsisting for a few days on the mixture of pollen and nectar, the so-called bee-bread stored away by the bee. In regard to the habits of the Ichneumonidæ, Sharp (The Cambridge Natural History, Vol. V, p. 557, 1895) makes the following statement: "Although the Ichneumonidæ are perhaps the most purely carnivorous of all the great families of Hymenoptera, there is nevertheless reason for supposing that some of them can be nourished with vegetable substances during a part at any rate of the larval existence, Giraud & Cameron (Ent. Month. Mag. XIII, 1879, p. 200) having recorded observations that lead to the conclusion that some species of the genus *Pimpla* may inhabit galls and live on the substance, or juices thereof." It is interesting to note that our species *Grotea anguina*, whose larva during a

part of its life feeds on vegetable matter, is also a representative of the Ichneumonid subfamily Pimplinæ, while *Habrocryptus grænicheri*, the second parasite to be considered in this paper, belongs to the subfamily Cryptinæ.

Before dealing with the habits of these parasites, I prefer to briefly consider the habits of the bee *Ceratina dupla*, as observed in our surroundings. Both sexes pass the winter together in hollow stems, and copulate in the spring, but not very early. Last season (1904), which was an exceedingly late one, they were seen copulating on the flowers of the dandelion on May 19th and 20th, although some bees of other genera (*Andrena* and *Halictus*) were preparing their nests already at the end of April. In this same locality the *Ceratina* bees did not take up the work with their nests until about June 14th. The pithy stems of various plants are hollowed out, sometimes to a considerable depth, and cell after cell is furnished with the food supply and an egg, each cell being separated from its neighbors by a partition of its particles. Around the beginning of August the first young bees appear in the cells at the bottom of the nest, and these have to wait, as Comstock has observed, until all the others above them (sometimes 15 or more) have emerged, whereupon the whole family is led out of the nest by the mother bee. This does not take place before the second half of August or even the beginning of September. Comstock witnessed two broods in his surroundings, but in our region I have never seen these bees produce more than one brood.

Grotea anguina Cress.

Altogether 16 nests of *Ceratina dupla* containing either the eggs or the recently hatched larvæ of the parasite *Grotea anguina* were obtained.

The eggs of parasitic insects are often remarkable on account of their small size, and in this particular case the difference in size between the egg of the parasite and that of the bee is at once noticeable. The egg of the latter is about 2½ mm. long and 1 mm. broad, while that of *Grotea anguina* hardly reaches more than one-half of the length and one-fourth of the breadth of the bee's egg. As a rule the egg of the parasite is placed

lengthwise on top of the egg of the bee. The larva of the parasite may emerge earlier or a trifle later than the bee larva, but in either case it proceeds to suck the contents of the egg or of the young larva of the bee, mostly securing a hold on the anterior part. Within a short time a shrivelling of the egg or larva may be observed, and at the end of about 24 hours the anterior portion has been emptied of its contents. Thereupon the parasite turns around, and empties the remaining portion, so that at the expiration of 2 days on the average only the dry remains of the egg or larva of the bee are visible. The parasitic larva now takes up a position on the bee-bread and feeds on this for the next 3 or 4 days as eagerly as if it were a bee larva. It thereby increases considerably in size, and then forces its way through the partition into a neighboring cell, sooner or later killing and eating up the bee larva of this cell. It usually invades a third cell, also destroying the resident of the latter, and sometimes even a fourth cell is entered with the same result. At the age of 13 or 14 days the parasitic larva is full grown, measuring from 12 to 14 mm. in length, and it then begins to spin a cocoon. At first the pith particles, remains of destroyed bee larvæ, pieces of bee-bread, etc., are cleared out of the way for a length of 3 or 4 cm. so as to make room for the future cocoon, This having been done, a solid, hard partition is spun at the upper end of the canal, and one placed at the lower end. These are very resistent, and protect the larvæ from attacks coming from above or below. The chamber between these two plug-like partitions is furnished with a lining of a thin white membrane, the larva finally deposits its excreta at the lower end of the chamber, and lives throughout the winter as a "resting larva." In the spring pupation takes place, and the mature insect comes out in time to deposit its eggs in the nests of *Ceratina dupla*.

From the larvæ kept in a heated room throughout the winter 5 ♂ and 6 ♀ specimens of *Grotea anguina* were obtained, the earliest one, a ♂, emerging on March 9th, and the latest one, a ♀, on May 23rd. These insects appeared for good reasons earlier than those hibernating under natural conditions.

As a rule the egg of this parasite is deposited in the lowest

cell of the nest, less frequently in the next lowest, but occasionally also higher up. In the majority of the nests one cell only contains a parasitic egg, although in 4 out of the 16 nests 2 cells were infested. One nest, collected July 27th, 1903, was kept under observation with especial interest, as it contained 2 parasitic eggs on the egg of the bee in the lowest cell, and in addition to this a parasitic egg on the bee's egg in the adjoining cell. One of the parasitic larvæ in the lowest cell killed the other one, it then pursued the usual course of eating up the bee's egg and feeding on bee-bread, and then entered the next cell and there destroyed the somewhat smaller parasitic larva. This occurrence shows that the larva of this parasite instinctively attacks any other larva it may come in contact with inside of the nest.

The normal position of the egg of the parasite is on top of the bee's egg, but in two instances it was placed some distance from the latter on the bee-bread. This, however, did not interfere with the development of the parasite in either case, as the young larva crawled around until it reached the egg of the bee.

Habrocryptus grænicheri Vier.

On June 23, 1904, a *Ceratina* nest was found with a cell containing the small eggs of a parasite on the top of the bee's egg. This egg resembled rather closely that of *Grotea anguina*, and it was thought to belong to that species until the larva made its appearance. The form of the latter, as also its habits made it clear that we were dealing with some other parasite. Later on 5 additional nests with the eggs of this parasite, *Habrocryptus grænicheri*, were obtained, the last one on July 4th.

In size and form the egg of this species agrees with that of *Grotea anguina*, although it is a trifle smaller and somewhat more pointed behind. It produces a cylindrical larva with a large head and distinctly constricted segments, quite different from the more elliptical larva of *Grotea anguina* with a small head and without constricted segments. The feeding habits of the larva of this *Habrocryptus* are peculiar. It moves around on the egg and later on the young larva of the bee, now and then sucking superficially, but without inflicting any damage

to the egg or the larva, and evidently obtaining a small amount of food, as is shown by its very slow growth. These sucking movements are performed in a characteristic manner. The parasite brings its mouth-parts in contact with the surface of the egg or the young larva, and sucks for a few moments, whereupon it releases its hold with a jerky upward movement of the head and crawls forward a short distance to repeat the same performance. As already stated, the bee's egg shows no ill effects whatever, it produces a normal bee larva, and the latter partakes of its food-supply, and thrives as well as any other bee larva. A remarkable feature is the tolerance displayed by the bee larva towards the small parasite crawling around on its body and sapping its juices. The bee larva keeps on feeding and does not seem to be inconvenienced in the least by the presence of the parasite. On one occasion the latter was observed to take up a position on the side and within easy reach of the mandibles of the bee larva. It might have been destroyed with but little effort on the part of the bee larva, but nothing of the kind happened.

The parasitic larva increases very gradually in size, especially during the first 4 or 5 days of its life, but at the age of about 8 days it makes a serious attack on the half grown *Ceratina* larva, killing it, and sucking its contents. This brings about a rapid growth of the parasite. It soon invades a neighboring cell, destroys the bee larva therein, and occasionally raids 3 or 4 cells in the same way. At the age of about 13 days it is ready to spin its cocoon, and for this purpose it makes use of the space occupied by 2 or 3 of the broken up cells. The cocoon is hurriedly and lightly constructed, and is not protected by any plug-like partitions as in the case of *Grotca anguina*. About 6 days later pupation takes place, and at the end of 11 more days the perfect insect emerges. So that the entire development from the appearance of the larva to that of the imago is accomplished within 30 days on the average. From the 6 nests under observation 4 perfect insects were bred.

REVIEW.

Although these two parasites represent two distinct types of Ichneumonidæ, one being a *Pimpline* and the other a *Cryptine*,

they both adopt the same method of depositing their eggs on the egg of their host *Ceratina dupla*. But in the development of the larva at the expense of the egg or larva of the bee, each of them pursues a different course. The larva of *Grotea anguina* first increases its size by taking up the contents of the egg or young larva of the bee, but it is still rather small and feeds for several days on pollen and nectar before undertaking the task of breaking through the partition into a neighboring cell in search of a bee larva for food. It starts out as a carnivorous larva, thereupon it passes over to the diet of a vegetarian, and finally returns to carnivorous habits. *Habrocyptus grænicheri*, on the other hand, does not destroy the egg of the bee, and furthermore it spares the life of the bee larva until the latter has reached a considerable size. During more than one-half of its larval existence it partakes of a very small amount of food, derived superficially from the egg or the larva of the host, and it grows extremely slowly. But finally, by killing the bee larva and feeding on its contents it enters a period of rapid growth, and later on it invades one or more of the bee cells in pursuit of prey in exactly the same manner as does the larva of *Grotea anguina*. The time necessary to complete the growth of the larva is about the same in either of the species, being 12 or 13 days, but in the later development there is a great difference between the two. After completing its cocoon, the larva of *Grotea anguina* remains as a so-called resting larva in a state of inactivity until the spring of the following year, when it pupates, and appears as a mature insect at about the time the *Ceratina* bees start to build their nests. During this entire period, lasting at least 10 months, the resting larva might suffer injury from different sources (attacks of parasites, inclemency of the weather, etc.) if not properly protected, and we understand the importance of the strong defensive partitions erected at the upper and lower end of the cocoon chamber. Furthermore, the parasite does not always deposit its egg in the lowest cell, but sometimes as high up as the 7th cell, as observed in one of the nests. In such a case there may be several young bees emerging from the lower cells in late summer. These, in order to leave the nest would have to break

through the cocoon of the parasite, and thus endanger the life of the latter, if not held back by the very effective barrier of a defense partition. I have come across two old nests of *Ceratina* with an empty cocoon-chamber of the emerged parasite, and several dead *Ceratina* bees below the lower partition. The parasite is able to gnaw its way through the partition but the bees can not overcome such an obstacle.

There is no period of a "resting larva" in *Habrocryptus grænicheri*. Very shortly after the spinning of a cocoon a pupa is formed, and 11 or 12 days later the imago makes its appearance in advance of the young *Ceratina* bees. No necessity exists for the construction of defense partitions at the ends of the cocoon-chamber, the later being protected by the still occupied bee-cells, and the cocoon is a simple affair, as compared with that of *Grotea anguina*.

It takes *Grotea anguina* about a year to pass through its entire development, and of its habits throughout the year we are pretty well informed. Not so with *Habrocryptus grænicheri*. This parasite goes through the different stages within a month, but as to its doings and whereabouts during the remainder of the year we know nothing.

The mode of oviposition has not been observed in either of the species, although I have repeatedly seen *Grotea anguina* flying around in the neighborhood of the nests of *Ceratina dupla*. The ovipositor of *Habrocryptus grænicheri* is 3 mm. in length, and that of *Grotea anguina* over 4 mm., and in both species it is strong and well developed.

In the Eastern States several small Hymenopterous parasites have been bred from the nests of *Ceratina dupla*, but in our region the two Ichneumonids considered above are the only parasites of this bee so far observed. It has been shown that the larva of either of these Ichneumonids is a very destructive inhabitant of the bee's nests, always killing more than one of the bee larvæ. Such a parasitic larva when full grown is longer than a cell of the *Ceratina* nest, and consequently it has to occupy at least two of the cells. But notwithstanding the destructive tendency of the parasites, they do not seem to occur in sufficient number to interfere materially with the frequency of *Ceratina dupla*.

A List of Coleoptera.

Taken on the Summit of Mt. Seward, N. Y.

By C. O. Houghton.

On June 22, 1901, the writer, accompanied by Dr. A. D. MacGillivray of Cornell University, spent a short time in collecting insects upon the summit of Mr. Seward, one of the highest peaks in the Adirondack Mountains.*

This mountain lies ten or twelve miles to the east of Axton and rises to a height of about 4500 feet above the sea level. The sides are quite heavily wooded and in places very precipitous and the top is thickly studded with dwarfed spruce and balsam trees, so small that one can almost walk over the tops of them although they have attained a considerable age.

The trip to this mountain was made from Axton, on the last day of our outing at that place † and owing to the roughness of the road and the difficulties in the ascent only about a half hour was available for collecting purposes at the summit; and this was about all we could endure, for the black flies (*Simulium* sp.) simply swarmed there and rendered collecting well nigh impossible. In all of our collecting in the low lands about Axton, although tormented a great deal by the black flies and mosquitoes, we had experienced nothing like it and I think that fully as much time was expended in trying to fight off these pests as in our collecting operations.

Near the point where we reached the top and from which we did not venture far, as the trail ended there and the walking was very difficult, there was an old signal station which had been made use of some time before. This was simply a tower-like frame built up to a height of perhaps 15-20 feet with poles cut from the sides of the mountain, and upon this we secured a number of the beetles listed below. Our attention was chiefly directed to the collection of Coleoptera and indeed, with the exception of the black flies, but few other insects were seen.

* Mt. Marcy, the highest, has an elevation of 5379 feet.

† See "A List of Insects Taken in the Adirondack Mountains, New York—I." By Alex. MacGillivray and C. O. Houghton—Entomological News, Vol. XIII, 1902, p. 247.

The following list embraces only those species taken on the summit, some of which were also taken at Axton;* when taken at both places it is so designated. The number following the name indicates the number of specimens taken on Mt. Seward. Most of the material was determined by Mr. Chas. Liebeck; the writer is responsible for the remainder.

STAPHYLINIDÆ.

Homalota sp., 1.
Alceocharid, undetermined, 1.
Xantholinus cepalus Say, 1.

COCCINELLIDÆ.

Harmonia picta Rand., 1.
Hyperaspis bigeminata Rand., 60-75.†

CUCUJIDÆ.

Læmophlæus convexulus Lec., 1.

CRYPTOPHAGIDÆ.

Cryptophagus sp., 3.

ELATERIDÆ.

Elater socer Lec., 2.
" *nigricans* Germ., 1.
Agriotes limosus Lec., 1.‡
Limonius pectoralis Lec., 9.
Corymbites spinosus Lec., 1.
" *appressus* Rand., 1.

BUPRESTIDÆ.

Dicerca divaricata Say, 1.‡

MALACHIDÆ.

Attalus nigrellus Lec., 1.

CLERIDÆ.

Thanasimus dubius Fab., 1.

CERAMBYCIDÆ.

Asemum moestum Hald., 4.
Tetropium cinnamopterum Kirby, 1
Pachyta monticola Rand., 2.‡
Acmæops pratensis Laich, 1.

CHRYSOMELIDÆ.

Galerucella decora Say, 1.‡
Disonycha pennsylvanica Ill., 1.

MELANDRYIDÆ.

Xylita lævigata Hellw., 1.

OEDEMERIDÆ.

Asclera puncticollis Say, 2.

CEPHALOIDÆ.

Cephaloon lepturides Newm., 1.‡

CURCULIONIDÆ.

Apion walshii Smith, 1.

SCOLYTIDÆ.

Pityophthorus materiarius Fitch, 1.
" *sparsus* Lec., 1.
Xyleborus cælatus Eich., 1.
Polygraphus rufipennis Kirby, 6.

Mr. and Mrs. E. B. Williamson, of Bluffton, Indiana, left home on December 31 for Guatemala, where they will collect insects. Mr. Williamson, who is favorably known for his papers on dragon flies, will pay special attention to that group.

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* By an oversight, all of the species taken on Mt. Seward were included in the list of Coleoptera taken at Axton and vicinity.

† These were all taken on, or close to, the old signal tower; many others could have been secured.

‡ Taken also at Axton.

A New Lac-Insect.

By T. D. A. Cockerell.

The lac-insects (*Tachardia*) are for the most part members of the tropical fauna, and only a few species occur within the boundaries of the United States. In New Mexico *T. cornuta* Ckll. has long remained unique, and I did not expect to see a second species from that region. However, one has come to hand, and from a locality in which I have collected many times, without finding it. It must be extremely local; the explanation of this fact is sufficiently evident when on boiling up the material received, I find it severely attacked both by a fungus and a chalcidid.

Tachardia glomerella n. sp.

Crowded on the stems of *Gutierrezia glomerella* Greene the individuals coalescing in large numbers, but not (in the material received) entirely surrounding the stems; color very dark, with translucent shining orange-red rounded bosses, suggestive of guava jelly; scales smooth and rounded, without (even when young) any distinct projection such as is seen in *T. cornuta*; female when boiled and mounted colorless, about 3 mm. long; the crimson pigment produced on boiling very abundant, making the liquid extremely dark; caudal process yellowish-brown, only moderately chitinized, very broad basally, emitting no hairs from its apex; dorsal excretory processes cylindrically slightly broadened to the base, colorless.

Larva with antennæ 6-jointed, joints 3 and 6 long (6 longest), the others short, 4 and 5 with a stout spine subapically, 6 with a similar but larger spine at about the beginning of its last third; apex of 5 with two extremely long hairs, nearly twice as long as the sixth joint.

Found on the mesa near Little Mountain, Mesilla Valley, New Mexico, Oct. 6, 1904, by Dr. David Griffiths. Communicated by Professor E. O. Wooton.

Larger and darker than *T. cornuta*, and without the protuberance. Much darker and otherwise different from *T. fulgens* Ckll.; without the stripes and lateral foot-like processes of *T. fulvaradiata* Ckll. The *Gutierrezia* is very abundant in the Mesilla Valley.

Pulvinaria ficus Hempel.—This coccid was recorded from the West Indies by Maxwell-Lefroy, who gave measurements of the antennæ and legs. An examination of the data presented shows that the species was not *P. ficus* at all, but *P. cupaniæ* Ckll. The true *P. ficus* is known only from Brazil.—T. D. A. Cockerell.

The Spreading of Sphaeridium Scarabaeoides L.

By Frederick Knab.

This beetle is not only spreading through the Eastern States, as shown by Mr. C. O. Houghton, in the last volume of Ent. News, p. 310, but also to the westward. Upon a recent visit to Chicago I was suprised to see a fine series of this insect among the local captures in the collection of Mr. A. B. Wolcott. Although Mr. Wolcott has collected industriously about Chicago for a number of years, he had never seen this species until he met it on October 9, 1904. Upon that date he captured 23 specimens and could have taken many more. The specimens were all found on the lake-shore embankment in the northern part of the city where they doubtless crawled after being washed ashore. They were very active and would readily take flight after running a distance of one or two inches. Mr. Wolcott also captured a single specimen on November 2, 1904, so that it would seem that the species is established about Chicago, though evidently a very recent arrival. The above specimens show considerable variation in the color-markings of the elytra, and also in size, the specimens measuring from 4.5–7 mm.

It is an interesting feature in the spread of the species in the East that it seems to have invaded the Connecticut River valley from the southward. The writer took a single specimen near Mount Tom, Mass., in the summer of 1902, and the following season encountered it at various points in Hamden County, Mass., while the Rev. C. Crozet had already found the species plentiful about Hartford, Conn., in 1901.

I should be obliged to you if you would call attention in Notes and News to the fact that I shall be glad to examine and name any *Cryptocerate Hemiptera* sent to me, except *Corixas*. I am working on these groups for the North American fauna, and find it extremely difficult to get material. There is so very little known about them that even our accepted text books contain glaring errors. I should be glad to answer any queries regarding these insects.

I see that my friend, Mr. G. W. Kirkaldy, implies that I might give you some information regarding the method of "oaring" in water bugs. Quoting offhand from casual observation, I would say that *Belostoma*, *Corixa* and *Notonecta* move the hind legs together. *Ranatra* I have observed several times, and that curious insect paddles through the water in a very curious way. It uses the second and third pairs of legs, which it moves alternately, first one pair and then the other. It is a very slow and awkward swimmer.—J. R. de la Torre Bueno, 25 Broad St., N. Y.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., FEBRUARY, 1905.

If in the evolution of species there had been no breaks or gaps it would be impossible to differentiate species, and even now complete series would make it very difficult to draw lines and separations. Our tools, so to speak, for the identification of species may be divided into figures, word descriptions and types. Some very distinguished entomologists believed in the former two tools only, as they did not care to go beyond the failure or the possibilities of the tools. A carpenter may say feet and inches are fine but millimeters are of doubtful value and micromillimeters perfectly idiotic. We can sympathize with that carpenter as micromillimeters are of no value to him. Figures and more particularly words may appear equally idiotic to some entomologists because they are inadequate to describe or differentiate some of the minute differences in insects. In other words, in some instances the study has gone beyond the standards of measurement. When we are stranded in this way recourse must be had to types, and that is why types are becoming more and more worshipped every day. Would it not be infinitely better to wait until the tools or standards of measurement become delicate enough to measure all differences and not let the *mihi itch* run away with our sound judgment?

To make the thing clearer and perhaps to illustrate and exaggerate a tendency we cite the following: The celebrated mammologist, Dr. Coyote, discovers a peculiar beetle among

some skins and is very curious to know the species and asks an entomological friend what it is. Mr. dear Dr. Coyote the genus to which that species belongs was monographed by Dr. Lectularius, his types are in the Royal Museum at Khartoum, and it is simply impossible to identify that species from either his figures or descriptions; you must personally examine his types.

Dr. Coyote lived in New York and his father was the owner of the Metropolitan Traction Company. So the next day at 8 A. M. he started for the State of Kordofan.

For the past two years I have noticed that the larvæ of one of our Geometrid moths, *Zerene* (*Cingilia*) *catenaria* was doing considerable damage to some of our small shrubs and bushes in certain localities. On August 15, 1903, in one place within the city limits I saw quite a large area where there was scarcely anything but bayberry bushes, that had the appearance of having been swept by a fire, the leaves having been completely eaten leaving nothing but the thick ribs, which had turned brown. At this time the larvæ were beginning to pupate, many having already done so. On July 22, 1904, in another locality, some five miles away, I found these larvæ in great abundance, being about half or two thirds grown. They had stripped many bushes and shrubs of their leaves; in this place their food was more varied; I noticed them on bayberry, sweet fern, low blueberry, young white birch trees, and on a few young oaks. About the same time I noticed them in still another locality about midway between the two last; here also they were feeding on bayberry, sweet fern and to some extent on young white birch trees, and had stripped many of them.—JAMES E. BILLSON, Providence, R. I.

Doings of Societies.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held December 22, 1905. In the absence of the Director, Dr. Castle presided. Fourteen persons were present. The following were elected officers to serve for the year 1905: Director, Philip Laurent; Vice-Director, H. W. Wenzel; Treasurer, E. T. Cresson; Recorder, Henry Skinner; Secretary, Frank Haimbach; Conservator, Henry Skinner; Publication Committee, C. W. Johnson, J. H. Ridings.

HENRY SKINNER, *Recorder.*

A joint meeting of the Association of Economic Entomologists, the Entomological Section of the Academy of Natural Sciences of Philadelphia, the American Entomological Society and the Feldman Collecting Social was held in the Entomological rooms of the Academy of Natural Sciences of Philadelphia on December 29, 1904. Dr. Philip P. Calvert was elected Chairman of the meeting and Dr. Henry Skinner acted as Secretary. Among those present were:

Levi W. Mengel, Pennsylvania.
J. H. Matthews, Pennsylvania.
J. A. G. Rehn, Pennsylvania.
E. M. Walker, Ontario.
J. G. Saunders, D. C.
H. L. Viereck, Pennsylvania.
F. C. Bishopp, D. C.
C. S. Mead, Ohio.
H. A. Surface, Pennsylvania.
J. F. McClendon, Pennsylvania.
C. P. Gillette, Colorado.
James Fletcher, Ontario.
L. O. Howard, D. C.
C. O. Houghton, Delaware
W. S. Huntington, Pennsylvania.
M. V. Slingerland, New York.
E. L. Dickerson, New Jersey.
Henry C. McCook, Pennsylvania.
E. P. Felt, New York.
T. H. Schmitz, Pennsylvania.
D. M. Castle, Pennsylvania.
H. E. Summers, Iowa
G. M. Bentley, North Carolina.
Frank Benton, D. C.
Umekichi Nawa, Japan.
H. A. Snyder, Pennsylvania.
Frank Haimbach, Pennsylvania.
H. W. Wenzel, Pennsylvania.
F. Weigand, Pennsylvania.
W. J. Coxey, New Jersey.
C. T. Greene, Pennsylvania.
H. N. Poole, Pennsylvania.
G. M. Greene, Pennsylvania.
H. A. Wenzel, Pennsylvania.
J. F. Strauss, D. C.
A. A. Girault, D. C.
L. Martin, D. C.
J. B. Smith, New Jersey.
J. J. Repp, Pennsylvania.
E. S. G. Titus, D. C.
W. A. Riley, New York.
A. F. Satterthwait, Pennsylvania.
Herbert Osborn, Ohio.
W. D. Hunter, Texas.
W. M. Scott, D. C.
G. W. Martin, Tenn.
E. D. Sanderson, New Hampshire.
F. W. Rane, New Hampshire.
E. Daecke, Pennsylvania.
C. W. Fenninger, Pennsylvania.
J. C. Bradley, New York.
A. F. Burgess, Ohio.
A. L. Quaintance, D. C.
H T. Fernald, Massachusetts.
W. E. Britton, Connecticut.
F. L. Washburn, Minnesota.
C. E. Chambliss, South Carolina.
Henry Skinner, Pennsylvania.
P. P. Calvert, Pennsylvania.

Dr. Calvert gave an account of his method of work in the differentiation of the species and genera of Odonata for the Biologia Centrali-Americana.

Dr. Skinner spoke of the classification of the Hesperidæ based on the costal fold.

Prof. J. B. Smith discussed the value of characters used in classification and specially referred to his work on the genitalia of *Lachnosterna*.

Dr. L. O. Howard complimented Dr. Calvert on his work and referred to the value of larval characters. He also mentioned the utility of genitalic characters in elucidating other smaller differences.

Prof. Quaintance talked of his studies in the Aleyrodidæ, and said the classification of the family was based on larval characters.

Dr. Felt alluded to his recent work on mosquitoes and said exact illustration by the aid of photo-micrographs was of very great importance.

Prof. E. D. Sanderson said he had used a method similar to that of Dr. Calvert and found it very useful in the study of plant lice.

Dr. Henry C. McCook spoke eloquently of the great value of entomological studies and contrasted the early days with present universal recognition of the value of such studies.

Prof. H. E. Summers gave an account of a method of mathematical differentiation of species, trying to elucidate by a single character the expression of the others.

Mr. H. L. Viereck gave a resumé of his studies in Andrenidæ.

Mr. Rehn gave an address on the extralimital species of Orthoptera.

Mr. E. M. Walker commented on Mr. Rehn's communication and spoke of the Canadian species.

Dr. James Fletcher spoke lovingly of Canada and referred to his studies of rare Canadian butterflies, such as *Arg. astarte*, *Chion. alberta* and *Erebia vidleri*.

Prof. Quaintance said he wished to thank the Philadelphia Entomological Societies in behalf of the visiting entomologists for their hospitality and the good time shown them.

Dr. Calvert made some remarks on the value of organizing a National Entomological Society. After discussion, Mr. Bradley moved that a committee of three be appointed by the Chair to consider the matter. The committee appointed consisted of E. D. Sanderson, H. T. Fernald and J. C. Bradley. After the meeting some time was spent in social intercourse over the refreshments provided by the local committee.

HENRY SKINNER, *Secretary*.

A meeting of the Entomological Club of the American Association for the Advancement of Science was held in the rooms of the American Entomolgical Society, in the building of the Academy of Natural Sciences of Philadelphia, on Friday evening, December 30, 1904. The following were present: F. Benton, F. C. Bishopp, J. C. Bradley, D. M. Castle, C. E. Chambliss, M. T. Cook, E. Daecke, C. W. Fenninger, H. T. Fernald, W. J. Fox, C. P. Gillette, F. Haimbach, W. D. Hunter, L. Martin, A. D. MacGillivray, J. H. McGregor, U. Nawa, J. L. Phillips, A. L. Quaintance, J. A. G. Rehn, W. A. Riley, E. D. Sanderson, W. M. Scott, H. Skinner, R. M. Strong, H. E. Summers, E. S. G. Titus, H. L. Viereck, F. L. Washburn, H. A. Wenzel, H. W. Wenzel.

In calling the meeting to order the President, Dr. Henry Skinner, spoke of the meeting of the Entomological Club held twenty years before in the Hotel Lafayette, in Philadelphia. In the absence of the Secretary, Mr. E. V. Wilcox, Mr. J. C. Bradley was elected to take his place. Mr. H. A. Morgan was then elected President, and Mr. G. W. Herrick Secretary for the New Orleans meeting in 1905. Dr. Skinner was elected permanent Secretary, whose duty it should be to notify officers of their election and see that the business of the club is attended to.

At a joint meeting of the Association of Economic Entomologists and the American Entomological Society the previous evening, a committee had been appointed to report at this meeting on the advisability and means of establishing a national association of entomologists. The following report from this committee was read:

Report of the Committee on a National Association of Entomologists.

Your committee believes that there is room in America for an association of entomologists wherein all divisions and all branches of entomology shall be represented; an association which shall bring together all aspects of the science and throw its influence in favor of harmony and uniformity of practice. Such an association will be a success, however, only if it is established on a broad basis, and with a membership which shall be truly American rather than sectional.

Your committee therefore recommends the selection by this meeting of a committee of three, not members of any of the societies named below, whose duties shall be:

1. To communicate with the American Entomological Society, the New York Entomological Society, the Entomological Society of Washington, the Cambridge Entomological Club, the Entomological Society of Ontario, and the Pacific Coast Entomological Society, requesting each to select some member to represent his society on this committee.

2. As soon as four of these socities shall have elected members of the committee, the entire committee shall prepare a constitution and by-laws and plan of work for a proposed American Society of Entomologists, and report them at such time and place during 1905 as shall seem to them most likely to find the greatest number of entomologists assembled. Notice of this meeting to be first published in ENTOMOLOGICAL NEWS and the Canadian Entomologist.

3. This committee shall also arrange a program of discussion on some entomological topic for the proposed meeting.

(Signed) J. CHESTER BRADLEY,
H. T. FERNALD,
E. D. SANDERSON.

The President and Messrs. Summers and Titus spoke their appreciation of this movement. On motion the report was adopted, and the chair instructed to appoint a committee, which was done as follows: John B. Smith, C. P. Gillette and J. G. Needham.

The President spoke of the history of American entomology, especially of Thomas Say. The "Father of American Entomology" had lived under peculiar conditions; it was recorded that at times he had slept under specimens in the museum and lived on eight cents per day. The speaker exhibited a book which had belonged to Say and was presented to the American Entomological Society by his wife, Lucy W. Say. In this book was the imprint of a butterfly's wing which had been made by transferring the scales on to a pasted surface. The only extant type of any of Say's species was shown. The Academy of

Natural Sciences in Philadelphia had been censured for the loss of Say's types, but in justice to the Academy it was explained that at that time there was no entomologist in Philadelphia, and the Academy had sent the collection to T. W. Harris to be cared for, and while in his hands it was destroyed.

A set of several albums belonging to the American Entomological Society was shown, which contained photographs of very many of the older as well as contemporary entomologists. All were invited to contribute photographs who had not already done so.

Mr. Rehn exhibited some old and rare books from the library of the American Entomological Society and that of the Philadelphia Academy of Natural Sciences.

Mr. Cook stated that the Gundlach collection of insects was in excellent state of preservation in Havana, Cuba. Mr. Cresson and others in Philadelphia had at one time worked on this collection ; twenty-three years ago it had been put in hermetically sealed boxes, only a few of which had become broken. There were over 2000 species. The speaker had the proof of a catologue of the Coleoptera which had never been finally published. Mr. Fox stated that many of Cresson's species were in Poey's collection. Mr. Cook said that that collection was in the University of Havana where were also Poey's fishes.

In speaking of the Comstock-Needham system of wing venation, Dr. MacGillivray stated that Prof. Comstock had been successful in homologising the wing veins in most of the different orders of insects. From the study of *Nemoura* he had derived a hypothetical primitive type of venation, which had closely corresponded with wings observed later. He showed by diagrams the definite way specialization by reduction had taken place, as illustrated by the Radius. In the case of saw-flies the radial sector arises from the base of the stigma while in the higher Hymenoptera it appears to arise from near the apex ; but he had recently proven that in reality the base of the radial sector has been lost in all higher Hymenoptera, and the radial cross-vein has assumed its function. Mr. Daecke inquired how this system applied to such orders as Odonata, where the veins were very numerous. Dr. Mac-

Gillivray replied that in that case there had been another type of specialization, by addition, the definite methods of which were just as clearly demonstrable. Dr. Riley said that he had taken up the study of the system with a strong prejudice against it; but as he studied it he had become filled with enthusiasm. He mentioned the successful work that had been done in applying the system to different orders,—by Prof. Comstock in Lepidoptera, by Dr. Johannsen in Chironomidæ, by Dr. Needham in Odonata, by Dr. MacGillivray in Hymenoptera,—and said that their work showed that there was a solid ground work of truth, although details had yet to be worked out in different groups. Dr. MacGillivray stated that Prof. Comstock had derived a classification of the Lepidoptera from their wing venation, which had been corroborated by Mr. Bodine from a study of the scales, Mr. Kellogg from the antennæ and very closely by Dr. Dyar from a study of the tubercles of the larvæ.

Dr. Fernald complained of the inaccuracy and vagueness of the terms used in the question of mimicry. He placed on the board a tentative table classifying those phenomena. A similar table was placed on the board by Mr. Summers. The subject was discussed at length by Messrs. Skinner, Gillette, Bradley, Fox, Riley, Fernald, Summers, Rehn and MacGillivray.

Mr. Washburn spoke upon the attractions of Minnesota for the entomologist.

It was ordered that the minutes be published in both the Canadian Entomologist and the ENTOMOLOGICAL NEWS. The Club then adjourned.

J. CHESTER BRADLEY, *Secretary pro tem.*

At the meeting of the Feldman Collecting Social held December 21, 1904, at the residence of Mr. H. W. Wenzel, 1523 S. Thirteenth St., Philadelphia, ten persons were present.

Prof. Smith spoke of his work in connection with a glossary of entomological terms, and stated that the terms will be more than doubled as compared with the list issued by the Brooklyn Entomological Society some years ago, and will number at

least 5000. He referred to a recent work on insect variation and doubted the value of counting the spots and shape of maculation in 1000 specimens of one variable species. It simply indicated an indefinite variation which students already are aware of.

Discussed by Messrs. Castle, Harbeck and Wenzel, who spoke of the variation of *Cryptocephalus* maculation.

Prof. Smith remarked that in some seasons certain insects are more constant than usual, and that variations are very local.

Mr. Wenzel referred to variation in *Pterostichus*, which bears out Prof. Smith's remarks as to local variation. He also showed a piece of wood from southern Arizona which was perforated by insects. A specimen of *Zygops seminiveus* was found inside.

The incompleteness of analytical tables of species by Le Conte was referred to by Messrs. Wenzel and Smith. To use these tables properly it is necessary to have an almost complete collection of the genus in question, owing to the indefiniteness of most comparisons.

Mr. Harbeck recorded the capture of *Chlorops pulvera* from Fern Rock, Pennsylvania, May 28, 1904, and *Leskia thecata* at Clementon, N. J., September 5, 1904, both new to this region.

Mr. Laurent exhibited a butterfly showing effects of cyanide on the yellow coloring. He had examined the abdomens of 10 specimens of *Prionus laticollis* and found that they contained an average of $383\frac{1}{5}$ eggs.

Mr. Daecke showed a beetle, *Silvanus surinamensis*, which was found commonly in barrels of currants imported from Greece. WM. J. FOX, *Secretary*.

A meeting of the American Entomological Society was held December 22, 1904. Dr. Philip P. Calvert, President, in the chair. Fourteen persons were present. The following were elected to serve as officers for the year 1905: President, P. P. Calvert; Vice-President, H. W. Wenzel; Treasurer, E. T. Cresson; Recording Secretary, Henry Skinner; Correspond-

ing Secretary, Frank Haimbach; Curator, Henry Skinner; Librarian, J. C. Bradley; Publication Committee, E. T. Cresson, C. Few Seiss, B. H. Smith; Executive Committee, Philip Laurent, H. W. Wenzel, Frank Haimbach; Finance Committee, J. W. McAllister, C. S. Welles, D. M. Castle.

HENRY SKINNER, *Secretary.*

A meeting of the Entomological Section of the Chicago Academy of Sciences was held November 17th, at the John Crerar Library, nine persons present.

Dr. C. F. Adams, of the University of Chicago, took the floor, his subject being "American Dipterology." His talk was of a historical nature, naming the epochs through which the study of American Diptera had passed, its principal devotees and collections, and partly describing the work being done by present students.

Thomas Say, the so-called father of American Entomology, was the first American to write of the Diptera, but nothing of great magnitude or importance was accomplished until Osten-Sacken and Loew, both Europeans, entered the field. Their work extended over many years, and has proved invaluable to later students. Walker, of the British Museum, described a large number of species, but his descriptions were poor and many of the species proved to be synonymous with others previously described. The first real American Dipterist, as Dr. Adams put it, to enter this field of research was Prof. S. W. Williston in 1879. He described three new species in 1880, and published a monograph of the Syrphidæ in 1886. This was the first publication by an American Dipterist of a revisional character and gave new impetus to the study. The first edition of Prof. Williston's "Manual of North American Diptera," appeared in 1888, the latest revised edition, in 1896. Since then Prof. Williston has devoted most of his time and attention to tropical Diptera, and his latest work appears in the "Biologia Centrali Americana."

Present workers mentioned by Dr. Adams include:

Mr. D. W. Coquillet, of the National Museum, an earnest student and prolific writer.

Prof. W. M. Wheeler of the American Museum, N. Y., who has done considerable work in the Dolichopodidæ and Empididæ.

Mr. C. W. Johnson, of the Boston Society of Natural History, who is interested particularly in the Stratiomyidæ and Leptidæ.

Dr. J. B. Smith, whose work among the mosquitoes is well known.

Prof. J. S. Hine, of the University of Ohio, interested principally in the Tabanidæ.

Prof. Aldrich, of the University of Idaho, interested in the Dolichopodidæ and working on a catalog of North American Diptera.

Mr. A. L. Melander, of the Experiment Station, State of Washington, Empididæ.

Mr. C. T. Brues, of the American Museum, N. Y., Phoridæ.

Dr. O. A. Johannsen of Cornell University, Nematocera.

Dr. Adams considers the collections of the United States National Museum, the University of Chicago, Harvard University, and the University of Kansas as the best in the United States. The collection of the University of Chicago consists principally of the former Dr. Hough Collection, and is rich in Muscidæ. The material on Anthomyidæ is very good, having been revised by Stein, a European authority, and returned and includes numerous types. This collection is also rich in Micro-Diptera. In Chicago literature on the Diptera is very complete, as almost every book or periodical on the subject can be found at either the University of Chicago, the John Crerar Library, or in Professor Williston's private library.

Dr. Adams was heartily applauded at the close of his discourse. He was followed by Prof. Williston who added a few words, mentioning Edward Burgess, an American, who wrote on Diptera in 1878 or 1879, before Prof. Williston did and whose collection is now in the National Museum. Prof. Williston also stated that the National Museum contained over 100 types of *Stegiomyia*, and he considered it by far the most complete collection of American Diptera.

A. Kwiat, *Recorder.*

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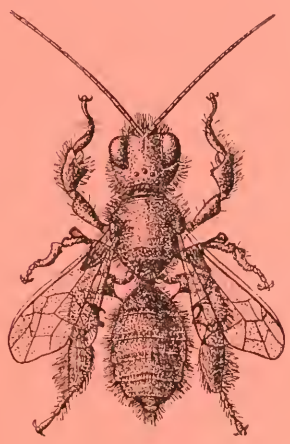

Cryptohalictoides spiniferus Viereck.

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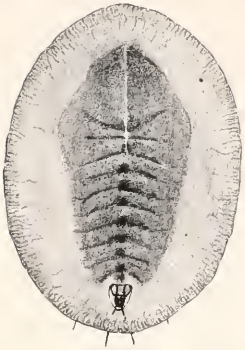

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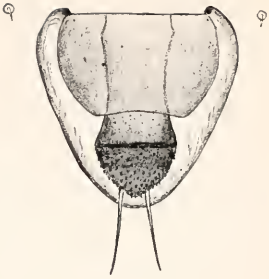

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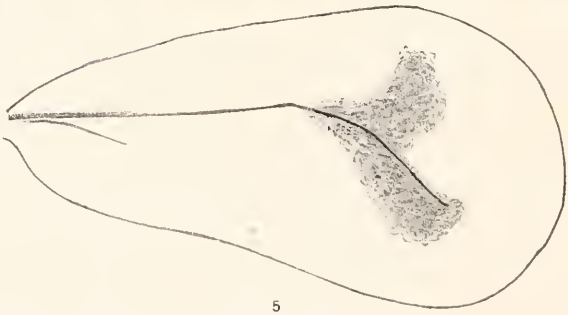

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ALEYRODES ACTEÆ BRITTON.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. MARCH, 1905. No. 3.

CONTENTS:

Some New or Little known Aleyrodidae from Connecticut. I.

BY W. E. BRITTON, Ph. D., State Entomologist of Conn.

(Plate IV.)

Aleyrodes acteæ sp. nov.

Egg.—Unknown.

Larva.—Early stages not found. Specimen examined was about 0.99 mm. by 0.66 mm. Shape oval like pupa case. Color uniform light yellowish green, medio-dorsal region not clouded. Vasiform orifice brownish or slightly darker than the other portion. Segmentation apparent with a median crest on each segment. Surface more or less wrinkled, with no wax rods or papillæ. Larva thin and flat though slightly convex.

Pupa case.—Size about 1.5 mm. by 1 mm. Broadly oval in shape, pale yellow or greenish white near the margin with a medio-longitudinal area of dark brown. Dorsum, especially the dark portion, highly convex, most abrupt at cephalic extremity; marked transversely with rather deep furrows corresponding to the adult segmentation. Each segment has a median crest which is darker in color than the surrounding portion. Marginal area radially corrugated or wrinkled. Margin finely crenulate. A pair of setæ 43μ long at anal extremity, with a second pair 30μ long situated at a distance from the first pair nearly twice as great as the distance between the first pair. Entire dorsal surface shiny, and wholly destitute of papillæ, wax rods or secretion of any kind. A low

wall of wax on the underside, just inside of the margin connects it to the leaf, and remains upon the leaf as an oval ring of wax after the pupa case has disappeared. Vasiform orifice subtriangular, about 80μ long and nearly as broad as long, with angles rounded and sides bulging. Operculum rhomboid-ovate, half the length of orifice, two-thirds as long as broad, base nearly a straight line, sides bulging, apex concavely truncate. Lingula spatulate with a pair of prominent spines or setæ 40μ long, one each side of distal extremity, which is not lobed but obtusely pointed or rounded. A transverse fold or carina reaches entirely across the broadest portion. Free end is densely papillose with short hairs.

Adult.—Wings white, with a two-lobed dusky spot more or less diffused and irregular at the extremity of median vein; the vein is dark grey or black through this area which appears equal on the upper and under sides of front and rear wings. Legs and antennæ yellow. Two rows of prominent spines on the front or under side of hind tibiæ, the length of the spines being about equal to the thickness of the tibia. Eyes divided by wax secretion. Entire insect more or less covered with a mealy or granular secretion of wax. Abdomen bears two latero-ventral tufts of white wax.

Female.—With the characters just mentioned. Length about 1.4 mm.; forewing about 1.63 mm. by 0.88 mm.; hind tibia 0.56 mm.; thorax dark on dorsal and ventral surfaces; abdomen with a suffused dusky spot on dorsum at base; a large brown spot at anal extremity on dorsum, and a small brown oval spot just in front of the large one; and a pair of small dark spots on ventral surface near anal extremity.

Male.—Length about 1.3 mm.; forewing about 1.52 mm. by 0.70 mm.; hind tibia 0.48 mm.; hind tarsus 0.27 mm.; antennæ about 0.41 mm. Spots on wings are less distinct than in ♀. Thorax dark above, yellow beneath. Abdomen yellow without prominent markings, more slender than in ♀ and terminating in the genitalia. Latero-ventral wax tufts smaller than in ♀.

The characters of this insect are shown on the accompanying plate.

Types.—No. 8253 U. S. National Museum.

Cotypes.—Collection of Connecticut Agricultural Experiment Station, New Haven, Conn. Described from 12 ♀, 2 ♂ and hundreds of pupa cases.

Habitat.—Found on the leaves of a single plant of baneberry (*Actæa*) at Mount Carmel, Connecticut, September 24, 1904. Several other baneberry plants growing in the vicinity were examined but not found infested. Collected by Mrs. W. E. Britton.

A striking and handsome species, not resembling any other

that I have seen in the Northern States. It occurs on the under sides of the leaves, seventy-five or eighty larvæ, pupæ and pupa cases being found upon a single lobe of the compound leaf.

Named from the genus of plants upon which it was found.

From a comparison of the descriptions, *acteæ* appears to be allied to *aureocincta* Ckll. and *amnicola* Bemis, but I have not examined material of those species. It differs from the former in the markings of the adult, and in the shape of the operculum; it does not have the prong-shaped black markings on the pupa case like *amnicola*. It is also somewhat larger than either of these species.

I am indebted to Prof. A. L. Quaintance of the Bureau of Entomology, Department of Agriculture, Washington, D. C., for examining the specimens and manuscript, and to my assistant, Mr. B. H. Walden, for making the photographs (5 and 6) shown on plate.

DESCRIPTION OF PLATE.

1. Pupa case x 30.
2. Vasiform orifice x 325.
3. Margin of pupa case x 400.
4. Forewing x 46,
5. Larvæ and pupæ on leaf, photographed from dried specimens x 4.
6. Adults, from photograph x 4.

Just One Log.

By Annie Trumbull Slossom.

It was a very big log, some twelve feet in length and two feet in diameter. It was of gumbo-limbo wood—*Bursera gummifera*—and had evidently been lying where I found it for many months, for the underside was deeply imbedded in the powdered disintegrated coral—or coral-like rock—found along Biscayne Bay. Every new comer notices the gumbo-limbo on his arrival in southern Florida. Its bark is of a deep brownish red, or mahogany color, and the outermost layer, of very thin delicate tissue, flakes off and hangs in loose ragged strips, making the tree an odd and conspicuous object in the tropical hummock.

There was a new bridge built last year over the Miami River, more accessible than the old one and taking one directly into the rich hummock growth so delightful to a naturalist. Across this bridge I went almost daily through the winter and early spring, and one day, in a road or trail cleared through the woods, I found my log. What a treasure house it proved to an entomologist!

At first I feared it was too recently felled, the bark too fresh and hard to be easily examined. But presently I found at one end a loosened fragment of bark which, after some tugging and pulling, I succeeded in removing, and at once my efforts were rewarded. A half dozen specimens of the singular Brenthid, *B. anchorago*, were lying there in a sort of mass, apparently half torpid, though the weather was not cold to northern blood. On being stirred up they stretched their long awkward legs and strode away, though in no unseemly haste. This long-nosed, shining, slender fellow is very variable in size, fully as much so as the Cucujid, *Catogenus rufus*. I find specimens not only under bark but on flowers in the bright sunshine. Scores of *Cossonus impressifrons* mingled with the Brenthids and the Scolytid, *Xyleborus pubescens*, lay in characteristic galleries near by.

On my knees in the warm white coral powder I gathered in my harvest till my cyanide bottles were well filled and the hour of luncheon approached. Of course I went logging again next day and many to-morrows found me hard at work. Number and variety proved almost inexhaustible and the unexpected was always happening. It was not easy work. The bark was very hard and tough. Blade after blade of my knives snapped as I tried to cut into it, and for weeks my hands were always blistered. Sitting or kneeling there for hours at a stretch I grew stiff and cramped, warm and weary, but I had a beautiful time! A tiny *Europs* ran about in dozens, a little *Sacium* prettily marked and probably an undescribed species was not uncommon and there were two or three species of *Læmophlœus*; *L. modestus* the most abundant.

There were also many specimens of a *Ditoma* which I had collected in former seasons under the bark of various trees and

which I had supposed to be a color variety of *D. 4-guttata*. Now I seemed to detect decided differences and have been since assured by good authorites that this is a distinct species, perhaps West Indian if not quite new. One day I found that by digging away the white soil in which my log was embedded I could reach a portion of the underside of the wood where the bark was softer from partial decay. Here I discovered abundant insect life. There were scores of odd maggot-like things which I knew must be Dipterous larvæ. I carried some home to my room with plenty of the soft, moist, decomposed wood in which I found them, hoping to breed the imago and learn its identity. But they all dried up and died. However one morning in March the puzzle was apparently solved when I found several specimens of the tropical Stratiomyid, *Cyphomia marginata*, crawling on the log, their wings scarcely dry. I do not know whether anything has been recorded concerning the habits or life history of this species, nor can I prove indisputably that the "maggots" of which I have spoken were the larvæ of *C. marginata*, but I feel sure of it myself. In this same decayed wood were many small Staphylinids, hundreds of the slender little *Lispinus tenellus*, and among them another seemingly allied species new to me. This proved to be, according to Mr. Frederick Blanchard, a *Hypotelus*, a genus not hitherto recognized, I think, in North America. Erichson described *H. pusillus* from Brazil, which Mr. Blanchard considers very near the Florida species. Dr. Sharp says that the genus is found "under sappy bark."

I sent some specimens of the *Europs* to Mr. Blanchard who discovered among them one specimen of a *Bactridium* sp., which I had overlooked, confusing it with the Europs. I found also among the specimens of *Cossonus impressifrons* a small black species of the same genus, *Cossonus*, which appears to be undescribed, though it may possibly be West Indian.

When cramped and aching from my uncomfortable position on the ground I often changed my posture and seating myself on the log rested in the sunshine. Then I saw many things I should have missed had I kept to my cortical collecting. A pretty little *Physalis* or ground-cherry, of the nightshade

family, grew all about me. This proved to be the food-plant of a tropical *Lema*, the *confusa* of Chevrolot, a pretty orange and black beetle, and I gathered many specimens. Deer flies—*Chrysops flavida*—buzzed about my head, shining golden-green Dolichopids alighted on the leaves near by, and one morning a gorgeous fly of metallic blue came to my very hand, allowing me to capture it and learn that it was *Microdon scitulus* Will. Even Lepidoptera sought out my log, rare species too. One hot noon as I sat resting there before starting homeward I saw an oddly shaped object of silvery white, touched with black, on the smooth red bark at my side. Bending to examine it I found it was a small moth with folded wings and placed a cyanide bottle—quickly emptied for the purpose—over it. It was a fine fresh specimen of *Mieza igninix*, the pretty moth of Yponomeutidæ, whose curious larva I was so fortunate as to discover at Punta Gorda years ago (Jour. N. Y. Ent. Soc., Vol. IV, p. 86.) A small tree, the red bay—*Persea catesbyana*—grew just within reach of my hand as I sat there and one day I pulled some of the aromatic leaves to rub between my fingers while I sniffed the spicy odor. As I did so a larva dropped into my lap, an odd looking thing, with forward portion near the head swollen and enlarged. Searching I found several others and carried them home. They fed well, pupated, and in early April became moths of the species *Bronchelia hortaria*, a handsome Geometer.

Hymenoptera also, Hemiptera, Odonata, Orthoptera all, at one time or another, visited me at my log cabin and met with a warm soothing welcome there. That singular little Gryllid or cricket, *Mogosiplistus slossonæ*, ran swiftly away as I lifted the bark under which it lay hid, spiders crawled off from dark corners, hundreds of mites crowded thickly together there, and ants of two or three species seemed to have their abode in wood or bark.

Among the mites were some small roundish black creatures which I at first took to be also *Acarina*. But on examination they proved to be beetles, and Mr. Blanchard identified them as *Acritus atomus* Lec., a Cuban species, not previously recognized in our fauna.

Do you wonder that day after day of the winter and early spring found me at this happy hunting ground and that when I am remembering the busy hours in far off Miami and wishing, now it is too late, that I had kept a fuller record of my field work there, a journal, a calender, a daily diary, I satisfy my New England conscience by saying to myself in nautical phrase, "Well, at any rate, I kept a log."

Notes on some Californian Buprestidae.

By H. C. Fall.

One of the rarest and finest of the Californian Buprestides is the beautiful green *Dystaxia murrayi*. This species is rather widely dispersed in the southern part of the State, occuring on live oaks both on the desert and seaward sides of the mountains, but is not often taken by collectors. Imagine then the satisfaction of the writer when on a visit to Dr. F. E. Blaisdell of San Francisco, the Doctor in exhibiting his treasures opened a box containing a fine series of Dystaxias taken by himself at San Diego, from which he generously selected a set for my own collection. On placing the new specimens beside my single previous example I noticed that they were of a somewhat more brilliant green but made no further comparison at the time. Later my attention was called by Dr. Fenyes to the fact that Blaisdell's species, of which he had just obtained specimens, did not agree with his supposed *murrayi*, and a very brief comparison sufficed to show that they were indeed unmistakably distinct, though superficially remarkably similar.

On examining the series of *Dystaxia* at the National Museum the past summer, the new species was found as I had anticipated, mixed with *murrayi*, and it is not unlikely that it stands thus in other collections. It may be briefly characterized by comparison with *murrayi* as follows:

Dystaxia elegans n. sp.

Very similar to *murrayi* in size, form, color and sculpture, but when compared more attentively the present species is seen to be slightly smaller on the average, the color a more brilliant green, the elytra widest

more posteriorly, the fine, soft, erect, whitish pubescence of the upper surface a little longer and more evident. Antennæ (♂) fully attaining the middle of the elytra, pale at base, blackish and distinctly serrate from the fifth joint, the triangular joints strongly compressed, gradually increasing in width to the seventh or eighth, then decreasing in width to tip, the wider joints nearly as wide as long. In the female the antennæ are much shorter, not passing the humeral umbone, but the joints though narrower are proportioned nearly as in the male. In *murrayi* the antennæ are nearly filiform in both sexes, the outer joints (5–11) very feebly serrate, mutually equal in width and nearly three times as long as wide. There is the same sexual difference in length, and the outer joints are blackish as in *elegans*.

In the "Transactions," 1893, p. 137, Horn describes the genus *Glyptoscelimorpha* and takes the opportunity of presenting the differential characters of the *Schizopini* to which the genus belongs. The three genera comprising the tribe are there separated as follows:

Antennæ slender, nearly filiform, scarcely at all serrate.
  Claws entire at tip, slightly thickened at base; last joint of antennæ nearly one-half shorter than the tenth . . . **Glyptoscelimorpha.**
  Claws cleft at tip, last joint of antennæ very little shorter than the tenth. . . . . **Dystaxia.**
Antennæ flattened, the joints 4–10 broader than long and distinctly serrate; claws cleft at tip; last joint of antennæ oval, longer than the tenth. . . . . **Schizopus.**

From the above table it would appear that a mistake had been made in referring *elegans* with its flattened serrate antennæ to *Dystaxia*, and that it would more properly be placed in *Schizopus*. *Murrayi* and *elegans* are, however, too nearly identical in every feature of structure and facies, with this one exception, to warrant their assignment to distinct genera. The table given by Horn must then be modified, and in so doing attention should be called to an extraordinary character, which somewhat curiously escaped both Le Conte and Horn. In *Dystaxia* and also in *Glyptoscelimorpha* the antennæ are 12-jointed; in *Schizopus* they are 11-jointed, as indeed they are in every other known genus of the *Buprestidæ* if we may depend upon Kerremans, who so describes them without naming any exceptions in his late work on the family in Wytsman's Genera Insectorum. These three genera may then be more properly characterized thus:

Antennæ 12-jointed, attaining the middle of the elytra, at least in the male.

Claws simple, last joint of antennæ two-thirds as long as the eleventh. **Glyptoscelimorpha.**

Claws cleft at tip; last joint of antennæ barely visibly shorter than the eleventh. . . . . **Dystaxia.**

Antennæ 11-jointed, stouter, scarcely passing the hind angles of the prothorax in either sex; last joint a little longer than the tenth; claws cleft. . . . . **Schizopus.**

The fourth and fifth joints of the antennæ in *Schizopus* are both longer than wide in the only specimens at hand, and not wider than long as indicated by Horn.

It is pertinent to say in passing that Kerremans in the work above cited has badly bungled the characters of this group, the antennal characters of *Schizopus* and *Dystaxia* being interchanged, while the antennæ of *Glyptoscelimopha* are said to barely reach the middle of the pronotum. Such mistakes are especially unfortunate in a work of such (supposedly) high authority as that of the Belgian specialist.

POLYCESTA.

There can be no doubt that the Texan *P. clata*, now recorded on our lists as a variety of *californica*, should be restored to specific standing. The former differs from the latter quite constantly in its more obviously concave front, finely carinate median thoracic impression, slightly less obtuse hind angles of the prothorax and the less densely more unequally punctate intercostal interspaces of the elytra. In addition to the above differences, which were given by Le Conte, the formation of the last ventral segment is conspicuously different, being angulate at tip in *californica* and lobed in *clata*

Our third species—*velasco*—differs somewhat from both the above in the sculpture of the upper surface as heretofore described, but a more important means of separation exists in the first ventral suture. Our species are separable as below:

First ventral suture broadly rather strongly posteriorly arcuate; prothorax with a strong median and well defined lateral impressions; elytra strongly costate.

Apex of last ventral angulate at middle, the sides of the angle scarcely sinuate. . . . . **californica.**

Apex of last ventral produced in a nearly parallel-sided lobe which is obtusely rounded at tip. . . . . **elata.**

First ventral suture straight; prothorax without well defined lateral impressions; the alternate elytral intervals only slightly more elevated. . . . . **velasco.**

The form of the last ventral does not vary much in the sexes of *californica* and *elata*, though the apical lobe is a little less prominent in the female of the latter species. In a male of *velasco* from Yuma, California, the last ventral is sinuate and subacuminate at apex; while in a female from Texas it is angulate. I unfortunately have not both sexes from the same locality. In a female from Oak Creek Canon, Arizona, recently submitted by Prof. Snow, the last ventral is more acutely angulate and the elytral costæ more pronounced. This is possibly a distinct species, but more specimens of both sexes should be seen before passing judgment. It is not possible at this time to express any opinion as to the validity of *P. cavata* Lec. and *P. obtusa* Lec. The former, described from Alabama, has been placed as a synonym of *elata;* and the latter, described from Philadelphia, is referred to *velasco.*

Recognition of two North American Species of Cicada Latr.

By P. R. Uhler.

1. **Cicada townsendii** n. sp.

An unusually robust form appearing to be closely related to *C. montezuma* Dist. Color of head and pronotum greenish (fading to pale tawny), marked with black; the ground color of mesonotum and tergum brownish black, marked with reddish brown and greenish, the middle and submarginal curved lines being green and powdered with white bloom, as is also the surface beneath. Head stout, as wide as the front of pronotum, if the obliquely set eyes be included; front tumidly prominent, black, having a pale line down the middle and a spot of the same color each side, superiorly, and a larger pale spot on the cheeks, sulcations of the cheeks obliquely and deeply grooved; the rostrum extending behind the middle coxæ, the eyes prominent. Pronotum greenish, or pale tawny when dried, the posterior border with a greenish band and the anterior margin more narrowly greenish, a large triangular black spot is on the middle back of the front margin, and on this a short greenish, longitudinal line runs back a little more than half the length, each side of the black

are two uneven pale spots, followed outwardly by larger spots between the dark sutures, and nearer the sides are two long curved pale lines; the lateral margins are broadly curved, greenish, bluntly rounded on the anterior angles and almost rectangular on the basal angles, the posterior margin is strongly curved, the sutures mostly black. Mesonotum piceous black, sometimes tinged with rufous, the middle line pale greenish or tawny, sometimes obsolete, on each side of this are two short, pale curved lines, and still further outwards two longer pale curved lines, and the lateral border usually pale, all of these lines are commonly covered with whitish bloom; flaps behind the crux broad luniform, pale greenish, covered with bloom. Wing-covers sometimes tinged with whitish, moderately ovately, but not acutely rounded at tip, costal vein flat, thick, pale green, or testaceous, veins from base to end of middle series pale green, apical series dark brown, the areoles mostly large and wide, the costal areole short and wide, widest abont one-fourth from the apex, terminating in an acute triangle, basal areole five-sided, longer than wide, comparatively long, areoles of the discoidal series long and wide, placed very moderately oblique, slightly infuscated apically, those of the apical series wide and not very long, mostly acutely triangular at base, the basal vein of the second areole strongly twice bent; areoles of the wings long, not much curved, widening apically, the second-vein forking widely towards the outer end. Underside of body greenish, tinged with piceous, or fulvous tinged with green. Exterior valves of the male white or pale greenish, sometimes dusky at base covering a little more than one-half the length of the venter, each valve obliquely narrowing on the inner border, and formed less obliquely on the outer border, overlapping a little at base. Margins of the abdominal segments pale brownish. Legs green or pale brownish, piceous at tip of tarsi, including the nails. Length to tip of abdomen 27–30 mm. Width of base of pronotum 13–14 mm. Expanse of spread wings 98–100 mm.

Seven specimens, three of which were males, have been in my charge for examination. A pair of these were collected in Arizona, not far from the Mexican border, by Dr. Edward Palmer, and four others were sent to me by Mr. C. H. Tyler-Townsend, from the vicinity of Las Cruces, New Mexico.

The density of white bloom upon the surface of these insects, particularly beneath, so hides the surface that the pattern of marking is almost unrecognizable.

The mesonotum is particularly convex and the almost concurrent high curve of the abdomen has the effect of causing the wings to appear placed at an unusually low level.

Upon clearing off the bloom from one of the specimens the markings are disclosed as follows: tawny lines form two loops

arising from the fore-margin and exterior to these, each side, is a longer loop of the same color, the crux being also pale fulvous. One male from Arizona is much smaller than any other specimen, and the valves over the drums are narrower and unsymmetrical.

2 **C. grossa** Fab.

This species has recently been brought to light in the British Museum, where, through the courtesy of Dr. G. R. Waterhouse, I was permitted to examine the types of Fabricius in the collection of Sir Joseph Banks. They proved to be two specimens of the large form, of which I have specimens from North Carolina, Arkansas, Texas, Kansas, New York City, northern New Jersey, Maryland and Virginia. These largest females have been taken in North Carolina, Arkansas, Texas and southern Missouri; those which I have met with in the Atlantic States north of North Carolina are in varying degrees smaller. When collected in alcohol, their green color becomes rusty or dark brown. This last is the color to which Fabricius has given the term *niger*. These types were reported to have come from Brazil; but no collector has thus far found the species in South America, nor has it been met with in the West Indies or Central America. Incorrect localities for species in the collections of authors of the last century have been frequently remarked, as better knowledge has accumulated.

Variations in size, color and pattern of marking are, perhaps, responsible for the exaggerated synonymy which has accumulated upon this species. The synonymy stands as follows: *Tettigonia grossa* Fab., Ent. Syst. iv, p. 16, Syst. Rhyng. p. 33, No. 2; *Cicada marginata* Say, Journ. Acad. Nat. Sci. Philada. v. iv, p. 330; *Cicada auletes* Germar. Silbermann, Rev. Ent. v. ii, p. 65; *Cicada grossa* Germar. Thom, Ent. Archiv. v. ii, p. 5; *Cicada trupsilon* Walker, Brit. Mus. List. Homopt. v. i, p. 103; *C. resonans* Walk., Brit. Mus. List, Homopt. p. 106; *C. consonans* Walk., Brit. Mus. List. Homopt. p. 106; *C. vibrans* Walk., Brit. Mus. List. Homopt. p. 107 C.

The synonyms of Mr. Walker are given on the authority of Dr. Stal, as I did not have the time to examine those speci-

mens in the British Museum. I feel much doubt as to the one which is recorded as from the West Coast of America. Certainly, the Pacific coast of either America would be decidedly unsuited to the nature of this insect, which lives on the roots of our forest trees in the loam of the Piedmont Belt and that of the Mississippi plateau country.

A New Species of Entomobrya.

By H. J. Franklin, B.Sc.,

(Plate V.)

Massachusetts Agricultural College, Amherst, Mass.

Entomobrya albicollis sp. nov. To the unaided eye the adult insect appears to be very dark in color with a light band across the dorsum of the body just posterior to the head. This species is very variable in its coloration in different stages, and the adults also seem to vary somewhat in this respect. The anterior portion of the body, as well as the head, seems to be very constant in its coloration, there not being a single specimen among all the adults and young as well, which I have examined which departs very far from the typical coloration seen in the adults. The long fourth segment of the abdomen, however, may appear light brown or yellow.

Under the microscope, the insect has quite a different appearance, especially as regards color by reflected light from that which it has by transmitted light,

By reflected light in bright sunlight the head appears light translucent brown with dark eyespots connected more or less with each other, and with the side margins by dark irregular bands. Mesothorax of same color as head but with a thick hypodermal pigmentation of pure white, anterior margin very dark. Metathorax, as well as first three segments of abdomen, with the exception of their very narrow anterior edges, dirt brown in color. Fourth segment of abdomen sordid brown with a slight tinge of blue, its anterior border marked with large, light yellow, elongate-oval spots the anterior ends of which coalesce more or less to form an irregular light yellow anterior margin ; fifth and sixth segments of same color as fourth, the fifth with a conspicuous light yellow spot on each side near the anterior margin—in this respect resembling *E. bicolor* Guthrie. Antennæ very variable, as a rule, with the first three segments ferrugineous, a little lighter toward the tips which are rather dark ringed ; terminal segment lighter. Legs quite constant, with femora and trochanters blue, tibiæ very light yellow, the anterior ones occasionally spotted somewhat with blue. Manubrium of same color as femora, lighter at distal end. Dentes very light yellow with a slight tinge of brown at the base, yellow fading out toward the apex.

By transmitted light, the dark band connecting the eye-patches with each other and with the margin of the head as well as the dark anterior margin of the mesothorax and all the parts of the remaing portion of the body appearing brown by reflected light become deep blue. The terminal segment of each antennæ appears light blue by transmitted light.

Antennæ about three times as long as the head or one-quarter shorter than the body without head and furcula; relative length of the segments, on the average, as follows: $\frac{1}{13}$, $\frac{2}{30}$, $\frac{3}{27}$, $\frac{4}{30}$.

Legs slender, of about the same length as the antennæ, with tibiæ considerably longer than femora, each tibia bearing one long clavate hair near the tip. Large claw of tarsus, bearing three teeth within, all on the distal half, the one nearest the middle being much the largest, the other claw unarmed and lanceolate. Dentes, as usual, in the genus, serrate beneath. Mucrones provided with three teeth, a stout middle and distal one and a very slender basal one, all acute pointed. Each mandible with four teeth at the cutting tip and a many-toothed grinding surface.

On the surface of the body as a whole there are found three kinds of hairs: first, small simple hairs which are scattered over the entire surface of the body and all the prominent appendages except the dentes and mucrones; second, spinulose hairs which are apparently the only kind borne on the dentes and mucrones, which surround the base of the manubrium and are found mixed with the simple hairs on its surface, and which are also very sparsely scattered over the body, legs and antennæ being somewhat numerous about the bases of the latter and on the frons; third, large hairs which appear truncate at the tip, being somewhat thickly placed on the dorsum of the body, especially of the thorax, and which are densly covered with hairs on the truncate surface and on the side of the truncation.

There seems to be considerable variation, according to instar, in the relative lengths of the third and fourth segments of the abdomen. It is difficult to state the typical size of an adult of this species; it seems, on an average, to be about 1.75 mm. in length. I have one specimen 2.25 mm. in length.

Described from nine cotypes, three of which I have retained and of the remaining six deposited three in the U. S. N. M. and three in the collection of the Massachusetts Agricultural College.

This species has been found in considerable numbers under the bark of the Sycamore throughout the year at Amherst, Mass. The young were always present, but seemingly more abundant during August and September.

During the summer of 1903, I found a large number of

ENTOMOBRYA ALBICOLLIS FRANKLIN.

specimens of *E. ditellaria* Guthrie on a pile of lumber located beneath a clump of pine trees (*Pinus rigida*) in Amherst.

EXPLANATION OF PLATE V.

(all figures greatly enlarged).

Fig. 1.—End of furcula.
Fig. 2.—Ocelli of left side.
Fig. 3.—One of the tarsi.
Fig. 4.—Ventral aspect of the apex of the left mandible.
Fig. 5.—Dorsal aspect of the distal half of the left mandible.

Culex brittoni n. sp.

By E. P. Felt.

Culex brittoni n. sp —Female.—Probscis over half the length of the body, dark brown, minutely flecked with gray scales, apex yellowish gray. Palpi distinct, 5-segmented, basal two subglobular, the first very dark brown, the second brown, both sparsely clothed with hairs ; third to fourth thickly clothed with scales and ornamented with rather sparse, long hairs ; third joint yellowish, fourth and fifth dark brown, the latter yellowish at apex. Antennæ filiform, dark brown, rather thickly clothed with short, grayish hairs and with sparse, basal whorls of long setæ. Eyes dark brown or black, rather coarsely granulate. Occiput rather sparsely clothed with short, curved, yellowish scales and with numerous long, curved, black fork scales. Mesonotum with a pair of subdorsal, light brown, naked stripes extending to the posterior third, the median line and the lateral areas and posterior portions being dark brown and clothed with sparse, long, black bristles and numerous finer, golden yellow ones. Laterally there are a few longer, yellow bristles. Scutellum grayish, sparsely clothed with light golden yellow, curved scales, a few longer ones posteriorly, and its posterior margin crowned centrally and laterally with long, black setæ, those on the sides forming distinct groups ; patches of similar setæ occur at the base of the wings. Metanotum yellowish, smooth. Halteres yellowish, transparent. Abdomen clothed with very dark brown, almost black scales with distinct basal bands of yellowish white scales, those of the second and following segments being slightly broader than the others. Ventral surface of abdomen yellowish. Wings rather large, venation distinct, scales very thick, brownish, almost black along the costal margin, fringe slaty gray. Petiole of anterior fork cell about one-half its length, that of the posterior fork cell shorter and a little over half the length of its cell. Posterior cross vein about its own length from mid cross vein. Basal third of the third longitudinal vein with most of the linear scales appressed. Outer portion of fringe composed of scales of several lengths, giving a distinctly uneven border. Coxæ and basal portion of femora yellowish white, the posterior portion

of apical part of femora, the apex and posterior portion of tibiæ, its apex and posterior portion of the first tarsal segment, its apex and base of second and the apices of the third and fourth silvery yellowish; other parts dark brown. Tarsal claws simple. Length of body about 5 mm., wing spread about 10 mm.

Described from a single well marked specimen taken by Mr. H. L. Viereck, at Branford, Conn., June 27, 1904.

This species presents a somewhat general resemblance to *Culicada cantator* Coq. It may be at once separated therefrom by the simple claws and the peculiar character of the wing fringe as noted above. It is also a much more distinctly marked species.

Note on the finding of Ptinus fur and brunneus.

By G. R. Pilate, Dayton, Ohio.

On November 11, 1902, I found a few small Coleoptera on a stick of wood I pulled out of a corner in my wood-shed. I am only a beginner in the collection of Coleoptera and do not know much about them, so I did not know what they were, but thought I would look and see if I could not find a few more. The corner of the wood-shed where I found them had not been disturbed for two years or more, as I had no use for the kindling that was piled there. I went to work to clean it out, and found all the sticks and boards covered with the beetles. In the far corner I found an old barrel in which the rats had made a nest. There was about half a bushel of rat dirt mixed with a lot of old paper and rags. When I dumped this out on the floor, the beetles fairly swarmed out of it. Being so many I took it for granted that they were common and not worth bothering with. So I gathered about a hundred and swept the rest out on the canal bank. That night there was a heavy rain, and when I came to look for them a few days after, dirt and all were washed away. Mr. Charles Dury of Cincinnati identified them for me, and told me what I had missed in not taking more of them. Without exaggeration, I know I would have taken two thousand or more. I was going to take up the floor of the shed and look under it, but my wife was taken sick and I had no time to think more of them. The next May I took a few stray specimens crawling about the shed.

Three New Bees from the Southwest.

By T. D. A. Cockerell.

Anthophora corvicolor n. sp.

♀—Length 18 mm.—Coal-black, with rather short black pubesence, except that there is a little inconspicuous pallid hair just above clypeus, the hair on hind part of occiput is chocolate-brown (but that on vertex black), that on pleura and legs inclines to a sort of dark purplish brown (the color of some myxomycetes), while that on the outer surface of the hind tibiæ and the base of their tarsi is a rather sordid white. The sides of the abdomen are distinctly æneous, or greenish, as in some species of *Andrena*, and the hind margins of the abdominal segments are rather narrowly rufous; the femora are dark reddish, the hind femora brighter. Facial quadrangle broader than long; clypeus well punctured, the punctures of various sizes; labrum rugoso-punctate, with a keel on the lower half; antennæ entirely black; mesothorax minutely roughened and dull, not obviously punctuate; scutellum with a median longitudinal shining raised line; upper margin of postscutellum reddish; tegulæ rufo-piceous; wings only slightly dusky; pygidial plate of abdomen narrow.

Hab.—Laurel Canon, California, May, 1893 (Dr. A. Davidson.) Quite unlike any other described American *Anthophora*; it looks like an overgrown *Emphoropsis infernalis*. It is worth while to record that Dr. Davidson has also collected *A. gohrmanæ* Ckll., at Los Angeles.

Emphoropsis murihirta n. sp.

♂—Length about 13 mm.—Similar in appearance to *E. floridana* from Florida, with the pubescence similarly arranged and of the same color; but differing as follows:

(1.) The hair of the mesothorax has black hairs intermixed.

(2.) The clypeus (of about the same shade of pale yellow) has the lateral margins broadly black. The labrum and scape, as in *floridana*, are wholly black, but the former is covered with white hair.

(3.) The lateral face-marks are reduced to a narrow stripe ending in a hood, thus recalling *E. miserabilis*, but that has the light color of clypeus subtrefoil-like.

(4.) The legs are brown, not black, and their pubescence is white, except on inner side of tarsi, where it is brown, and on the hind legs, where some black hairs are mixed with the white.

(5.) The abdomen, beyond the first segment (which is clothed like the scutellum) has the hairs (which are erect) partly black and partly pale, the black ones mostly short; and the ventral surface has much long white hair. The pygidial plate is surrounded with light hair.

(6.) The wings are a trifle clearer; the second submarginal cell is large, broader than long.

What seems to be the female of this species is similar in appearance but much more robust, with the face wholly black, and the hair on the legs nearly all black.

Hab.—Los Angeles, California, one of each sex. (Dr. A. Davidson.)

Megachile agustini n. sp.

♂—Length about 14 mm.—Appearance of *M. comata* Cress., with the same pale greyish greenish pubescence. It is also much like the male of *M. latimanus* Say, but with the banding of the abdomen rather more distinct. The distinctive characters are as follows:

(1.) The entirely black antennæ have the flagellum slender, not crenulated beneath, and the last joint is flattened and discoid.

(2.) The mandibles are normal, not broadly dilated or elbowed as in *comata*, and are entirely black, except an obscure dark red patch not far from the apex. The apical tooth is sharp and rather long.

(3.) The spines of the anterior coxæ are comparatively short and somewhat flattened, with an orange line on the outer edge; the anterior faces of the coxæ present large patches of appressed orange rufous bristles. (In *latimanus* there is a pallid spot, but no patch of bristles; in *comata* the coxal spines are very long.)

(4.) The anterior femora are dark rufous, with broad black stripes in front and behind; the lower margin is dilated to a keel on the apical half, but the black curved lines seen on the lower margin of *latimanus* are wholly absent.

(5.) The anterior tibiæ are black and red, with much the pattern of *comata*, but the red on the inner face forms a longitudinal instead of an oblique band.

(6.) The anterior tarsi resemble those of *comata*, but are a decided yellow, and the long posterior fringe is dark fuscous within; seen from beneath, the first joint is not hollowed as it is in *comata*, and the anterior fringe is rufous, not dark. There is a conspicuous black spot on the lower side of the second joint beneath. There is no concavity of the apical part of the upper edge of the first joint, such as is seen in *latimanus*.

(7.) The middle and hind legs are nearly normal, with the femora broad, but not greatly swollen; middle tibiæ short and thick, convex outwardly; middle tarsi, especially the first joint, fringed behind with long white hair; hind tarsi with first joint flattened, the next three cordiform, hair on inner side rather pale orange-rufous, with long but not dense white hair laterally in front.

(8.) The fourth and fifth dorsal abdominal regments, viewed laterally, show some black hairs. Apex of abdomen broad, irregularly crenulate, but the emargination is very slight or obscure. Beneath, the last ventral segment is tridentate, with the middle tooth small.

From *M. fortis* Cress., it is separated by not having the

anterior edge of the first joint of anterior tarsi "sharply carinate and blackish," the shorter coxal spines, etc.

From *M. nevadensis* Cress., it is separated by the color of the pubescence, the character of the last ventral segment of the abdomen, etc.

Hab.—Pecos, New Mexico, Aug. 30, 1903 (Cockerell); Los Angeles, California, (Davidson.) Named after Agustin Pecos, the only surviving member of the Pecos tribe of Indians.

Notes on Mixogaster Breviventris Kahl.

By J. R. de la Torre Bueno.

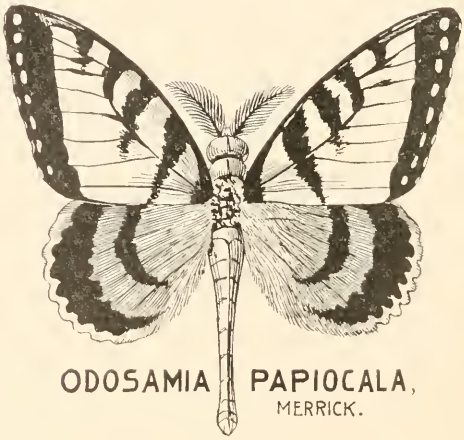
Mixogaster breviventris was described in the Kansas University Quarterly for 1897 from one specimen taken in Kansas. In going over some Diptera taken by me near New York, my friend Mr. Charles T. Brues saw an extremely peculiar *Syrphid* which he took with him for study. It turned out to be this species. In a letter to me he called attention to the peculiarities of the genus. *Mixogaster* is essentially tropical or subtropical and its appearance in Kansas, and in this more northern region is quite remarkable. My two specimens were taken at Mosholu, N. Y., one on July 25th and the other on August 8, 1903. Both individuals were flying in and out among the stems of low-growing bushes in a manner so extremely like a wasp that I mistook them for one of the latter. When in the net they fluttered their wings and extruded their terminal abdominal segments in a startlingly wasp-like fashion, exactly as if they could sting. In coloration and form they resemble one of the smaller black and yellow wasps.

For the information of specialists I may say that Mosholu is the name of a station on the New York & Putnam R. R., and is a part of Van Cortlandt Park in New York City.

I have raised out of nine pupæ of *Sphinx luscitiosa*, the var. *una*, ♀, *but only one*. The eight others were of natural color. I have seen Mr. Keller's specimen and the one I have is even darker than his. This makes three specimens all together and the first one in the State of New Jersey.—Professor Wormsbacher.

This is a Joke.

The student of nomenclature is duly warned in advance that the species described herein is a fake and a hoax. If there is one thing more than another that jars the writer of this article it is to get an exchange list of some thousands of numbers which it is necessary for him to translate into *Danais plexippus*, *Colias philodice*, *Vanessa antiopa*, *Platysamia cecropia*, *Deilephila lineata* and *Pamphila cernes*, etc., to find out there is not one miserable thing he wishes. His good friend in the western part of the Keystone State dotes on numbers, and nothing agrees with him more than the reception of one of Prof. S——s exchange lists. Knowing he had all the numbers ever described, with fear and trembling, I asked him to



ODOSAMIA PAPIOCALA, MERRICK.

№1345763.

send me a specimen of number 1,345,763, never expecting to get it. A few days after came a letter containing the following. "No doubt you have ere this concluded that I have forgotten your request for a specimen of number 1,345,763, but such is not the case. I have been very busy getting my duplicates in shape, lists made out, and shipping and receiving sundry other *numbers*. I have found time this morning to pack and ship the above number to you, and trust it may

arrive safely and prove an acceptable addition to your collection of Rhopalocera. While it is unique, your kindness to me in the past justifies my placing it in your charge, and I have no doubt you will value it more highly than I do." I never expected to get it and have thus been rewarded after all these years. It is now in a fire-proof building, and is the joy of all visiting naturalists who are privileged to gaze upon it. Its beautiful yellow and black primaries and red secondaries make it an object of great beauty, and I trust no ubiquitous *Anthrenus* will keep it from being a joy forever.

West Virginia Mountain Butterflies.—During August 1904, in company with a party of collectors, I camped for a week on one of the higher mountain ridges of the great forest region of central West Virginia.

The elevation of our camp was about thirty-five hundred feet above sea level, and from there I made frequent trips to the Cranberry River which flowed at the foot of the mountain twelve hundred feet below. This stream has its origin in, and runs its course of more than fifty miles, through an unbroken forest rarely penetrated by anyone except hunters and fishermen. At the points where I visited the river wild flowers were growing upon the banks in abundance and swarms of butterflies were gathered about the Swamp Thistle, (*Cirsium muticum*), Virgin's Bower (*Clematis virginiana*,) Oswego Tea (*Monarda didyma*) and Joe-Pye-Weed (*Eupatorium purpureum*) which were blooming in the greatest profusion. I have never seen *Papilio philenor* so abundant elsewhere, and *Argynnis aphrodite* and *Argynnis cybele* were present by hundreds. Here was a rather unusual collection of northern and southern forms. On August 15th, four species of *Argynnis* were taken (*atlantis*, *aphrodite*, *cybele* and *diana*). One specimen only of *atlantis* was secured and two of *diana*. All fresh males.

Below is given a list of the species of butterflies collected during my stay in the woods:

Anosia plexippus.	Basilarchia astyanax.
Argynnis diana.	Basilarchia disippus.
Argynnis cybele.	Feniseca tarquinius.
Argynnis aphrodite.	Chrysophanus hypophlaeas.
Argynnis atlantis.	Lycaena pseudargiolus neglecta.
Brenthis bellona.	Lycæna comyntas.
Phyciodes tharos.	Pieris protodice.
Grapta comma.	Pieris rapæ.
Grapta faunus.	Colias philodice.
Vanessa antiopa.	Papilio ajax.
Pyrameis atalanta.	Papilio troilus.
Pyrameis huntera.	Papilio philenor.

F. E. Brooks, Morgantown, Virginia.

Life History of Lemonias virgulti.

By J. G. Grundel, Alma, Santa Clara Co., Calif.

The female deposits its eggs on the stems and leaves of its food plant, a species of *Eriogonum*, near the ground; also on grasses and other weeds near by, singly and in groups of four and five. She doesn't seem able to fasten all the eggs as fully one-half are dropped on the ground. The egg is a flattened globe of a bluish color, with a shallow depression in the center and the whole is covered with small depressions very much like a thimble. They are not so deep in the micropyle, and the edges of all are surrounded with lancet-like projections. The egg is laid in August to September, and the larva emerges the following February. The young larva feeds on the upper side of the leaves, but when half grown, it feeds only on the outer bark of the stems, and at night only, hiding during the day among the dead leaves and roots close to the stems. When full grown it is 7/8 inches long by $\frac{3}{16}$ in diameter, color dark slate; abdomen red brown and legs red. On each side, next to legs, ten yellow spots with tufts of short black hair, mixed with long white; the next rows have no spots, but only short tufts of black hair shorter than in the first rows; the next rows have yellow spots with black hair and one white hair in center of each tuft. Head black, covered with short hair. The larva is a very small eater, and acts similarly to that of *Chrysophanus gorgon*. It fastens a number of dead leaves together with a very thin white web in which it rests when not eating, and in which it also goes into chrysalis. The fly emerges in about one month, and will feed only on the flowers of its food plant. The female pupa is as large again as the male, and is covered with a thin down, the empty larval skin remaining on the anal end of the pupa. The fly is very plentiful, and local in the Santa Cruz mountains, and is to be found only on very hot roadsides.

General Notes.—Last July while visiting a neighboring mountain, I saw thousands of larvæ of *Deilephila lineata* feeding on all kinds of grasses and herbs, and I am very much afraid they will be a pest in our vineyards, as they were about fourteen years ago.

Our San Jose scale that has been a pest in our orchards has all disappeared. The brown apricot scale is all gone (thanks to the little *Comis fusca*), and the black scale on our olives is going fast, from what I don't know; perhaps the hot weather last summer had something to do with it.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., MARCH, 1905.

One of our best friends, an old NEWS subscriber, a well known entomologist and an all round good fellow generally, lately informed us that the NEWS index was very incomplete, and that he had instructed his assistant to make a complete index of the volumes. This criticism was like a Thunderbolt from a clear sky, as we were laboring under the impression that we always erred on the safe side in its preparation, and that our index was a model of what an index should be. A good index is the outcome of common sense and judgment; a perfect index may be considered to be a repetition of the entire contents, and a very bad index is the almost total absence of any at all. The happy medium lies between these two extremes. Take up last month's NEWS and look over its pages with a view of indexing it, and you will notice many things that are of no importance in an index, and if put in would only impose a useless burden on the compiler, and entail a useless expense on the Journal. Turn to page 33 for example. The index might read Exotic Butterflies—someone might want to know that they are in the collection of the Academy of Natural Sciences of Philadelphia. Someone wishing to have specimens figured might like to know what plate makers made them. Some would probably like their names in the index. Someone will be inquisitive about their habitat. Should the names of the authors be repeated after the specific names in the index? Would it be necessary to reprint the names in the index that are listed on page 35? How would you index the article on page 39? Would you put more than Paraguay, Orthoptera of, and the names of the new genus and species? Would you repeat all the other names in the article? How would you index the notes in Doings of Societies? We think upon examination you will agree with us that it is as above remarked, a question of judgment, and that the NEWS index is fairly complete.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

CORRECTION.—Page 24, Vol. 16, lines 3 and 16, for *aurifer* read *pretans*.

WE regret to announce the death of Alpheus S. Packard, M.D., Ph.D., of Providence, Rhode Island.

In Holland's Moth Book, Nos. 23 and 24, Pl. xvii, should be transposed, both in reference to the plate and in the text on page 232.—EDGAR J. SMITH, Natick, Mass.

PSEUDOTAMILA CARMINATRA.—This litte Noctuid was desribed by Dr. J. B Smith in Trans-Amer. Ent. Soc., 1903, p. 207. In the check-list the name is misprinted *carminata*. The original account stated that the specimens were thought to have been collected by Mr. Mason. but the accurate locality (other than Colorado) was unknown. Recently Mr. John T. Mason showed me a considerable series, all collected in Denver. There is no doubt that he obtained the types. The species is very distinct and easily recognized.—T. D. A. COCKERELL.

NO POETRY IN BUGS?—Read the following verses by an unknown author, and find poetry and politics as well:

The lightning bug seems brilliant
  But he has not any mind;
For he stumbles through existence
  With his head light on behind.

The measuring worm is different;
  When he starts out for pelf
He reaches to the limit,
  And then he humps himself.

WITH regard to Mr. Kirkaldy's query as to how the giant water bugs move their hind legs, I would say that a live *Benacus griseus* was brought to me to-day and I at once put him in a bottle of water to see how he acted. He invariably moved the hind legs together, *not* alternately; I then took him out and placed him on a table to see him crawl, in this position he at first moved the hind legs together, but afterward alternately. Several more tests resulted in the same way, in swimming the hind legs were always moved together, in crawling they were always moved together at first, and afterwards, when he got used to the situation, alternately; the alternate movement was always, however, rather half-hearted and showed a tendency to revert to the swimming movement.

With regard to *Ranatra* I have a very distinct impression of having seen them move the hind legs together, *not* alternately when swimming, after having been thrown back in the water.—C. S. BRIMLEY.

Entomological Literature.

Coloration in *Polistes* forms the subject of quite a lengthy paper by Miss Wilhelmine M. Enteman recently issued by the Carnegie Institution of Washington, as publication No. 19. All Hymenopterists will welcome the work as it throws considerable light on the taxonomy and variation of this interesting and extensive genus of wasps. The matter of coloration is taken up first in its relation to the ontogeny of the wasp. The development of the colors was observed to pass through much the same stages as those described by Mayer for butterflies. In the case of *Polistes* the hypodermal pigment forms the lighter shades of drab and yellow markings where it has not been overshadowed by the darker cuticular pigment deposited in the chitin. A chemical examination of the pigment reveals the fact that it shows a great similarity in many of its reactions to the group of benzole derivatives known as the "azo" dyes. The color variation of large series of wasps has been examined and compared by means of statistical methods, and it is pointed out that variation in members of the genus is continuous, all of the widely different types of coloration shading into one another through insensible gradations. A correlation in color between the different parts of the body is shown and its relation worked out in detail.

One of the most interesting features is the relation which is to be observed between variation and enviroment. The development of pigment in the wasps aside from hereditary influences seems to depend in great measure on temperature and humitity. Thus the desert species of portions of Arizona and the southwest tend to be pale without the darker and warmer tones of brown and black shown in northern forms. This tendency toward melanism is evinced most strongly in the colder humid portions of the coastal region of both North America and Eurasia. A close relation between the forms inhabiting the eastern coast of Asia and of North America is pointed out and a map of the world showing distribution presented.

There is only one bad feature to mar the general excellence of the work, and that is the presence of a couple of very badly executed plates. Plate IV shows a number of inaccuracies in structure and wing venation and the figure purporting to be *Polistes rubiginosus* would scarcely be mistaken for that species by any one familiar with the latter. Text figure 1 is also inaccurately lettered.

No attempt at limiting species is made although a number of the points worked out will be of aid to the future entomologist who may undertake this difficult task. C. T. B.

JERRY, a good friend of mine, has started in to form a collection of the fleas of the world. Do not send exchange lists or specimens unless asked for. Hardly necessary to say, that Jerry is the name of my dog.—PHILIP LAURENT.

Doings of Societies.

Minutes of meetings of Brooklyn Entomological Society, held at the residence of Mr. George Franck, 1040 DeKalb Avenue, Brooklyn, N. Y.

October 6, 1904.—Fifteen persons present, the President in the chair.

The admission of the Society to the Scientific Alliance of New York being reported, R. Ellsworth Call and Archibald C. Weeks were elected delegates to the Council of that body.

Dr. Carl Fulda, of Brooklyn, N. Y. was elected a member.

The President called attention to the opportunity for original research afforded by the rearing and identification of the larvæ of aquatic coleoptera. Heretofore, practically all the descriptions related to mature forms, while the identity of the larvæ had been neglected, there being very little authentic literature concerning them. The shed dytiscid larval and pupal skins remained intact and so perfect that they could be easily preserved and accurately studied. An obstacle in rearing the Dytiscidæ would be found in supplying sufficient mosquito and other larvæ to satisfy their ravenous appetites. When their natural food failed they developed cannibalistic traits, making it advisable that each larva should be reared in a separate jar.

Mr. Franck reported that a numerous swarm of *Danais archippus* had been recently seen near Rutherford, New Jersey (one collector taking 700 specimens in two days), as proof of the generally accepted theory that the assembling of this species in the fall is preparatory for southward migration. Discussion by Messrs. Franck, Watson and Weeks as to the probability of northern hibernation of this butterfly.

Mr. Wasmuth reported the capture of a larva of *Callimorpha dyari*, at Jamaica, L. I., in the early spring, which fact, in Prof. Smith's opinion, was sufficient evidence of its hibernation.

Mr. Shoemaker exhibited a specimen of each of the following moths: *Cirrophanus triangulifer* captured on September 2, 1904, in Alexandria Co., Va., *Graphiphora garmani* taken on April 27, 1904, at Brooklyn, N. Y., and *Hepialus argenteomaculata* taken at electric light on May 30, 1904, at Washington, D. C., and the carab *Platynus cordatum*, of which he had ob-

tained 16 specimens at Washington, in September, the previously recorded captures being in the spring. The insect had always been considered rare and he had found it extremely local.

November 17, 1904.—Seventeen persons present, the President in the chair.

Messrs. Charles S. Leng and William T. Davis, of Staten Island, N. Y., were elected members.

Mr. Franck exhibited some interesting specimens taken by Mr. Marion H. Mead, of Passaic, N. J. 1. *Papilio troilus*, variation, between type and variation *texana*, the spots forming the submarginal row being wedge-shaped instead of circular. 2. Hybrid male of *C. angulifera*, and *C. promethea*. 3. *Erebus odora* ♀. The eggs of this moth were obtained but had so far not developed. 4. *Anisota rubicunda*. Left primary wholly suffused with pink causing transverse yellow band to become obsolete; right primary normal. 5. *Papilio turnus* ♂ showing a black round spot located just within and near middle of costal vein of primary.

Mr. Franck further reported that three specimens, 2 ♂ and 1 ♀, of *Sphinx franckii*, had been taken during the past season in Baltimore.

Mr. George P. Engelhardt read a paper descriptive of the collecting and other experiences of Mr. Jacob Doll and himself, during the past spring and summer, in Utah, whither they had gone in the interest of the Museums of the Brooklyn Institute of Arts and Sciences. They reached Beaver, where they had decided to locate, on May 14th, and from thence made excursions of varying distances in every direction through the adjacent canons and valleys, even remaining in camp a week at a time. Mr. Engelhardt journeyed on one occasion to St. George in the extreme southwestern corner of Utah, a distance of 175 miles, experiencing many inconveniences and privations on the trip. The nights were so cool that comparatively few moths came to light or sugar. Jack rabbits abounded but were not eaten by the natives because of their infestation by bot-fly grubs, 5 or 6 often occurring in one individual. The animals did not appear to be enfeebled by these parasites. The mature insect was not conclusively identified, but speci-

mens of a large bluish black fly, supposed to be the species in question, were taken. On hot days these flies rested on dry ditches or rocks. When disturbed they rose directly upward out of sight, returning in a few minutes to the same spot. A number of males of *Egeria tibialis* and *Cossus brucei* were captured by exposing the virgin females. In certain localities the surface of the ground was overrun by vast multitudes of the so-called "Utah cricket," *Anabrus simplex*. This grasshopper is some two inches in length and produces a low chirp, less loud than our field cricket. In the morning the crickets forsook their places of concealment among the sage-brush on the sand hills and attacked the alfalfa, returning in the evening in such numbers that it was impossible to avoid trampling upon them. The cultivation of fields infested by them had frequently to be abandoned, the farmers making no efforts to destroy them.

The trip to St. George was accomplished by wagon accompanied by a single guide with provisions and blankets. At night they slept on the well thatched roofs of house sheds or shacks, if available, and if not, on the ground, in their blankets. They traversed desert regions known as the Buckhorn, Paragonah and Cedar Valleys and the towns of Paragonah, Parowan, Cedar City, and Kanarra, Mormon settlements. The temperature often reached 100° F. The vegetation was generally scanty, consisting of mesquit, cactus and sage brush. Insects were correspondingly few, although flies caused much annoyance at meals. At Bellevue the vegetation became more diversified, ash, cottonwood, a species of prickly leaved oak and other trees besides many shrubs occurred. Here were taken *Catocala chelidonia* and *Sphinx oreodaphne* and *dollii;* also many Coleoptera and Hymenoptera on the flowers of a species of wild tobacco which grew profusely along an irrigating ditch. On descending a deep well to secure a blow snake a large number of specimens of *Eleodes obscura* were captured at the bottom, which was fairly covered by them. At St. George silkworm breeding was stated to be successfully conducted, 700 pounds of cocoons having been obtained the year previous. Cicindelidæ occurred in great numbers along the Virgin river which flows near the town. In a cave, on the

crest of a volcanic hill, along the river were found hundreds of skeletons of animals which had fallen or jumped in, but not being able to escape, had perished from starvation. Among the bones many specimens of the tenebrion, *Cryptoglossa verrucosa* were taken.

Five days were spent in camping in the Beaver Range mountains at an altitude of 10,000 feet. The few insects taken were chiefly those of the valley species. The expedition was extremely successful, many interesting species and specimens, in all orders of insects, some of which were new to science, besides numerous snakes and other reptiles and skins of animals being taken. The extended sojourn afforded ample opportunity for rearing large series of certain Lepidoptera, and a large supply of setting boards, of the spreading, while fresh and relaxed, of a great portion of the entomolgical collections. Detailed descriptions of the species taken and results obtained will shortly be published.

ARCHIBALD C. WEEKS, *Secretary.*

The January meeting of the Newark Entomological Society was held on the 8th with President Keller in the chair and 16 members present.

A new order of business, making the reading of papers on entomology and exhibition of specimens the last rule was proposed and accepted on motion. This rule, in its old place, generally caused a breaking up of the meeting.

A motion to hold two meetings monthly was lost.

The outing committee reported progress; also the curators; Mr. Bischoff is hard at work rearranging the collection of Coleoptera.

Mr. Dickerson gave an interesting account of the exhibits of insects at the St. Louis Exposition.

Mr. Grossbeck read an article on the life history of *Feniseca tarquinius* Fabr. written by Mr. Brehme.

Mr. Bischoff reported that he had larvæ of *Ptinus fur* (collected), feeding on rags. Mr. Dickerson reported the capture of *Ceracis sallei* Mell., at Arlington and Chester, N. J., and *Hydrobius tessellatus* at Pottersville, N. J. (new to N. J.) Mr. Doll took five specimens of *Catocala marmorata* on sugar at

Bayonne, N. J. and found the larvæ of *Apatura clyton* numerous at Maplewood, N. J. in 1902 (both new to N. J.) Mr. Grossbeck reported the following specimens, none of them being recorded from this State before: *Panthea furcilla*. One grown larva on a tree trunk at Little Falls, N. J., September 1, 1902.

Habrosyne rectangula Ottol. One specimen at light, New Brunswick, N. J., June 7, 1904.

Mamestra anguina, Grt. One specimen bred from pupa, Paterson, N. J., June 26, 1904.

Memythrus tricincta Harr. One specimen captured and three specimens bred from galls of *Saperda concolor* from willow, Paterson, N. J., June 23rd to July 12th, 1903.

Memythrus asilipennis Bdv. One fresh ♂ specimen. Paterson, N. J., May 30, 1902.

OTTO BUCHHOLZ, *Secretary*.

The twenty-fourth regular and first annual meeting of the Mount Royal Entomological Club, Montreal, Que., was held on the 7th January. Mr. E. Denny, President, in the Chair. Ten members and five visitors were present. The election of officers for 1905 resulted as follows:

President, Mr. E. Denny, re-elected; Vice-President, Mr. G. R. Southee; Secretary-Treasurer, Charles Stevenson, re-elected; Recording Secretary, Mr. A. Denny; Council, Mr. T. S. Robinson.

The following papers were read: "Insect disguises," by Mr. E. Denny; "Caterpillars," by Mr. K. R. Stevenson; "Insects in Commerce," illustrated by lantern slides, by Mr. Charles Stevenson. "The Most Valued Insect in My Collection," by all the members present.

Two new members were elected.

The rest of the evening was enjoyed in watching lantern views with an humorous recitation by Mr. K. Stevenson and concluded with refreshments during which plans for the year's work were discussed.

CHARLES STEVENSON, *Secretary-Treasurer*,
906 St. Urbain St., Montreal.

At the meeting of the Feldman Collecting Social held January 18th, at the residence of Mr. H. W. Wenzel, 1523 South Thirteenth Street, Philadelphia; ten persons were present.

Mr. H. Wenzel exhibited, on behalf of H. Wenzel, Jr., work of several species of Scolytidæ. He reported the capture of *Aphodius inquinatus* and a moth *Plathypena scabra* on January 1st, flying over the snow. Several interesting Cucujids are found in the burrows of Scolytidæ.

Mr. Daecke called attention to a male specimen of *Vespa germanica* caught by H. Wenzel, Jr., on January 1st, which would indicate that some of the males as well as the females of this species hibernate.

Mr. Haimbach showed some Noctuidæ, including *Feltia jaculifera*, *herilis* and *subgothica*, and spoke of the difficulty of separating the three species.

Mr. Laurent spoke of the necessity of the specialist being a field naturalist as well as a writer.

Dr. Castle exhibited a Forficulid from California.

Mr. Wenzel referred to *Cychrus vandykei* Roeschke, and said he believed it to be only a form of *elevatus*.

The following officers were elected for 1905:

President, E. Daecke; *Vice-President*, C. Few Seiss; *Secretary*, Frank Haimbach. Dr. Philip P. Calvert was unanimously elected an honorary member of the Social.

WM. J. FOX, *Secretary*.

The fourteenth regular quarterly meeting of the Pacific Coast Entomological Society was held on November 26, 1904, at the Café Odeon, 8 O'Farrell Street, San Francisco, President Fuchs in the chair.

Fifteen members present. Two new members were elected.

Mr. J. G. Grundel read a paper on the "Life History of *Lemonias virgulti*."

Mr. F. X. Williams communicated some "Notes on the larvæ of certain Lepidoptera."

Dr. F. E. Blaisdell reported taking ninety-six specimens of *Aphodius cribratus* on November 24th in the Alhambra Valley, Contra Costa County, California, from the form of a wood-rat's nest. These specimens were living in a clump of earth no

larger than a double-fist at the bottom of the nest—this soil was wet with excrementitious fluids. The larvæ were also taken. He also exhibited and reported taking the larvæ of an interesting mosquito from a hole in a sycamore tree. The hole did not contain more than a quart of water and there were at least 1,000 larvæ living in it. The larvæ were found there from July to November, and were conspicuous for their large anal gills.

Miss Julia Wright reported a "Trip Abroad," giving an interesting account of a visit to the British Museum.

Mr. Grundel exhibited *Kodisoma nigra*, a species of a Geometrid and the pupæ of *Lemonias virgulti*.

Mr. Williams showed *Attacus ceanothi*, that had been reared from a larva found on the spruce, and the larvæ of *Hepialus sequoiolus* and *Calosaturnia mendocino*.

Mr. Edw. M. Ehrhorn exhibited a bunch of earth-pearls (*Margarodes trimeni*) from South Africa. These scale insects are found on the roots of *Rhus* sp. in Cape Colony. The natives gather and string them, and sell them in the open market as curios. They are used as ornaments for the neck or wrist. Each insect has the appearance of a beautiful pearl, the colors varying from pure white, through golden yellow to iridescent.

F. E. Blaisdell, M. D., *Secretary*.

OBITUARY.

W. N. Tallant, of Cincinnati, Ohio, died on the 16th day of January last, at the age of forty-nine, after an illness of only a few days. He was born in Wheeling, W. Va., but went as a young man to Columbus, Ohio, where he was in the Pennsylvania Railroad Freight Office. He rose to a high position in the employment of this company and was with them for thirty years. He became interested in the study and collecting of Lepidoptera soon after going to Columbus, and that was where he did most of his work in that line. He was a very enthusiastic collector, and was unusually successful in rearing many varieties. He left a fine collection, especially of Ohio species.

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APRIL, 1905.

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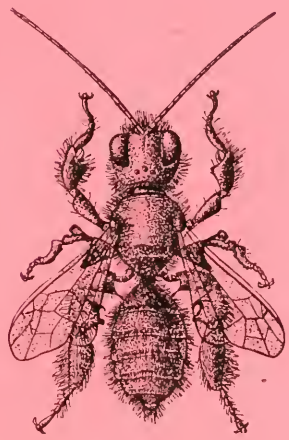

Cryptohalictoides spiniferus Viereck.

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PROFESSOR ALPHEUS SPRING PACKARD, M.D., Ph.D.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. APRIL, 1905. No. 4.

CONTENTS:

Alpheus Spring Packard, M.D., Ph.D.

(Plate VI.)

Prof. Alpheus Spring Packard, M.D., Ph.D., died on February 14, 1905. He was born in Brunswick, Maine, in 1839, and was graduated from Bowdoin College in 1861. He occupied many important scientific positions, being one of the founders and for twenty years editor-in-chief of the American Naturalist. In 1865 he became librarian and custodian of the Boston Society of Natural History, was curator of the Essex Institute and in 1867 became curator and afterward director of the Peabody Academy of Sciences. From 1877 to 1882 he was a member of the United States Entomological Commission. At one time he was State Entomologist of Massachusetts. He was a corresponding or honorary member of a number of European Scientific Societies and was elected a correspondent of the American Entomological Society in 1861. He occupied the chair of Zoology and Geology at Brown University from 1878 to his death. Dr. Packard was a prolific writer and was known to all entomologists through the work "Guide to the Study of In-

sects." He filled an important place in American Entomology and his work was of great value as may be known from the following list of his more important contributions: A Text Book of Entomology, 1898; Cave Fauna of North America; Guide to the Study of Insects, 1869; Insects Injurious to Forest and Shade Trees; Monograph of the Geometrid Moths, 1876; Monograph of the Bombycine Moths, 1895; the Humble-bees of New England and their Parasites, 1864. He was the author of more than sixty important papers on the subject of insects but did not confine his work solely to this branch of zoology. Dr. Packard may be said to have belonged to the second generation of distinguished American entomologists which includes LeConte, Riley, Horn, Scudder and Cresson. We give an excellent likeness of Prof. Packard from a photograph lately presented by him to the American Entomological Society.

The Blattidae of Montreal.

By Charles Stevenson, Montreal, Que.

The bringing to me of a beautiful green cockroach by a friend on the 9th April, 1904, aroused my interest in this group, so I tried to find how many species could be found in Montreal. The following list is the result of the observations made during the last season:

1. *Blattella germanica* Linn., the "croton bug," very common.
2. *Nyctibora sericea* Burm., imported with bananas.
3. " ? one immature specimen introduced with bananas.
4. *Blatta orientalis* Linn., the "oriental roach," common.
5. *Periplaneta americana* Linn., the "American roach," rare.
6. " *australasiæ* Fab., rare.
7. *Panchlora viridis* Burm., rare, evidently imported with tropical fruits. A specimen was captured in Winnipeg, Man., which was traced to a shipment of goods from Montreal, and a specimen was given me that was caught in the city of Quebec.

So far I have been unable to find a native field species and my fellow entomologists do not remember seeing any in their grubbing expeditions.

Notes from a Diary Made During a Collecting Trip to the Rocky Mountains of Colorado and Utah.

By Philip Laurent.

In company with Dr. Henry Skinner I left Philadelphia on Sunday morning, June 25, 1899. Our train pulled out of Broad Street Station at 8.50. Our first stopping place was Chicago, which we reached about 10 o'clock Monday morning. Here we were joined by the third member of our party, Prof. A. J. Snyder. After twelve hours spent in Chicago, during which time we had the pleasure of meeting Mr. Healy and Mr. Longley, both enthusiastic entomologists, we again boarded the train and were once more on our way to the West. Denver was reached about ten o'clock Wednesday morning. The first glimpse of the snow-capped peaks of the Rocky Mountains was to be had from our train about two hours before reaching Denver. The two or three spare hours that we had in Denver were spent in looking around the city, and in a hasty glance at the fine collection of Lepidoptera belonging to Mr. J. T. Mason. Denver is a very clean and pretty city, and we would have liked to have lingered here a day or two, but we were anxious to reach our goal or collecting grounds, and so at or about one o'clock in the afternoon we again boarded the train which two hours later landed us at Colorado Springs. However, we did not stay at the Springs, but entering a trolley car a short ride of twenty minutes landed us at Manitou, at the base of Pike's Peak. At last, after traveling for three and a half days we were able to commence our entomological work. We had no trouble in securing accommodations at Manitou, for the town for the most part, is composed of boarding houses and small hotels. Of all the places that we visited while on our Western trip none impressed me so favorably as Manitou, for its attractions are many and varied. There are numerous walks and drives, and the medicinal quality of its soda and iron springs is known far and wide; while the ride on the Cog Wheel R. R. to the top of Pike's Peak is one that he who has taken it will never forget. On the 29th we made the trip to the top of the Peak, but found but little collecting, as the crest of the Peak,

for several hundred feet down its sides, consists of nothing but rocks and large boulders; while the crevices in many cases are packed with snow. At the time of our arrival at the top of the Peak—which was about 11.30 in the morning—the thermometer registered 52 degrees, while at Manitou, some 8,000 feet below us, it was high in the eighties. On our way down from the "Peak" we stopped off at the "Half Way House" and spent several hours collecting in Dark Canon, the entrance to which is directly back of the house.

Having been so well pleased with our collecting in Dark Canon yesterday, to-day (Friday, June 30th) we concluded to go up again. We started about 7 o'clock, collecting as we slowly went along, and after three hours of very hard work at last reached our destination. The "Half Way House" is about three thousand feet above Manitou, and the ascent is about 1,000 feet to the mile, so that the task of walking up is no child's play, particularly to one who is not accustomed to this kind of exercise. However, it is nothing unusual for parties to walk the entire distance to the top of the Peak in one day, and had we remained longer at Manitou I have no doubt that we also would have accomplished the feat.

This morning (Saturday, July 1st) we packed up our "duds," and bidding farewell to Manitou and Pike's Peak, we boarded a trolley car and were soon over at the station at Colorado Springs. Our train left at 10.55, and soon we were dashing along on our way to Salt Lake City. The ride through the Royal Gorge and over the Divide was one that I shall never forget, but I shall not attempt to describe it, as words would fail me and I would consume too much of your valuable time; besides, I have no photographs with which to back up my assertions.

On Sunday July 2nd, shortly after noon, our train arrived at Salt Lake City, just two hours behind time. After securing accomodations and looking after our baggage, we found it was too late to do any more daylight collecting that day. The next day found us up bright and early and off to Fort Donglass, which is situated a short distance from the mouth of Red Butte Canon. The collecting in the fields around the fort was

very good, particularly for Lepidoptera, which were attracted by the flowers of the alfalfa, a plant which here in the West takes the place of our red-clover in the East. Up the Red Butte Canon we also found very good collecting, not only for Lepidoptera but also in some of the other orders of insects.

Tuesday, July 4th, found us in the City Creek Canon, and although we started to collect from the very mouth of the canon, yet it was not until we had traveled up the canon for a distance of about three miles that we found good collecting; in fact, it seemed as though insect life increased as we got farther and farther up the canon. It was here in City Creek Canon that we found *Papilio daunus*, *P. rutulus*, and *P. eurymedon* so very common, that at last we paid no attention to them, unless it was to "scoop" in a *Papilio daunus* that happened to come our way.

Wednesday, July 5th, again found us up City Creek Canon, as we could not resist the temptation to pay another visit to this interesting collecting ground. This might be called "Rattle-snake Day" as the Professor and the Doctor captured the only rattler that I saw during the entire trip, though the Professor saw two large ones in the same place shortly after I left Utah.

Thursday morning, July 6th, found all three of us a little foot-sore, so we concluded to hire a team to take us up the canon to a point about seven miles above the entrance, known as the "Forks," and then work our way down. We secured a team, but not such a one as you would expect the President of the United States to take when going to a reception. The seats consisted of boards with the splintery side up, and we had traveled but a few miles before we were made painfully aware of the fact. To sum it up in a few words, our rig resembled a cross between a buck-board and a lumber-wagon. However, we at last reached our destination, and as it was our last day to collect in this vicinity, and wishing to make the best of it, we at once started in, working our way down the canon, collecting as we slowly went along.

Friday, July 7th, we were up at the break of day, as we had made arrangements with a party the night before to convey us

to Silver Lake, at the head of the Big Cottonwood Canon. We waited, and waited patiently for our team to appear, but when at last the morning hours had passed by and no sign of man or team, we concluded that there were liars in Salt Lake City almost as bad as some that we have in Philadelphia. That night we hunted up another party, who promised to be on hand the next morning to convey us to our longed-for collecting grounds up in the Wasatch Mountains. True to his word, early the next morning, our man with his team put in an appearance, and soon we were on our way to the head of the Big Cottonwood Canon.

The ride up the canon is a very fine one, the beauty and grandeur of the scenery increasing as we travel onward and upward. Late in the afternoon we arrived at Silver Lake, and after the rough ride of some thirty-one miles we were naturally tired, so after preparing our supper, unpacking our bags and boxes, we turned in for the night.

The morning of the 10th found all three of us up shortly after daybreak, and down by the lake trying to catch a mess of fish for breakfast, but after fishing for an hour with only three small fingerlings to show as the result of our efforts, we concluded that ham and eggs were good enough for breakfast. The inner man having been satisfied, we gathered up our collecting paraphernalia and were soon on our way to the top of one of the numerous peaks that surrounded our camp. The greater part of the day was cloudy, but nevertheless we managed to secure a number of desirable specimens, of not only butterflies but also beetles and other insects.

Thusday, July 11th, was moving day for the "bug hunters," as the arrival of our host's family made it necessary for us to vacate the shack, and so to speak, "take to the woods," Two comfortable tents on the edge of the woods, however, afforded us all the protection that was necessary. Moving over, and our "duffle" arranged, we were off again to collect. The Professor spent the day on one of the near-by peaks, while the Doctor and myself followed the road down the canon. In the evening on comparing our captures, we found, as we had expected, that the catch made by the Doctor and myself dif-

fered entirely from that made by the Professor some seven hundred feet above us.

Wednesday, July 12th, all three of us visited the peak where the Professor had collected the day before, but towards noon I left the Doctor and the Professor and descended to the shore of Silver Lake, where I spent the afternoon in search of such Coleoptera as are found under stones, logs, rubbish, etc. It was the first time since our arrival in the West that I found Coleoptera in paying numbers, and before darkness put a stop to my work I had collected some 200 desirable specimens; as might be supposed, mostly Carabidæ.

Thursday, July 13th, again found us on our way up the mountain side, but on towards eleven o'clock the distant thunder coupled with the black clouds over Mt. Millicent warned us that a thunderstorm was approaching, so leaving the Professor to watch for any buttterflies that might be foolish enough to venture out during a thunderstorm, the Doctor and myself returned to camp. At one o'clock, as the weather was still threatening, the Doctor and I concluded to climb up to Twin Lakes and try for a mess of trout. The climb, or steep walk as it might be called, was not a hard or long one, and soon we were standing at the outlet to the lakes looking down at trout enough to feed a dozen hungry men, but the rascals would take neither fly nor bait. It is hardly necessary to state that, as usual, our breakfast the next morning consisted of the omnipresent ham and eggs.

The next day, Friday, July 14th, was the first real bright day that we had had since our arrival at the head of the Big Cottonwood, and the result was that we took more specimens than in any previous two days put together. But, nevertheless, we were not to occupy a dry tent that night, for about seven o'clock in the evening our daily thunderstorm—to which we had now become accustomed—put in its appearance, and for about an hour the rain came down in torrents.

The morning of the 15th dawned bright and clear, but everything was wet from the rain of the night before, so that it was almost 10 o'clock before the vegetation was dry enough to permit us to do any successful work in the way of collecting.

July the 16th, and the last day for the Doctor and myself to do any more collecting at Silver Lake, had every appearance of being a rainy day. It was certainly not a day for butterflies, so leaving the Professor and the Doctor in camp waiting for the sun to appear so that they might resume their butterfly collecting, I started off in search of Coleoptera, with the result that when night came I found I had in the neighborhood of 250 specimens for the day's work.

The morning of the 17th found the Doctor and myself on our way back to Salt Lake City, leaving the Professor behind to continue his entomological labors. We arrived at Salt Lake City about four o'clock the same afternoon, and as neither of us had enjoyed such a thing as a bath or even a good wash for eight days, we concluded to stay over in Salt Lake City until the next day and clean up. A shave, hair cut, and a bath, and once more we commenced to feel like civilized men. Our tickets and baggage looked after, and at 6.40 Tuesday evening we left for our homes in the East.

At 8 o'clock Thursday evening we arrived at Chicago. A trip out to Ferris Wheel Park and a ride on the Ferris wheel, and at 11.30 we were again on our way. However, had it not been for two pairs of very lively legs we never would have made that 11.30 train, for the prevaricator of the truth who manipulates the Ferris wheel informed us that it would take about twenty minutes to make the trip in the wheel, instead of which it took us just exactly forty.

We arrived at Pittsburg the next evening about seven o'clock and after securing accommodations and making a few small purchases we retired for the night.

The next morning, Saturday, July 22d, we went in search of Dr. Holland and his collection of butterflies, but soon found out that the Doctor was out of town, and consequently did not see the Holland collection. As this was our only object in stopping off at Pittsburg, we were very much disappointed; for aside from smoke and soot, the Carnegie Institute and the Zoological Garden we saw but little else in Pittsburg to interest us.

Saturday evening at 8.30 again found us on the train, our

next stopping place to be Philadelphia, providing everything went well with us. We were not disappointed, and at seven o'clock Sunday morning, July 23rd, our train arrived at Broad Street Station. And thus ended a short but interesting collecting trip to the Rocky Mountains.

A Bibliography of Entomological Glossaries.

By Alec. Arsène Girault.

The list of glossaries following is given upon request, and comprises those consulted in the preparation of an entomological dictionary. This is to such a degree incomplete that its publication, even within three or four years, is doubtful, and hence, knowing the need now felt for works of this nature, the bibliography herewith given has been prepared.

The meagreness of the list readily shows under what difficulties the present-day entomologist is laboring in regard to the language of his science. Vocabularies are unknown, and the glossaries now existing are very incomplete and imperfect, the largest and best being but an imperfect compilation of those preceding. No attempt has as yet been made to define terms with that accuracy, nicety and invariability so essential in scientific language.

The Standard Dictionary (Funk and Wagnall's Company, N. Y.) is at present indispensable; the entomological terms have been defined by Dr. L. O. Howard. Its bulk is a great draw-back, but it is *the* authority on general entomological terms. A rather useful paper has been published in the Proceedings of the California Academy of Sciences, 3rd series, Zoology, I, pp. 115–143, on Scientific Names of Latin and Greek Derivation, by W. Miller. Other general zoological and physiological terms, not generally given in entomological glossaries, may be found in works on those subjects, including also works on evolution. A few of these are given in a supplementary list, but no attempt has been made to list anything like all of them.

The Bibliography of Entomological glossaries follows.

1826. Kirby, W. and Wm. Spence. Orismology, or explanation of terms. (Intro. to Entom., IV, pp. 257–354.)

Containing an explanation of 977 terms, with useful rules for their use. Apparently the oldest glossary; valuable.

1832. Burmeister, H. C. C. Orismology. Its Definition and Compass. (Manual of Entomology, pp. 5–113, pls.; also cf. pp. 624–632. Translation by W. E. Shuckard, London, 1836. Vol. I, Handbuch der Entomologie, Berlin, 1832.)

A most complete and important review of the subject to date; invaluable. Definitions of all of the terms then in use are given, with valuable criticisms, and also references to scattered papers containing the original definitions of many terms. These references are not included in this list, because of their nature.

In order to make Burmeister's references more full, and to add to this list, mention may be made of the following, though not strictly glossaries:

1767. Linnæus, C. Fundamenta Entomologiæ. Later translated by Wm. Curtis (1772.)

1772. Curtis, Wm. Fundamenta Entomologiæ; or an introduction to the knowledge of insects. London, 1772. A translation of Linnaeus.

1778. Fabricius, J. C. Philosophia entomologica sistens scientiæ fundamenta adjectis definitionibus, exemplis, observationibus, adumbrationibus. Hamburg, 1778.

1788. Vandelli, D. Diccionario dos termos technicos de Historia Naturel. Coimbro, 1788.

1788. Schmiedlein, G. B. Insectologische Terminologie oder Grundbegriff der Insectenlehre. Leipzig, 1788.

1790. Borkhausen, M. B. Versuch einer erklärung der Zoologischen Terminologie. Ein Handbuch Zum Gebrauch derer, welche die Zoologie studiren wollen. Frankfurt, 1790.

1795. Moeller, C. H. Lexicon Entomologicum oder Entomologisches Wörterbuch, in welchem alle diese Wissenschaft einschlagende Begriffe und die in den Linneischen und Fabrizischen Schriften vorkommenden Termologien übersetzt, erklärt, and mit Beispielen nach beiden Systemens erläutert werden. Erfurt, 1795.

1829. Anon. Description and History of some of the principal British Insects. Terminology. Mag. Nat. Hist., 1829, t. 1., pp. 421–424, fig.

1832. Helfer, J. W. Terminologie Entomologica. Dissert. inaug. Ticini Regii, 1832.

1859. Say, Thomas. Complete Writings on the Entomology of N. A. (New York, 1859. LeConte edition, 1, pp. 123–160.)

Defines about 775 descriptive terms; valuable.

1860. Mueller, Julius. Terminologia Entomologica. Brünn, 1860.

1867. Anon. Glossary. (Amer. Naturalist, 1, pp. 681-868.)
550 words used in natural science.

1878. Strecker, Herman. Synonym. Cat. of the Macrolepidoptera of N. A. (Reading, Pa., B. F. Owens. Pp. 35-45.)
An explanation of 450 Lepidopterous terms. Good.

1879. Brooklyn Entomological Society. Explanation of Terms used in Entomology. (Bull. Brook. Entom. Soc., June 1879. Repr., Brooklyn, New York, 1883. 38 pp.)
Contains 1450 definitions of descriptive terms, compiled from previous glossaries. The only working glossary extant, and although very much out of date, very valuable.
A revised edition is now in preparation.

1881. Ormerod, E. A. Manual of Injurious Insects. (London, Simpkin, Marshall & Co. Pp. 315-316.)
49 general terms.

1881. Thomas, C. Descriptive Catalogue of Larvæ. (10th Rep. State Ent. Ill., in Trans. Dept. Agr. Ill., 1881. Appendix, pp. 60-62).
15 terms used in describing larvæ.

1883. Packard, A. S. Guide to the Study of Insects. (8th edition, New York, Henry Holt & Co. Pp. 685-686.)
155 general terms.

1886. French, G. H. The Butterflies of the Eastern U. S. (Philadelphia, J. B. Lippincott & Co. Pp. 389-396.)
Good definitions of 240 Rhopalocerous terms.

1888. Fernald, C. H. The Orthoptera of New England. (Boston, Mass. Pp. 55-56.)
48 general Orthopterous terms.

1889. Packard, A. S. Entomology for Beginners. (New York, Henry Holt & Co., 1889. Pp. 337-354. 2nd edit., 1892.)
Good definitions of 482 terms.

1890. Ormerod, E. A. Manual of Injurious Insects. 2nd edit., London, 1890, Simpkin, Marshall, Hamilton, Kent & Co Pp. 397-380.
The same as edition 1.

1897. Lugger, O. The Orthoptera of Minnesota. (Bull. No. 55, Minn. Agr. Exp. Sta., pp. 366-375.)
Good simple definitions of 346 Orthopterous terms.

1901. Dickerson, M. C. Moths and Butterflies. (Boston, Mass., Ginn & Co. Pp. 333-335.)
49 general anatomical and physiological terms.

As a list supplementary to this, mention may be made of the following :

Packard, A. S. Zoölogy. Amer. Sci. Ser. (brief course,) New York, Henry Holt & Co., 1885. Pp. 317-322.

Holder, C. F., and J. B. Holder. Elements of Zoölogy. Appleton's Sci. Text-books, New York, D. Appleton & Co., 1884. Pp. 373-375.

Darwin's Origin of Species. 6th revised edition., London, 1889.

Bailey, L. H. The Survival of the Unlike. New York, The MacMillan Co., 1896.

Apgar, A. Glossary of Molluscan Terms. Jour. N. Jersey Nat. Hist. Soc., January, 1891. P. 155.

Jackson's Glossary of Botanical Terms. Philadelphia, Pa. Very complete.

Asa Gray's Botany, revised edition.

All of these contain glossaries, which have more or less indirect bearing on general entomology. Jackson's "A Glossary of Botanical Terms," especially, will prove useful. For definitions of terms not contained in glossaries, see Comstock and Kellogg, "Elements of Insect Anatomy"; Packard's, "A Text-book of Entomology"; Sharp's "Insects, Cambridge Natural History"; Comstock and Needham, "The Wings of Insects"; Comstock and Chujiro Kochi, "Anatomy of the Head of Insects"; Comstock's "Manual for the Study of Insects"; Lugger's "Minnesota Reports," and LeConte and Horn's "Classification of the Coleoptera." An enumeration of more would be useless. The monographs of the different families are very valuable, and all general works of any importance are essential.

On the North American Species of Oscinis.

By C. F. Adams, University of Chicago, Chicago, Ill.

In addition to the table to the species I give descriptions of four new forms which I found in the Hough collection. It is difficult to give all the species their proper place in the table, but after examining material in the Hough collection, in the collection of the University of Kansas, my own collection, and that of the British Museum, I feel that there are few inaccuracies in the following table. Other new species from the West Indies are not included, as their descriptions are to appear elsewhere.

TABLE TO THE SPECIES.

1. Mesonotum black 9
   Mesonotum yellow 2
2. Antennæ wholly yellow 3
   Antennæ not wholly yellow 6
3. Mesonotum vittate 4
   Mesonotum not vittate . . . . . **mitis** Will.
4. Eyes pilose 5
   Eyes bare . . . . . **nuda** n. sp.
5. Scutellum triangular . . . . . **triangularis** Will.
   Scutellum oval . . . . . **ovalis** n. sp.
6. Antennæ wholly black . . . . . **virgata** Coq.
   Antennæ not wholly black 7
7. Scutellum black . . . . . **dorsalis** Loew.
   Scutellum luteous or yellow 8
8. Mesonotum with four vittæ . . . . . **quadrilineata** Will.
   Mesonotum with three vittæ . . . . . **dorsata** Loew.
   Mesonotum not vittate . . . . . **minor** n. sp.
9. Legs wholly yellow 10
   Legs not wholly yellow 14
10. Abdomen wholly black 11
    Abdomen not wholly black 12
11. Third and fourth veins moderately divergent. . . . . **umbrosa** Loew.
    Third and fourth veins nearly parallel . . . . . **atriceps** Loew.
12. Base of dorsum of abdomen yellowish 13
    Base of dorsum of abdomen black . . . . . **apicalis** Will.
13. Face blackish . . . . . **pallipes** Loew.
    Face yellow . . . . . **collusor** Town.
14. Antennæ wholly yellow . . . . . **flaviceps** Loew.
    Antennæ not wholly yellow 15
15. Venter of abdomen yellow 16
    Venter of abdomen black 18
    Venter of abdomen variegated . . . . . **minor** n. sp.
16. Mesonotum bisulcate . . . . . **subvittata** Loew.
    Mesonotum trisulcate . . . . . **trisulcata** n. sp.
    Mesonotum without sulcæ 17
17. Sides of mesonotum and pleura reddish yellow . . . **pectoralis** Coq.
    Sides of mesonotum and pleura black . . . . . **obscura** Coq.
18. Mesonotum shining 19
    Mesonotum at least subopaque, more or less pollinose 22
19. Antennæ wholly black 20
    Antennæ not wholly black 21
20. Femora wholly yellow . . . . . **anonyma** Will.
    Femora not wholly yellow . . . . . **variabilis** Loew.
21. Legs, except middle femora in part, yellow . . . . **nudiuscula** Loew.
    Legs, except all femora in part, testaceous . . . . . **decipiens** Loew
    Legs, except all femora and front tibiæ in part, yellow . **concinna** Will.

22. Face whitish or yellowish 23
    Face black 26
23. Mesonotum with four grey pollinose, posteriorly abbreviated, vittæ, **trigramma** Loew.
    Mesonotum not so marked 24
24. Legs yellow, hind femora and hind tibiæ somewhat brownish **incipiens** Will.
    Legs largely black or dark brown 25
25. Vertical triangle shining . . . . . **hirta** Loew.
    Vertical triangle greyish pollinose . . . . . **fur** Will.
26. Tibiæ wholly yellow . . . . . **nana** Will.
    Tibiæ not wholly yellow 27
27. Third and fourth veins divergent . . . . . **longipes** Loew.
    Third and fourth veins parallel . . . . . **carbonaria** Loew.

Oscinis minor n. sp.

Head yellow. Vertical triangle reaching only half way to antennæ, containing a black ocellar dot; third antennal joint orbicular, its apex, with the arista, black. Mesonotum largely yellow, sometimes blackish posteriorly, and in one specimen, wholly black, thinly pollinose, and with a few black bristles laterally; pleura yellow, in the dark form with a blackish spot above middle coxæ; scutellum usually wholly, sometimes only apically, yellow, with a pair of small black bristles; halteres yellow. Abdomen black, hind margins of segments yellow; venter variegated. Legs yellow, hind tibiæ centrally, and tips of all tarsi, blackish. Wings hyaline, third section of costa two-thirds length of second, third and fourth veins nearly parallel.

Four specimens. Opelousas, La. March.

Oscinis nuda n. sp.

Head yellow; vertical triangle reaching half way to antennæ, containing a black ocellar dot, eyes bare. Mesonotum yellow, with four, broad, brown vittæ, and an additional narrow one above base of wing; lateral bristles black. Pleura yellow, with a small black spot above middle coxæ. Scutellum oval, yellow, and with an apical pair of small bristles. Metanotum black; halteres yellow. Abdomen yellow, hind margin of segments narrowly black. Legs yellow, tips of tarsi black. Wings hyaline, third section of costa one-half as long as second, third and fourth veins nearly parallel. Length 1.8 mm.

Four specimens. Tipton, Ga. October.

Oscinis ovalis n. sp.

Head yellow; vertical triangle deep, reaching nearly to the antennæ, containing a black ocellar dot; eyes pubescent. Mesonotum yellow, lateral margins and the narrow longitudinal vittæ brownish black; lateral vittæ black; pleura yellow, with an elongate, black spot above middle

coxæ; scutellum oval, yellow except basally, and with an apical pair of small bristles; halteres yellow; metanotum deep shining black. Abdomen brownish yellow, blackish basally. Legs yellow. Wings hyaline, second and third sections of costa of nearly equal length; third and fourth veins nearly parallel. Length 1.7 mm.

One specimen. Tipton, Ga. June. Close to *O. triangularis* Will., but is smaller, and the scutellum of entirely different shape.

Oscinis trisulcata n. sp.

Head yellow; occiput, upper part of vertical triangle, upper margin of third antennal joint, arista, and clypeus on each side, black. Mesonotum black, sides and humeri yellowish, with three longitudinal sulci; lateral bristles black; pleura obscure brownish black; scutellum concolorous, flat above, and with an apical pair of small bristles; halteres yellow. Abdomen brownish above, yellow beneath. Legs yellow; posterior femora with a blackish ring centrally. Wings hyaline; third section of costa about half as long as the second; third and fourth veins nearly parallel. Length 1.5 mm.

One specimen. Opelousas, La. March.

Observations on Papilio turnus var. glaucus.

By Ernst Jeheber, Lancaster, Penna.

How fascinating is the first glance at a *Papilio glaucus* flying in nature, and it has often occurred to me that many collectors must have wondered what the cause may be for its dimorphism. Such has been my case, and I concluded to rear this species in the hope of being able to a degree to solve this problem. My first step was to carefully go over all the literature at my command which treated upon this subject, and from it I could only learn that yellow females sometimes produced black females, or that black females often produced yellow females; that the larvæ are either green, light to dark brown and blue-black. I now procured a number of eggs and larvæ of *turnus* and reared them on their favorite food plants—namely, wild cherry, tulip poplar and ash. The larvæ all progressed nicely until after the last moult, when I observed that a number of the larvæ after one or two days feeding showed signs of disease, in as much as they stopped feeding and I could plainly see that through their entire body they had a spasmodic jerking, which started at the head and went in a wavelike manner until it reached

the last segment. I separated these larvæ from the healthy ones, and upon the next morning I found most of them to have changed to a blue-black, some of them spotted and others very dark, and it could be plainly seen that the spots developed from within the larvæ. They did not feed again until the change of color was completed, which was generally on the third day. The pupation of these specimens was delayed just the number of days which it required for this color change. Every one of these larvæ developed into *glaucus* females, while the green and brown larvæ developed into the yellow form. My next object was to try find the reason. I succeeded in obtaining eggs of the second generation and again reared a large number of the larvæ with exactly the same result.

After those larvæ which changed their color as above had gone through their last moult I examined the foliage upon which they had fed, and I discovered that the leaves were sprinkled over with fine black spots and were completely covered over with a gummy substance. The nature of the phenomena I could not determine, but do not doubt that botanists can explain it. I now placed a number of green larvæ on this diseased foliage, and after one to two days feeding they changed their color, although not so intensely, the reason for which, in my judgment, is that they were too near pupation, these latter larvæ developed into specimens bearing a more or less large yellow spot in the centre of the anterior wings. To prove that my observations were well founded I reared a number of larvæ of the next generation on healthy foliage and a number on diseased foliage—I call it diseased as it turns yellow and withers much before the other—and the result was, healthy foliage, yellow females; spotted foliage, black females. In the pupæ I could not distinguish any differences upon which to base facts, but I am convinced that the dimorphism is a diseased condition, brought about by diseased food plants, and as far as I am able to judge at this time I believe the albino and melanic forms of other species, particularly of *Colias philodice*, will be ascribed to the same cause. But why only the one sex should become so affected is a problem which must be left for a scientist to solve.

Oviposition in Cordulegaster.

By Dr. F. Ris, Rheinau, Switzerland.

Prof. Needham's very pleasant narrative in the January number of Entomological News reminds me that I might give an account of an observation that seems not yet to have been recorded.

There is, very close to Zürich, almost within the limits of the city, a locality where, many years ago, I used to collect our two Swiss Cordulegasters, *bidentatus* and *annulatus*, the first always about ten days earlier than the other more widely diffused and less appreciated species. The place is a small open space in the woods, rather steeply inclined, the exposure nearly due North. Notwithstanding the inclination, the ground is swampy—we are in a region of beautiful and well preserved deposits of the great Ice Age—and a small spring of clear water runs down the slope, collecting at its foot in a shallow pond, thickly overgrown with various sedges, *Menyanthes trifoliata*, etc. This spring and pond are rich in Neuroptera; I mention *Adicella filicornis*, *Crunœcia irrorata*, *Beræa articularis*, *Berœodes minuta*, *Ptilocolepus granulatus*, *Oxyethira falcata*, amongst the less common Trichoptera, and they are the haunt of the Cordulegasters, the only one in the neighborhood of Zürich where I found them regularly and in numbers. The quality of the water is somewhat peculiar, not for this country, but more generally speaking; it is very rich in lime, as are all such springs in our rigion, where glacial deposits cover the rock of soft tertiary sandstone. Every branch of moss, every rootlet, every dead leaf, that hangs or falls into these waters is in a very short time covered by a soft deposit of soft, porous limestone. These deposits soon crumble and form in the rivulets a bottom of small, sharp-edged, angular debris, quite different from soft mud or polished gravel as they exist in our larger waters. I think this detail is not without importance in connection with the Cordulegasters.

Last summer I visited the *Cordulegaster*-spring again, after many year's interruption, on June 11th. The season was an unusually early one; I came just at the best of *C. bidentatus*,

which otherwise might have been a fortnight later. In a very short time I had captured a series of seven males and five females of *C. bidentatus*, but not a single *C. annulatus* was yet seen. But, still better, I had repeated an observation made seventeen years ago, only not recorded at that time, and which I did not like to record after such a long interval, unless having made it again.

All the five females were caught ovipositing, and their manner in doing so was peculiar. They took a very nearly vertical position, wings, abdomen and all, and flying in this position slowly onward, dipped the points of their abdomens vertically into the crumbled limestone deposit on the bottom of the very shallow water. It is evident, that the protruding, pointed and very hard ovipositor is wonderfully fit to protect the soft texture of the terminal segments against being injured by the sharp-edged debris. I could not observe, whether the eggs were laid singly or in clumps, not finding any eggs left in the ovipositors of my captives. The operation was otherwise easily observed during some length of time, before it was put an end to by a good stroke of the net. The large and bulky insect in its awkward vertical position made a curious impression of helplessness and was indeed very easily captured.*

I may here add that the black-and-yellow annular pattern, with the golden green eyes, seemed to me wonderfully adapted for hiding Cordulegasters settled on lively green shrubs in full sunlight. The males often settled, but had I not seen them alighting, it was found impossible to discover them again as long as they rested motionless. A hawking *Cordulegaster* seen right in front at your eye-level appears as a mixture of black, yellow and golden green that will be very nearly invisible on a background of sunlit meadow or shrub.

Still another observation on *Cordulegaster* perhaps merits a short mention. Years ago, in 1891, I caught a fine female of *C. bidentatus* near Alvaneu in the Grisons. It exhaled an

[* Two brief records of oviposition by *Cordulegaster* have been published in earlier volumes of the NEWS: by Miss Mattie Wadsworth, Vol. XIII, p. 247, October, 1902, and by P. P. Calvert, Vol. XV, p. 316, November, 1904.—EDS.]

extremely strong perfume of a quite agreeable character, having something of roses and of musk together. This perfume was much alike the one observed in *Cicindela* and, I think, other ant-eating insects. In our special case the odor was so strong, that it remained in my net for more than a year, and it lasted long even in the cyanide bottle. I have not observed the phenomenon again in the same species nor in any other dragonfly, and suppose the specimen had fed on ants, *Formica rufa* for instance being abundant in its region.

Lycaena emigdionis n. sp.

By Fordyce Grinnell, Jr., Palo Alto, Calif.

Female.—Expands 22 mm.—Upperside of primaries uniformly metallic brown, with a few bluish scales towards base of wings; a black discal dash; a marginal fine black line. Fringes long and white. Secondaries: same as primaries, but with five, submarginal, large, distinct, black spots surrounded by a brighter tinge of brown, the encircling brown rather broad inwardly. Underside of primaries uniformly grayish white; a large, black, distinct, reniform discal dash; next a series of seven, very distinct, large, cuneiform spots (the first circular), extending parallel to the outer margin. Next a series of six more, obscure, smaller dashes; next a series of four less well-defined dashes; a fine submarginal black line. Underside of secondaries uniformly grayish white; a rather obscure black discal streak surrounded by white; between this and base three small, distinct black dots extending from upper to inner margin, one in middle, one near upper and the other near inner margin. Between discal streak and outer margin a series of seven distinct black spots, the first six forming a >, the other a little outward and evidently consisting of two fused spots. Submarginally a series of seven black crescents, the lower five enclosing red dashes, next these red dashes are five metallic silver circles enclosing, each, a black dot; the first of the seven black crescents is small and in the apex, the next is more distinct and accompanied by a like one submarginally. A narrow, fine black marginal line. Fringes white. Body below grayish, with some long hairs. Palpi grayish, tipped with black. Antennæ annulated black and white; club black, above tipped with white.

Male.—Upperside of primaries violet-blue; with a broad, very dark margin, one-fourth inch in width, widest at costal margin, extending from costal to inner margin. A fine, black marginal line. Secondaries: violet blue, with a broad dark brown band extending from costa to inner margin; in anal angle are three black spots surrounded by a lighter brown. A marginal fine black line. Fringes long, white. The underside is almost exactly like that of the female, and in the other particulars they are the same.

Hab.—San Emigdio canon, Kern Co., Calif. Described from 2 ♂, 1 ♀, taken June 3 and 4, 1904, by the writer, and now in his collection.

This species seemed to be extremely local in San Emigdio canon, being found in only one place, and extending along the canon for about a hundred yards. It seemed to be not at all uncommon, and a good series of specimens was taken in the short time I was in this particular locality. They are very distinct, and the first one I saw I recognized to be something new to me. The color of the upperside of the male and female, and heavy markings and metallic scales of underside and a partial obliteration of the marginal red band on the upperside of secondaries are very distinctive characters. It belongs to the *acmon* group.

A New Culex From Australia.

By D. W. Coquillett.

Culex labeculosus new species.

A rather large brown form with white bands at bases of the segments of the abdomen and tarsi. Proboscis nearly covered with white scales, those on upper half of occiput golden brown, on the remainder white. Mesonotum golden brown scaled and with several brassy yellow ones interspersed, some of which form a pair of indistinct subdorsal light colored lines, the scales very narrow; bristles black, those on the scutellum chiefly yellow. Scales of abdomen black, a broad crossband of white ones at base of each segment and several white scales scattered over the sixth and seventh segments. Scales of femora, tibiæ and first tarsal joint mixed black and white, not forming distinct bands or spots, those on the posterior side chiefly white, on remainder of tarsi black and with a band of white ones at base of each joint, that at base of the second joint of the hind tarsi covering nearly one-third of the joint; front tarsal claws of female unidentate. Wings hyaline, the scales brown, the lateral ones narrow and nearly linear, petiole of second submarginal cell nearly half as long as that cell. Palpi of female chiefly black scaled except at the apex, where the scales are white; palpi of male narrow, blackish and with two white bands. Length 4 to 5 mm.

Six females and two males, labelled as having been collected on Goode Island, Victoria, Australia. Received by Dr. L. O. Howard from Mr. C. French, the government entomologist of Victoria.

Type No. 8314, U. S. National Museum.

Some Notes on the Habits and Life History of Bembecia marginata Harris in Western Washington.

By W. H. Lawrence, Agricultural College, Washington.

The so-called Raspberry Root Borer or Blackberry Crown Borer, *Bembecia marginata* Harris, has found its way into some of the berry fields in Western Washington. The habits and life history vary somewhat from those described in other sections. Scattering observations made during 1901 to 1904, show that it takes a period of two years for the transformation of the insect. It has been particularly easy to trace the transformations, as but a single brood occurs in this section.

During 1903 adults reared from pupæ and adults captured in the field were confined in cages and in a large glass jar. In the latter, raspberry slips were placed in a dish of water. Numerous eggs were deposited in these cages. The females endeavored to place each egg beneath the object upon which they were resting; many were placed on the under surface of the leaves in the jar.

In the field the moths alight on the upper surface of blackberry or raspberry leaves. When ready to deposit their eggs they begin to flutter their wings, rise on "tip-toe," move sidewise, bend the abdomen around the edge of the leaf and deposit a single egg beneath. During the season not a single egg was found on the canes at any point high or low—all were on the lower surfaces of the leaves.

The eggs are oval, of a deep reddish brown color, and about $\frac{1}{16}$ of an inch long. A single moth lays about 140; those confined in cages laid from 135 to 150. A large number of eggs were kept on dry earth in the bottom of a breeding cage; others were kept on the wooden floor of a cage. Leaves collected in the field, on which eggs had been deposited, were also placed in these cages. Canes, on the leaves of which eggs had been deposited, were placed in water in jars, and kept alive as long as possible. The location of each of a large number of eggs on leaves in the field was marked. Not an egg on wood, dry earth, or dry leaves in the field, hatched. A

considerable number of those on the leaves of canes kept in water hatched, as did a greater number in the field. These experiments indicate that the eggs need a certain amount of moisture in order to develop properly. They hatched during the third week in September. A large number of those in the field hatched on the 19th to 21st of September.

When the egg is ready to hatch the larva makes a small, round hole in one end of the shell and crawls out. At this stage the larvæ are about $\frac{1}{16}$ of an inch long, nearly white, and clothed with a few colorless hairs; the head is dark brown. The larvæ in the field soon disappeared. Late in December, 1903, an effort was made to locate them; plants were dug up and the canes and roots split open, but not a single larva could be found. A number of young plants were selected on the leaves of which, in autumn, numerous eggs had hatched; these were taken up and carefully washed, preparatory to splitting them. A number of small, blister-like elevations were noticed on the bases of these canes, on the part below the surface of the ground. On opening these spots, each of them contained a single larva. The larva had crawled down the stem, eaten a hole through the epidermis, formed a round cavity in the bark just large enough to contain it, curled up, and become inactive. Other plants were examined. The larvæ had not only buried themselves in the bark of the canes, but in many instances were found several inches below the surface of the ground, under small scales on the roots, just beneath laterals, and in crevices of the roots. Many were found in these winter quarters. At this time of the year the larvæ are very small, having increased about one-third in length.

On December 29, 1904, the writer dug up about 15 hills of blackberry canes, washed the roots, and searched for larvæ. Four were found in winter quarters just beneath the epidermis. This observation further substantiates the one made the previous year and also shows that a second brood is just beginning to appear.

The writer has not had an opportunity to study the habits of the larvæ after they begin active feeding in the spring. Those that hibernate in the bark of the cane during the winter un-

doubtedly leave their quarters and crawl down from the outside of the stem. No evidence has been found to show that they enter the canes and tunnel down into the roots. Small holes have been found in the roots, showing that some of the larvæ at least enter directly into the roots.

During the following season the larvæ begin active feeding, and are about one-half to three-fourths of an inch in length by the time they are one year old. The body becomes much stouter. They remain at rest in the tunnels in the roots during the second winter and begin active feeding the following spring. At this time they are usually in the root, just beneath the crown; they usually take an upward course, enter and eat out the pith of the cane for a distance of one to five inches; then tunnel obliquely through the wood and bark, leaving only the epidermis intact. Having done this, the larvæ may go down the hole some distance, but when ready to pupate they return to some part of the tunnel in the cane before transformation. When ready to pupate the larvæ become somewhat shorter and darker in color. By the middle of June a few pupæ were found; by the middle of August all were in the pupal state, and some had emerged as adults. The adults continued to emerge until late in September.

When the adult is ready to emerge it crawls out of the pupa-case leaving it sticking in the hole made by the larva in the side of the cane. One pupa was taken in the act of cutting out the epidermis; this pupa was placed upon a piece of paper on a table in the laboratory. At the end of two hours the adult had emerged and was drying its wings. After emergence, the adults may be found resting on the leaves of raspberry and blackberry plants or flying about the fields depositing their eggs.

Up to the present time infested plants in this State have seldom shown any signs of the presence of the borers other than a poor growth. On one occasion a single hill of blackberry canes wilted about the time the leaves were well out. The roots were well filled with tunnels. Seven larvæ, each about an inch long, were collected. Other hills examined gave one to four borers, but none of them showed external signs of their presence. On a few occasions single canes in hills of blackberries died. In nearly every case a borer had eaten out the pith of the cane at the crown. In this section the borer never girdles the cane. There is never a morbid enlargement of the canes. In fact many times the borers never enter the canes, but remain in the roots until ready to emerge as adults. Pupa-cases were found sticking in the sides of exposed roots. In a single instance one borer was found in an exposed lateral root 18 inches from the base of the cane.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., APRIL, 1905.

We are frequently in receipt of letters from collectors and beginners lamenting the constant changes in the names of insects, principally generic, and we desire to say a few words to them that may be of interest. They appear to be laboring under the impression that they are obligated to turn their collections inside out every time a new list appears but every such idea is entirely erroneous. The species is the unit of classification and if one knows the specific name the rest is attainable. Why should the beginner worry his brains about the never-ending wrangle about nomenclature?

It is bad enough for the systematist to run the risk of getting megalocephalitis over it. Don't change your collection unless it is overcrowded and needs rearranging or you have some good reason for so doing, and even then don't change the names unless it is your desire to do so. If a new list comes out and you don't wish to follow it, wait for the next one which may be more in conformity with your own ideas. In a formative study like entomology changes in nomenclature are inevitable, but that is no reason for people being on pins and needles and making changes every five minutes. It will be not less than a thousand years before the question of nomenclature will be finally settled, as it will take that long to describe all the species of insects in the world; therefore why worry about it?

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

CHANGE OF ADDRESS.—After this date correspondents will kindly address all mail matter, packages, etc., to my residence, *Montclair, N. J.* —W. D. KEARFOTT.

PROF. O. W. BARRETT has for the present left Mayaguez, Porto Rico, and is at Clarendon, Vermont.

A fly and a flea in a flue
Were imprisoned. Now what could they do?
Said the fly: "Let us flee!"
"Let us fly," said the flea—
So they flew, through a flaw in the flue.

—Puck.

DESMIA FUNERALIS Hübner, and variety *subdivisalis* Grote.—With reference to above species and variety, I have examined a large number of specimens in all the collections to which I have had access, and I find that so far as I have examined all the *funeralis* specimens are males, and all the *subdivisalis* specimens are females; if this is correct, which I have no reason to doubt, then *subdivisalis* will have to drop out as a variety and simply become a synonym. Shall be pleased to be corrected in this if I am in error.—FRANK HAIMBACH.

Doings of Societies.

Readers of ENTOMOLOGICAL NEWS will probably be interested to know that small as is the Territory of Hawaii, it maintains three staffs of official entomologists. The oldest of these, in reference to years of existence, is the Entomological Division of the Board of Commissioners of Agriculture and Forestry, dating from the fall of 1893, when Mr. Albert Koebele, of *Vedalia cardinalis* fame, was engaged to carry on this work. Besides Mr. Koebele, the work of this office is now attended to by Messrs. Alexander Craw, Jacob Kotinsky and C. J. Austin. Next in order comes the U. S. Experiment Station of Hawaii with Mr. D. L. Van Dine as its official entomologist; and last in order of organization, but first in the number of entomologists it employs, is the Entomological Department of the Hawaiian Sugar Planters Experiment Station. Besides the

partial services of Messrs. Craw and Koebele, it employs Messrs. R. C. L. Perkins, G. W. Kirkaldy, F. W. Terry, O H. Swezey and Mrs. O. H. Swezey, entomologists' artist. All these offices are located in the outskirts of the city of Honolulu, on the Island of Oahu, almost within shouting distance of each other.

In the order given above, the first office devotes its attention principally to inspection work for the exclusion of undesirable pests, and the introduction of beneficial insects. Mr. Van Dine in the second office carries on work of general Economic Entomology as it is practiced in the States. The third office, superintended by Mr. Perkins, devotes its attention to entomological problems in sngar cane fields solely. Needless to say that much creditable work is accomplished by each of the stations, and, entomologically at least, Hawaii is well safeguarded. For this entomologicai activity, much credit is due to a very energetic member of the Territory Board of Commissioners, Mr. W. M. Giffard, himself an enthusiastic insect collector of no mean proportions.

This small but enthusiastic band of entomological workers together with others interested, met on January 26th last and organized The Hawiian Entomological Society. A constitution was adopted, and the following officers chosen : President, Mr. R. C. L. Perkins ; Vice-President, Mr. Alexander Craw; Secretary–Treasurer, Mr. Jacob Kotinsky. Mr. Albert Koebele was elected first honorary member in consideration of his valuable entomological services to this Territory.

The second regular meeting of the Society was held in the Library of the Board of Agriculture and Forestry on February 9, 1905 ; eight members present, Mr. Perkins in the chair. The secretary read a communication from Mr. Kirkaldy who is convalescing at the local hospital after an operation, the result of a serious accident last spring. Brother Matthias Newell, of Hilo, was elected honorary member. Mr. Kotinsky read the prepared portion of his paper on the "History of Economic Entomology in Hawaii." This paper was thoroughly discussed by all present, and many points of local interest were brought out in course of this discussion. Mr. Per-

kins stated that *Sphenophorus obscurus*, which occurs in papias, cocoanuts and Royal palms, besides sugar cane, was known upon these Islands in 1865, and might have been introduced many years previously. He also stated that *Neda abdominalis* was affected by the Braconid parasite (*Centistes americana* Riley,) which is so destructive to *Coccinella repanda*, before the latter was brought by Koebele.

The next paper was "Entomological and Other Notes on a Trip to Australia," by R. C. L. Perkins. In this Mr. Perkins recounted his and Mr. Koebele's experiences during their last entomological expedition to Australia in search of a parasite of the sugar cane leaf-hopper (*Perkinsiella saccharicida.*) These notes comprised observations on many insects, birds and forests. Mr. Giffard exhibited specimens of *Chalcolepidius erythroloma*, 44 of which were collected during Sundays of a couple of months from one Koa tree in a row of about eight or nine lining the road to Mt. Tantalus. Mr. Terry exhibited a living pair of *Neda testudinaria* which came here from Australia on December 13th. The female began to lay eggs on the 15th, and has since deposited 32 batches comprising 897 eggs. She apparently is still capable of laying a good many more.

At 10 p. m. the Society adjourned.

JACOB KOTINSKY, *Secretary-Treasurer.*

A stated meeting of the Feldman Collecting Social was held February 15, 1905, at the residence of Mr. H. W. Wenzel, No. 1523 South Thirteenth Street, Philadelphia. Twelve members were present.

The death of Professor A. S. Packard, of Brown University, of Providence, R. I., was announced, as was also the death of Dr. Prime, of New York City. Dr. Prime was a brother of Mrs. Slosson; he took a great deal of interest in entomology and was identified with a number of scientific and other soceties.

A letter was read from Dr. Philip P. Calvert, accepting his election to honorary membership.

Mr. H. W. Wenzel exhibited pieces of wood showing the work of Scolytidæ, and one piece showing the work of *Am-*

brosia beetles in swamp maple; the species is *Xyleborus pubescens* of which the females are wingless. Mr. Wenzel remarked that when the imago enters it leaves a stain which renders the wood useless for the cabinet-maker. The males of this species are predominant. Another species which was quoted is *Hypothenemus dissimilis*, found in terminal twigs of oak, where they pupate in the pith near the terminus of twigs, lying as peas in a pod. In the same galleries were found the parasites on the above species belonging to the family Proctotrypidæ.

Mr. Wenzel further remarked that on February 13th he took a number of specimens of *Hylesinus aculeatus* under the green bark of ash in Philadelphia.

Mr. Harbeck spoke of taking a number of interesting small species of Diptera by sieving.

Mr. Daecke spoke of characters in the classification of aerial and pedestrian Diptera, and of color and stripes as being only a matter pertaining to the internal structure.

FRANK HAIMBACH, *Secretary*.

Meeting of the Entomological Section, Chicago Academy of Sciences, held January 19, 1905, at the John Crerar Library. Eight members present. Minutes of the November meeting were read and approved. No meeting was held in December as no quorum was present.

The report of the Honorary Curator was read by the Recorder. It included a list of acquisitions to the Entomological Collection during 1904, the totals being as follows:

Lepidoptera	64
Coleoptera	1324
Hemiptera	255
Orthoptera	24
Neuroptera	15
Diptera	282
Hymenoptera	138
Myriopoda	1
Total	2103

The election of officers resulted as follows: Chairman, W. E. Longley; Recorder, Alexander Kwiat; Honorary Curator,

A. B. Wolcott; Executive Committee, John L. Healy Wm. J. Gerhard and A. Kwiat.

Chairman W. E. Longley then read his report of the past year's work of the Entomological Section and its members. This consisted largely of a list of the rarer insects captured in the so-called Chicago area. They were:

COLEOPTERA.

Cychrus lecontei *Dej.* Two specimens ♂ and ♀ were taken within 100 feet of each other in early spring in deep damp timber at Bowmanville.

Leptinus testaceus *Mull.* One specimen of this rare blind beetle was taken from a mouse nest at Clarke, Indiana.

Coccinella transversoguttata *Fab.* This is a rare northern species and only one specimen was taken, on the beach of Lake Michigan.

Sphæridium scarabæoides *Linn.* Quite a few specimens were taken near Lake Michigan on October 9th. Heretofore not reported farther west than Pennsylvania. It is found in Europe.

Clerus quadrisignatus *Say.* One example of this southern species was taken at River Forest on dead hickory.

Mezium americanum. One specimen taken by Mr. Kwiat at Edgebrook. It is cosmopolitan but apparently very rare on this continent. Its peculiar appearance may account for this scarcity as it greatly resembles a small red Arachnid.

Lema cornuta and Lema collaris. Taken at Clarke, Indiana.

Chrysomela auripennis. At Hessville, Indiana.

Phyllotreta armoracinæ *Koch.* Two specimens taken on the Lake beach June 2nd. This European insect is supposed to have gained a foothold in this country during the Columbian Exposition. It has been reported from Iowa, and Mr. Wolcott took a single specimen at Bloomington, Illinois, several years ago.

Physonota unipunctata *Say.* One specimen was taken at Hessville, Indiana, in early spring. It is a strikingly beautiful species and evidently very rare as it is seldom mentioned in Coleopterous literature.

Zonitas atripennis *Say.* Is commonly found on the great plains. One specimen was taken by Mr. Kwiat at Hessville, Indiana.

Mr. Liljeblad reported the following:

Cincindela purpurea, from Highland Park on the North shore.

" lecontei, from Fort Sheridan also on the North shore.

Lebia bivittata, from Fort Sheridan.

Notoxus serratus, from North Evanston on the North shore.

Acmæops bivittata and numerous color varieties from Fort Sheridan.

" nigripennis, from Fort Sheridan and Glen Ellyn, which lies almost twenty miles west of the lake.

Byrrhus americana, from Fort Sheridan

Cytilus sericeus, from Fort Sheridan.

Oberea bimaculata, from Fort Sheridan.

Zonitas bilineata, from Palos Park, which lies twenty miles southwest.

Mycotretus sanguinipennis, Palos Park.

Ceratoma caminea, from Palos Park.

Phymaphora pulchella *Newm*, from Highland Park.

Mr. Wolcott reported the capture of: Carabus meander *Fisch.;* Omophron nitidum *Lec.;* Omophron americanum *Dej.;* Badister pulchellus *Lec.;* Chalænius niger *Rand.;* Chalænius purpuricollis *Rand.;* Oodes fluvialis *Lec.;* Agathidium oniscoides *Beauv.;* Lomechusa cava *Lec.*, host the black carpenter ant; Cucujus clavipes *Fab.;* Languria gracilis *Newm.;* Hololepta fossularis *Say.;* Dicerca asperata *Lap.* and *Gory.;* Agrilus acutipennis *Mann.;* Calopteron terminale *Say;* Odontæus filicornis *Say;* Mecynotarsus candidus *Lec.*, found on white lake sands; Cryptocephalus guttulatus *Oliv.;* Blapstinus interruptus *Say;* Eurymycter fasciatus *Oliv.;* Odonota hornii *Smith*, an intermediate form between this species and dorsalis.

Mr. Liljeblad also reported the following Coleoptera from McGregor, Iowa, at which place he attended the field meeting of the Academy of Sciences: Pyrochroa flabellata, Cistela variabilis, Cupes concolor, Penthe pimelia, Lucanus dama, a diminutive specimen only ⅞ of an inch long.

HYMENOPTERA.

Mr Gerhard reported the capture of a male *Pelecinus polyturator*. This is considered quite a rarity.

LEPIDOPTERA.

Terias mexicana. A southern butterfly; was reported from Chicago, Hessville and Lake Geneva, Wis.

Lycæna lygdamus. A number of fresh specimens from Palos Park, early in May, by Messrs. Kwiat and Liljeblad.

Lycæna scudderi. Only one specimen, at Hessville.

Amblyscirtes samoset. One specimen taken by Mr. Liljeblad.

Crocota læta. Several specimens taken at Edgebrook, Hessville and Palos Park.

Arctia vittata. Taken at Palos Park.

Charadra deridens. Two taken at light by Mr. Beer.

Acronycta lithospila. One taken at light by Mr. Beer.

Polygrammate hebraicum. Two or three taken at Hessville.

Leptina doubledayii. One specimen taken at Hessville, by Mr. Kwiat.

Ulolonche modesta. Several from Hessville and Clarke, Ind.

Hydrœcia purpurifascia. Quite a number were taken at Hessville.

" rutila. Taken at light by Mr. Beer.

" marginidens. Taken at light by Mr. Beer.

" limpida. Two taken at light by Mr. Beer.

Hypocala hillii. Several were taken at lights in various parts of the city late in the fall.

Anchocelis digitalis. Several taken at light by Mr. Beer.

Schinia tertia. One specimen taken at light by Mr. Krneger.

Plusia selecta and Plusia ampla. Were taken at light by Mr. Krueger.

Euherrichia mollissima. Several were taken at Hessville.

Latebraria amphipyroides. One specimen of this large southern moth was taken at sugar at Edgebrook, by Mr. Vollbrecht.

Thysania zenobia. A very good specimen was taken in a residence portion of the city.

Nerice bidentata. Was taken at Edgebrook.

Pheosia dimidiata and Lophopteryx elegans. Were taken at Hessville.

Geometridæ reported were:

Acidalia purata. From Hessville.

Aspilates coloraria. From Hessville and Palos Park.

" liberaria. From Hessville and Fort Hamilton.

Endropia madusaria. From Clarke and Hessville.

" marginaria. " " " Palos Park.

" obtusaria. " " " Edgebrook.

Plagodis serinaria. From Palos Park

Eubyia quernaria. From Palos Park and from Edgebrook.

Lozogramma detersata. From Hessville

Eois demissaria. From Hessville.

Cinglis purata. From Hessville.

Cochlidion rectilinea and Kronea minuata. Were reported as new, from Hessville.

Cossus centerensis. Was taken at Hessville and Clarke, Ind.

Prionoxystus macmurtrei. Was taken at Palos Park and at Edgebrook.

Of Micro-Lepidoptera a large number were taken, many of them new to local collections. Most of them are unfortunately undetermined, but the following are deserving of mention.

Scirpophaga perstrialis. Two specimens at Hessville.

Titanio helianthialis. A number of specimens at Hessville.

Perispasta cæculalis. Two at Palos Park.

Cindaphia bicoloralis, Galasa rubidana, Schœnobius tripunctellus, Pseudoschœnobius opalescalis, Eucosma giganteana, Archips semiferāna, Archips fervidana.

Mr. Kwiat reported the successful breeding of *Crocota brevicornis* through two broods, securing quite a number of specimens showing considerable variation. He bred two males of *Crocota opella* from eggs which were sent him by Mr. Henry McElhose from St. Louis. Also *Arctia vittata* through two broods securing fairly constant forms. He expects to continue his study in these genera.

Most of the above species, both Coleoptera and Lepidoptera, were exhibited at the meeting by Messrs. Wolcott, Liljeblad,

Longley and Kwiat. The greater part of the Lepidoptera mentioned had not been reported from the Chicago area heretofore, which is the more surprising, as the concensus of opinion was that the season had been a very poor one. No records of Coleoptera or the other orders have been kept.

ALEXANDER KWIAT, *Recorder.*

A meeting of the Entomological Section of the Chicago Academy of Sciences was held February 16, 1905, at the John Crerar Library. Ten members present.

The topic for the evening was a discussion of "Variation in Tiger Beetles" by Mr. V. E. Shelford of the University of Chicago. Mr. Shelford has been studying these beetles for several years and has succeeded in gathering a large number of species and specimens from all parts of the world, paying more particular attention, of course, to Boreal American forms. Referring to taxonomic characters he found that color and color patterns, which have heretofore been used by prominent entomologists, are of little value, owing to the great amount of variation. The distinction between "thorax marginate" and "thorax not marginate" is also of little value as even this feature is variable. In his opinion, pilosity and the sculpture of the thorax are the best characters to work upon, and herein he is supported by Dr. Horn, of Berlin, who is using pilosity almost entirely in his forthcoming work on the group.

Mr. Shelford exhibited a chart showing various types of maculation and a number of the beetles, which showed the variations existing among the species. These variations were often geographical, but it seems that in many cases, almost all the different forms of a species could be taken in one locality while elsewhere only one or perhaps two forms were to be had.

There was some discussion among the members on this subject and also about a specimen of *Arctia virgo* exhibited by Mr. Beer which had yellow instead of red secondaries and abdomen.

Mr. Shelford was given a vote of thanks, whereupon the meeting adjourned.

A. KWIAT, *Recorder.*

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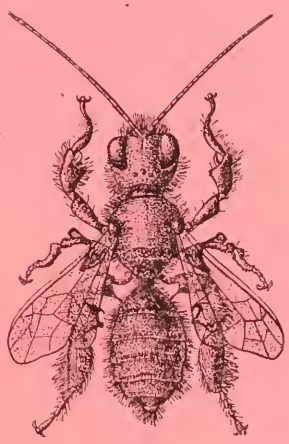

Cryptohalictoides spiniferus Viereck.

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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. MAY, 1905. No. 5.

CONTENTS:

Two New Species of Aphodius.

By H. C. Fall.

The two species of *Aphodius* described below have been taken in numbers by Dr. Blaisdell and Mr. Knaus respectively. They deserve to be more generally known, and as a preliminary step to their distribution the following diagnoses have been drawn up and their relationship to previously described forms indicated. I take pleasure in dedicating each to its discoverer.

Aphodius blaisdelli n. sp.

Oblong, black or dark castaneous, under side slightly paler, legs castaneous. Head not tuberculate, finely punctate with intermixed coarser punctures, not at all rugose; clypeus broadly emarginate, rounded each side; genæ prominent, subrectangular. Prothorax wide, only slightly narrowed toward the base, sides broadly arcuate, hind angles obtuse but rather well defined, basal margin bisinuate each side, marginal line deep and entire, disc sparsely punctate with coarse and fine punctures intermixed. Elytra oblong, scarcely narrowed at base, humeri slightly dentiform, striæ rather fine, closely rather finely punctate, intervals nearly flat on the disc, becoming strongly convex at apex; interstitial punctuation minute and sparse. Body beneath alutaceous and somewhat dull, feebly but numerously punctate, mesosternum densely

punctate, carinate between the coxæ. Hind femora finely alutaceous and sparsely punctate over the entire surface. Spur of anterior tibiæ stout and strongly arcuate apically in the male, more slender and nearly straight in the female; basal joint of hind tarsus slightly longer than the next three. Length 6-7¼ mm.

Described from a good series of specimens communicated by Dr. F. E. Blaisdell, who took them on November 24th from a wood rat's nest in the Alhambra Valley, Contra Costo County, California.

This is the species referred to by Dr. Blaisdell in the report of the proceedings of the fourteenth regular meeting of the Pacific Coast Ent. Soc. as *A cribratus*.* The entire catch of ninety-six specimens was taken "in a clump of earth at the bottom of the nest, wet with excrementitious fluids, and no larger than a double fist. The larvæ also were taken."

A careful comparison with the other members of Horn's "Group G," to which the present species belongs, shows that it is unquestionably distinct and differs from all of them more than they do from each other. By Horn's table it would fall with *cribratus* because of the simply emarginate clypeus, but it differs from this, and *nevadensis* and *gentilis* as well, by the smooth front, more quadrate prothorax with better defined hind angles and well marked exterior basal sinuation, the alutaceous and more strongly numerously punctate hind femora, and the longer basal joint of the hind tarsus, this being subequal in length to the three following in *gentilis* and *cribratus*, and distinctly shorter than the three following in *nevadensis*. In the dual pronotal punctuation *blaisdelli* agrees with *nevadensis*. It is not unlikely that the present species may be found mixed with *cribratus* in collections; if so, the above distinguishing characters will enable it to be readily separated.

Aphodius knausii n. sp.

Moderately elongate, slightly broader posteriorly, pale yellowish testaceous, shining, disc of thorax irregularly nebulously infuscate, elytra with a short fuscous stripe on the fifth interspace near the base, a common transverse spot just before the middle reaching to the third stria, and usually extending somewhat forward on the third interspace; markings frequently faint or nearly obsolete. Head without trace of tubercles,

* Ent. News, March, 1905, p. 95.

smooth, shining, minutely very sparsely punctulate; clypeal emargination broad and shallow, sides rounded; genæ slightly prominent, obtuse. Prothorax not narrowed in front, sides strongly, evenly arcuate, fimbriate anteriorly; basal angles not defined, basal marginal line strong throughout, the median lobe moderately prominent; surface minutely alutaceous but strongly shining, punctuation rather sparse, intermixed. Elytra slightly wider than the prothorax, humeri not dentate, striæ rather deep, very faintly or scarcely visibly punctulate; intervals convex, each with a nearly regular series of very fine, feeble, distinct punctures. Beneath finely alutaceous and strongly shining, mesosternum not carinate, metasternum very sparsely punctate, ventral segments with a row of rather coarse setigerous punctures along the anterior margin of each, otherwise impunctate. Anterior tibiæ smooth in front, externally tridentate, the terminal tooth normal, the upper tooth small, margin above not crenulate; tibial spurs slender and nearly straight, not differing in the sexes. Length 3-3½ mm.

Taken abundantly at Englewood in Southwestern Kansas by Mr. Warren Knaus.

A rather pretty little species, allied to *phalerioides* and *larreæ*, but smaller than either and differing from both in the elytral markings, the minute or obsolete punctures of the elytral striæ, the partial fimbriation of the side margins of the prothorax, and the ventral punctuation. In both *phalerioides* and *larreæ* the side margins of the prothorax are fimbriate throughout and the ventral segments are irregularly punctate. In *larreæ* the base of the prothorax is broadly evenly arcuate with scarcely a trace of median lobe; there are also sexual differences in the clypeus which do not obtain in *knausii*.

Notes on the Life History of Anthocharis genutia Fab.*

By John A. Grossbeck.

Amongst the first of our New Jersey diurnals to appear in the spring from hibernating chrysalids is the little orange-tip butterfly, *Anthocharis genutia*. This species was considered a rarity—at least in northern New Jersey—and it is only in recent years that the collectors in this vicinity have added it to their collections. It is not at all uncommon on Garret Mountain, Paterson, but seems to be confined to a very limited area. This, however, is accounted for by the fact, that

* Read before the Newark Entomological Society.

the territory inhabited by the insect is especially suitable for the development of the food plant, which is a little Crucifer that grows in the sandy soil on the rocks.

The males are the first to appear, and single specimens may be seen in the latter part of April. They do not become abundant until the 6th or 7th of May, and then an occasional female (about 1 ♀ to every 10 ♂'s) may be seen among them. Between the 10th and 18th of May the females are almost as common—in one instance they were more common than the males; but shortly after the latter date, all disappear suddenly. The first appearance is liable to be retarded by a cold temperature and consequently the dates may be shifted backward a little.

Females were observed depositing eggs May 11th, and the first larvæ hatched on the day following. The egg is cylindrical, broadest at the middle, slightly narrow at the base, and tapering rather acutely at the apex. It is orange in color, and under the power of a ¼-inch objective shows about fifteen vertical ribs, with numerous faint cross ridges between.

The eggs are laid singly on the stem of the food plant *Arabis lyrata*, immediately below the terminal bud of the plant and large plants may have as many as four eggs. This is slightly different from a note published by Mr. Hornig (ENTOMOLOGICAL NEWS, Vol. XIV, p. 252), who says: "As a rule there is only one egg on a plant, although two have been collected on large healthy specimens." The food plant in this instance was *Sisymbrium thaliana*.

From the lot of eggs collected on May 11th, nothing was bred, for as soon as they hatched the young larvæ fell prey to a small black spider which spins its web on the plant. There were several such in the cage which were not noticed until the entire lot of larvæ had been destroyed.

On May 18th I saw an isolated female in the valley, below Garret Mountain, which had evidently wandered from its breeding grounds; it was flitting gently about, stopping at short intervals on a white blossom which was afterwards determined as spring cress (*Cardamine rhomboidea*). A close examination of the blossoms revealed on each an egg tucked beneath, close to the calyx.

On the 19th I made another trip to the Garret Mountain. Judging from the abundance of eggs one week previous, I expected to reap a harvest of the larvæ; but after a half day's hard work I was glad to have eleven specimens. The rarity of the larvæ was easily explained, for on almost every plant was one or more of the little black spiders.

The young larvæ feed on the small tender leaves, but when the seed pods appear, these seem to be preferred, the larva beginning to eat at the tip and moving backwards until it is entirely consumed. When at rest it usually lies on one of the linear leaves and is very well protected by the resemblance. The full grown larva measures about 20–24 mm. in length, is pale bluish green with white spiracles, and has a rather broad mid-dorsal stripe of a yellowish color and a white longitudinal stripe on each side. The body is scantily covered with short, black, bristle-like hairs.

The first larva pupated June 5th. The chrysalis is a very peculiar looking object with the anterior part greatly prolonged and drawn to a point, extending far above the silken girdle. Most of the pupæ were attached to the food plant, but a few were fastened to the sides of the breeding cage. On this same date (June 5th) I gathered on the mountain from the food plant a number of small creamy yellow cocoons of parasites, and on the following day I found two in my cage which seemed to associate the parasite with the *genutia* larva. A small Braconid (*Apanteles pergandei*) emerged June 8th and a number of others two days later. The determination was kindly made by Dr. Ashmead.*

Adult flies from the chrysalids issued in the early part of July; the late appearance was due to abnormal conditions, though all but one specimen out of a dozen pupæ produced perfect imagos.

In the fields the fly is usually distinguished from other *Pierids* by its small size, whiter color and low jerky flight. It seldom, if ever, alights and can be taken easily if approached

* The species is described only in MS. and will appear in Dr. Ashmead's "Monograph of the North American Braconidæ," now in preparation.

cautiously; but if disturbed will give the collector a long chase, always avoiding the net. It rarely rises above four feet from the ground and may be pursued till caught without its rising overhead and soaring away.

Butterflies of Mt. Wilson, Southern Calfornia.

By Fordyce Grinnell, Jr., Palo Alto, Calfornia.

Mt. Wilson is located in the front range of the San Gabriel Forest Reserve, Los Angeles County. It is about forty miles from the Pacific Ocean—on a clear day the ocean is plainly visible from the summit, and the view over the surrounding country and the Mojave Desert to the north, is magnificent. It is reached by two picturesque winding trails about nine miles in length. The elevation is about 5886 feet above sea level, and from the floor of the valley it rises about 3000 feet. The city of Pasadena is located at its base.

It is probable that more insects have been collected on Mt. Wilson than any other mountain in California. At Heninger's Flats, quarter way up the mountain, is the largest forestry station in Southern California. On the summit is being constructed one of the largest astronomical observatories in the world. Two delightful camps are here, one on the summit, and the other a little below the top. In 1890 the Harvard telescope was here, which was later moved to South America.

The vegetation is varied and interesting and of late has been quite thoroughly investigated, many new things having been discovered. This richness of vegetable life is in harmony with the profusion of insects. The whole mountain is covered with an almost impenetrable chaparral, which together with the rugged character of the mountain, makes collecting rather difficult. There are three zones of plant life easily traceable on the mountain, with interminglings. First, the Chaparral Belt, characterized by the abundance of chamisal or *Adenostoma fasciculatum*; second, the Big-cone Spruce Belt, characterized by the conspicuous tree, *Pseudotsuga macrocarpa*, *Arctostaphylos*, *Quercus wislezenii*, and scrub *Quercus chrysolepis*; third, the Pine Belt, characterized by *Pinus lambertiana*, *P. monticola*, *Liboce-*

drus decurrens, *Quercus chrysolepis*, and *Conothus divaricatus*. The zones represented are the Lower and Upper Transition.

The butterflies listed below have been mainly the results of the writer's many collecting trips to the summit, for several years past, in May, June, July and August. The list is surely not complete, but will serve as an incentive for more and better work in the future. Earlier collecting would quite surely add species.

The scenery is so grand and inspiring, the air so clear and bracing, nature so joyous and absorbing, that as each summer vacation approaches, an irresistable impulse is felt for another quiet, lone intercourse with this grand old monarch of time.

1. *Danais plexippus* Linn.—A few found on the summit several years ago, around the *Asclepias* blossoms.

2. *Danais berenice* Cram.—Rare. Only occasionally seen.

3. *Argynnis* sp., probably *semiramis*, noted on the summit several years ago.

4. *Melitæa chalcedon* Db. & Hew.—Very common. Larvæ found on *Mimulus*.

5. *Melitæa gabbii* Behr.—Not common in June.

6. *Melitæa wrightii* Edw.—Two specimens taken during the last two summers.

7. *Phyciodes mylitta* Edw.—Frequent in Santa Anita canon.

8. *Grapta satyrus* Edw. Occasional.

9. *Vanessa antiopa* Linn.—Only occasionally seen.

10. *Pyrameis caryæ* Hbn.—Common on all the mountains.

11. *Pyrameis cardui* Linn.—Common everywhere.

12. *Junonia cœnia* Hbn.—Common and very pugnacious.

13. *Limenitis lorquini* Boisd.—Common especially in the canons.

14. *Heterochroa californica* Butl.—Common around the *Quercus chrysolepis*, to the summit.

15. *Cœnonympha californica* Db. & Hew.—Common and very variable.

16. *Cœnonympha ochracea* Edw.—Not rare; especially in June–August. Recorded under the name of *brenda*.

17. *Satyrus silvestris* Edw.—Common in the chaparral belt. Variable and probably more than one species.

18. *Lemonias virgulti* Behr.—Common in the chaparral belt, especially around *Eriogonum fasciculatum*, on which it no doubt feeds.

19. *Thecla grunus* Boisd.—Common around *Quercus chrysolepis*, upon which the larvæ and pupæ occur.

20. *Thecla californica* Edw.—Common in the upper part of the chaparral and pine belt.

21. *Thecla dryope* Edw.—Common around patches of manzanita in the pine belt.

22. *Thecla spadix* Hy. Edw.—Exceedingly local and confined to the lower part of the Big Cone Spruce Belt in all the mountains.

23. *Thecla sæpium* Boisd.—Common in all the mountains in June.

24. *Thecla adenostomatis* Hy. Edw.—Common in the chaparral belt.

25. *Thecla iroides* Boisd.—Occasionally seen but more common in the valley.

26. *Thecla dumetorum* Boisd.—Occasionally taken in Santa Anita canon.

27. *Chrysophanus arota* Boisd. — Common in early July around the scrub oaks locally in the chaparral belt.

28. *Chryosphanus gorgon* Boisd.—Not common.

29. *Lycæna icarioides* Boisd.—Common on the summit around *Lupinus* sp.; this will probably have to be separated under another name, with further study.

30. *Lycæna polyphemus* Boisd.—Common in May. This group is poorly understood and needs much study. More species will probably be added.

31. *Lycæna sonorensis* Felder.—A few taken in May in the Santa Anita canon.

32. *Lycæna battoides* Behr.—Not common.

33. *Lycæna pseud. piasus* Boisd.—Common everywhere.

34. *Lycæna exilis* Boisd.—Common in July.

35. *Lycæna marina* Reak.—Not rare in June.

36. *Lycæna acmon* Db. & Hew.—Common everwhere. Probably more than one species under this name.

37. *Pieris protodice* Bd. & Lec.—Common, also the variety *vernalis*.

38. *Pieris rapæ* Linn.—Common.

39. *Nathalis iole* Boisd.—Taken in numbers several years ago, near Heninger's Flats.

40.—*Anthocharis sara* Boisd.—Common.

41. *Anthocharis ausonides* Boisd.—Occasional.

42. *Colias eurydice* Boisd., and var. *amorphæ* on Heninger's Flats.

43. *Colias cæsonia* Stoll.—Two ♀ specimens taken. These show a curious aberration ; the black marginal band is broken into a series of yellow spots. On the secondaries, black scales are distributed along the outer margin.

44. *Colias eurytheme* Boisd.—Common.

45. *Colias harfordii* H. Edw.—Common in July in the canons.

46. *Papilio rutulus* Boisd.—Occasionally soars up the mountain sides from the canons below.

47. *Papilio eurymedon* Boisd.—With the last.

48. *Papilio indra* Reak.—A few specimens taken. Rare and difficult to catch.

49. *Pamphila nemorum* Boisd.—Common in May and June.

50. *Pamphila agricola* Boisd.—Not common.

51. *Pamphila campestris* Boisd.—Common.

52. *Pamphila phylæus* Dru.—Common.

53. *Pamphila melane* Edw.—Very common in June.

54. *Pyrgus ericetorum* Boisd.—3 males and 5 females taken occasionally in the upper portions of the chaparral belt.

55. *Pyrgus tessellata* Scud.—Common.

56. *Nisoniades propertius* Lint.—Common.

57. *Nisoniades callidus* Grinnell.—Very local and rare on the summit, altitude 5886 feet.

58. *Nisoniades tristis* Boisd.—Not common.

In a country which is undergoing such a change as this, in the way of material progress, the natural features of the land are becoming slowly eradicated, and so thoroughly reliable local lists will be extremely valuable to the future students.

Prof. W. L. Tower, of the University of Chicago, sailed from New York, on April 8th, for Mexico, where he will spend a year's leave of absence in entomological investigations.

A New Milesia from Arizona with Notes on Some Wyoming Syrphidae.

By Roy L. Moodie, The University of Kansas, Lawrence.

The Wyoming Syrphidæ were collected from June to September of the past summer in the central portion of Fremont County, Wyoming, near the town of Lander, which is situated near the eastern base of the Wind River Mountains. The altitudes varied from five thousand to eight thousand feet. The character of the country is that of most of the Western States, dry and but sparsely settled. Very little vegetation grew except along the banks of the streams. Since few, if any, Diptera have been reported from this region I venture to offer these notes on the Syrphidæ as a contribution to the geographical distribution of the group.

To Doctor F. H. Snow, of the University of Kansas, my warmest thanks are due for permission to study and describe the new *Milesia*. Dr. Charles F. Adams has assisted me greatly by his kind advice and interest in my studies. He has confirmed most of my identifications.

Milesia mida sp. nov.

Male.—Length 16–18 mm.—Face light yellow, thickly covered with similar pollen and pile, concave below the antennæ. Just above the base of the antennæ there is a small triangular spot. The antennæ and aristæ are entirely reddish brown, in profile situated in the middle of the head. Cheeks narrow with a black spot near the orbit. Frontal triangle same as the face. Vertical triangle black, yellow before the ocelli. Eyes bare, in the male contiguous for a short distance. Occiput black, posterior orbits broadly yellowish pollinose. Thorax black, opaque, with light yellow markings, as follows: A pair of median stripes gently convergent posteriorly and extending but little beyond the middle of the thorax; humeral callus oval, slightly elevated, yellow, one millimeter in width, seperated from the adjacent median stripe by a narrow black line; near the posterior end the median bands are joined by a yellow cross-band which is interrupted between the median bands and extends laterally to the base of the wings; posterior margin of the thorax covered by an entire yellow band; postalar callus yellow. Scutellum black with its posterior margin yellow. Pleura on the anterior border from the humeri to the base of the coxæ, black. Meso-pleura with a vertical, sterno-pleura with an oval nearly contiguous, spot. Tegulæ and halteres yellow. Abdomen: First segment black; second segment black with a yellow

cross-band which begins broadly on the anterior lateral edge of the segment and ends near the middle, where it is broadly interrupted by the black of the segment, the two halves of the band slightly arcuate. On the posterior angles of the segment are two oval reddish yellow spots; third segment black with a bright yellow cross-band, which is sometimes sub-interrupted by a narrow black line. Posterior edge of the segment crossed by a reddish yellow band; fourth segment same as the third, except that the posterior reddish yellow band forms the greater part of the segment, is dilated in front in the middle and is covered with reddish yellow pile. Venter: Anteriorly of alternate bands of black and yellow, posteriorly black. Legs: first two pairs of coxæ and all of the trochanters black, with black pile; third coxæ yellow with yellow pile; femora reddish yellow and black, the black with a slight greenish reflection; middle tibiæ and tarsi and hind tibiæ and tarsi wholly light yellow; front tibiæ and tarsi black, the tibiæ reddish yellow at the base; pulvilli yellow; ungues yellow with black tips.

Hab.—Arizona.

In structure this species is very similar to *Milesia ornata* Macq, but may be readily distinguished by its smaller size, darker color and the very different arrangement of the bands on the thorax and abdomen and also by the black anterior tibiæ and tarsi which in *M. ornata* are reddish yellow. *Milesia pulchra* Will. from Guatemala is also very similar in structure to *M. ornata*, and it is thus evident that the genus *Milesia*, as now known, forms a very homogeneous group.

Five specimens of the species *M. mida* were collected by Dr. F. H. Snow during his expedition to Oak Creek Canon, about twenty miles south of Flagstaff, Arizona. Altitude 6,000 feet. These specimens now form a part of the Entomological collections belonging to the University of Kansas.

The following table will be of use in more readily separating the species ot the genus *Milesia*:

1. Anterior tarsi black, posterior ones yellow . . . . . **mida** sp. nov.
   Anterior and posterior tarsi, either yellow or black . . . . . 2.
2. Anterior and posterior tarsi yellow . . . . . **ornata.** Macquart.
   Anterior and posterior tarsi black . . . . . **pulchra.** Williston.

The most abundant of the Diptera in Wyoming last summer were the Asilidæ, Bombyliidæ and Tachinidæ. The rarest were the Syrphidæ and the Conopidæ. Only twenty-five specimens of the latter family were taken all summer, and not until the latter part of August were many Syrphidæ observed.

Arctophila flagrans O. S.

Four specimens, three males and one female, of this beautiful insect were taken at a spring in the mountains. The specimens were all taken one noon and no more were seen during the rest of our stay there. The spring is situated high up above the canon of the Big Popo Agie River at an altitude of 7,200 feet and issues from the side of Prospect Peak. The insects captured were shy and difficult to take. This species has been reported from Colorado, New Mexico and British Columbia (Osburn).

Baccha lemur O. S.

One specimen taken in August on flowers of the *Cleome integrifolia* with other small Diptera and Hymenoptera. Osten Sacken records this species from California, Nevada, Fort Bridger, Wyoming and N. Mex. (Western Diptera, p. 334).

Catabomba pyrastri.

Two specimens of this species were taken hovering in the air under juniper trees, at an altitude of 6,000 feet, during July, near Lander.

Eristalis brousi Will.

Two male and four female specimens agree very well with the descriptions and with specimens in the Kansas University collection. In one of the males the mid-dorsal band of the abdomen occupies rather less than a third of the second segment, while in the other male specimen the band occupies more than a third. In the latter specimen the sides of the band are not straight but rather strongly curved. All of the females lack entirely the opaque spots on the third and fourth segments. The female specimens differ also considerably in size from specimens collected in Colorado. The Wyoming specimens measure 14 mm. and the Colorado ones less than 11 mm.

Eristalis hirtus Loew.

Five males and four females of this species show scarcely any variation except in one case, that of a rather diminutive female, which lacks entirely the yellow of the second segment. This species is very closely related to *E. latifrons*, but may readily be distinguished by the plumose arista in *E. hirtus* and the bare arista in *E. latifrons*.

Eristalis latifrons. Loew.

Several specimens of this species were taken during July and August. I can discern no variation between the Wyoming specimens and ones taken near Lawrence, Kansas.

Eristalis montanus Will.

One male specimen captured on Beaver Creek, in September, agrees both with the description and with the type specimen; also a single male from eastern Wyoming. Osburn reports this species from British Columbia.

Eristalis flavipes Walker.

One male specimen of this species taken on Beaver Creek, in September, differs but little from the description given by Williston in his Synopsis, p. 168. The thorax is crossed by a broad black band and the first four segments of the abdomen are covered with pile of a reddish hue. The tibiæ are more red than brown. Two specimens in the Kansas University collection show marked variation from the Wyoming specimen and from each other. In both of these specimens the black stripe is entirely wanting on the thorax and the abdomen in neither specimen shows a reddish tinge. In one specimen, locality not given, the abdomen is wholly covered with dense yellow pile. The other specimen shows a remarkable variation. In general appearance it resembles to a great degree *Mallota cimbiciformis* Fall, but in structure it is essentially an *Eristalis*. The abdomen is entirely black with black pile, except that the first segment has a small amount of yellow pile.

Hab.—Wyoming, Wisconsin, and Williston gives Canada. New England, Washington Territory and Minnesota (Loew).

Eupeodes volucris O. S.

Two males and five females differ only in size from specimens taken in Colorado and Arizona. One male measures only 6 mm.

Helophilus latifrons Loew.

This species was not noted until the latter part of August, when numerous specimens of both male and female were taken feeding on flowers of *Artemesia* and *Solidago*. The Wyoming specimens uniformily have the median dorsal stripe of the

abdomen wider, otherwise there is little variation from specimens taken near Lawrence.

Helophilus similis Macq.

This species is represented by numerous specimens of both sexes. They were taken in company with the closely allied form *H. latifrons*.

Helophilus obscurus Loew.

A single specimen of this species agrees with the description, save that there is no brown ring on the hind tibiæ, the abdomen is more shining and some of the cross-bands are not interrupted.

Paragus bicolor Fabr.

But one specimen of this little Syrphid was taken this summer. The specimen, a male, is smaller than the Kansas specimens and the abdomen shows more black. Length 4 mm.

Syrphus arcuatus Fall.

One female specimen is lighter in color and smaller than a specimen from Arizona. The occiput is rather more pilose, the hind femora more extensively black, and the yellow spots on the fourth segment are only slightly arcuate.

Syrphus ruficaudus Snow.

One female specimen measuring 10 mm., taken at the base of Prospect Peak at an altitude of 7,200 feet, agrees very well with Snow's description (K. U. Quart. '92). The abdominal band on the third segment is scarcely at all subinterrupted and there is a more noticeable reddish cast to this segment than obtains in the type specimens. The legs in my specimen are entirely reddish yellow and show no signs of black. Taken in August.

Syrphus montivagus Snow.

One female specimen measuring 10 mm. agrees with the description and with the type specimens. Some of the types show more red on the fourth segment than my specimen has. The cross-band is entirely interrupted in the Wyoming specimen and the spots are more arcuated than is the case with any of the type specimens. Among the types I find a

few in which the cross-bands are entire. The facial tubercle is a little darker in the specimen from Wyoming, and the legs are entirely yellow, with the exception of the tarsi, which are reddish. So far as I am aware the female of this species has never before been reported. All of the type specimens are males. Taken in August on Baldwin Creek.

Syritta pipiens Linné.

This was the commonest of the Syrphidæ, found everywhere up to an elevation of 7,500 feet. Collected from June to September.

Fleas and Disease.

By C. F. Baker.

Estacion Agronomica, Santiago de las Vegas, Cuba.

No less epoch-marking than the announcements first made of the connection of mosquitoes with malaria and yellow fever is the news which now comes through Dr. Ashmead, the leprosy expert of New York, that Dr. Carrasquillo, of Bogota, has found the bacillus of Hansen in the intestinal canal of fleas. The rapid progress of leprosy after introduction into some of our flea-invested southern cities, from local endemicity to alarming epidemicity, is, according to Dr. Ashmead, probably to be credited to inoculation by flea bites.

In connection with the investigation of the relation of fleas to bubonic plague, it has already been shown by the writer (Proc. U. S. National Museum, Vol. XXVII, 1904), that the fleas of rats in the warmer regions of the earth are close relatives of the flea specific to human beings, and thus, far more likely to bite human beings than are the fleas of rats in the colder regions, which are only distantly related to *Pulex irritans*. It is now necessary to know if any of these southern rat fleas—of which there are a number of species—voluntarily bite human beings.

These investigations, and now the new lines brought into striking prominence by Dr. Ashmead's announcement, make it of first importance that a complete study be made of all the

species of fleas occurring on rats, mice, dogs, cats, and human beings throughout the United States and tropical America, since any well founded medical and bacteriological investigations of the subject must be based on a thorough scientific knowledge of the fleas themselves, just as in the case of the mosquitoes in their relation to yellow fever. The utmost gravity of the possibilities involved not only justify but render imperative a careful and complete survey. The writer has in progress such a work, in continuation of extensive papers on the fleas already published. Residence in the tropics and in a leprosy center, together with the hearty co-operation of Dr. Howard, of Washington, Dr. Lutz, of Sao Paulo, Brazil, Dr. Carter, of the University of Texas at Galveston, and others, has made possible a good beginning. It is hard to see how anything like a complete survey could be made without also the active co-operation of college and medical men in every part of these regions, the Hawaiian Islands, and the tropical regions of the Far East. The simplicity of the apparatus needed (tweezers, small homœopathic vials of alcohol, and several rat traps) and the ease with which material can be gathered from rats, dogs, cats, and human beings, should make possible the ready co-operation of all biologists and medical men, and a hearty invitation is herewith extended to all such and to any other persons interested. As large series as possible of specimens should be taken and full data as to locality, host, etc., should be inserted in every vial. A direct report will be immediately returned for all specimens sent either to the writer or to Dr. Howard, Government Entomologist in Washington, D. C., U. S. A., and full published credit will later be given for every sending.

It will greatly facilitate the rapid progress of the work if entomological, zoological, medical, and pharmaceutical journals the world over will kindly copy this notice.

LAST SPRING I found enclosed in a *cecropia* cocoon between the outer and the inner cover a small moth (?) with the deposit of eggs and the empty cocoon of same. The cocoon of *cecropia* showed two small holes on its side, apparently made from the outside. The larva of *cecropia* never pupated.—WILLIAM WILD, Buffalo, N. Y. (May have been *Varina ornata*) Eds.

Parasitic Hymenoptera of Algonquin, Illinois.—I.

By Wm. A. Nason, M. D.

The subjoined list of the Ichneumonidæ is the first of a series, in which I record as far as is now possible, my captures of the Parasitic Hymenoptera of Algonquin, Illinois. It has proved a very prolific collecting ground for these insect forms as my lists will show.

A short account of the locality will be of value in elucidating the character of this collecting field for exploration. In my notes on a collection, made here, of Micro-Lepidoptera, recently published in the Entomological News,* I stated that the locality has some peculiar faunal relations. But it has local features equally interesting and important biologically. The village is situated in a triangular valley where a small stream enters the Fox River. It is a valley of erosion, bordered by high bluffs which come close to the river banks except in the triangular delta mentioned above. The bluffs are about one hundred and thirty feet above the level of the Fox River, and in many places are wooded with black, red, white and burr oaks, with an occasional bass-wood and maple trees interspersed with hickory and black walnut. Back of the bluffs the country is a typical rolling Illinois prairie.

Algonquin is in the centre of the northern Illinois dairy region, and for this reason the original prairie vegetation and the undergrowth of the woods have been largely destroyed by the numerous herds of grazing cows which exist in this neighborhood. This fact is a prime factor in making this insect fauna peculiar. The food-plants of the species having been largely destroyed by causes stated above, the surviving insects are necessarily those which can adapt themselves to the existing vegetation and physical conditions. And this makes the present lists especially valuable, as during the next ten or twenty years there must result a great modification of the surviving forms of the present fauna and also result in the creation of new forms and a possible new fauna more adapted to the future modified conditions.

* For January, 1905, page 1.

Quite a percentage of the species enumerated were captured in the sweeping net. This method of collection has yielded rich results in low lands, among growths of bushes, edging woods, among clumps of annual and perennial plants in fence corners, and among the varied growths of vegetation along roadside fences and hedges.

Another most prolific field for collection has been the inside of the windows of houses, stores, barns, woodsheds and blacksmith shops of the village. Here I have found many of the same species as in adjoining places where I have used the sweeping net. But I have also found many rare and unique forms which the net did not secure and which were evidently cases where the insects, wandering in pursuit of their natural hosts, were entrapped by the windows.

One of the best collecting places I found to be the leaves and shoots of the box elder (*Negundo aceroides*,) of which there were six trees in my yard. Here, throughout the season of warmth, from March to October, I never failed to find a large series of parisitic Hymenoptera and small Diptera, besides various other insect forms. This species of tree is evidently one which served as an acceptable substitute to a very great variety of insect forms which had lost their original natural food plant.

My records show that the time of occurrence of this class of insects varies immensely. Some species were found almost constantly through the whole season, and were quite broadly distributed, while others occurred only in isolated locations and then only at special limited times. For instance, I found *Arenetra canadensis* Cress., in flight only on two days during my whole course of collection. This was on March 3rd and March 10th—in early spring, when the air was very mild, and yet snow remained a few feet from where the insects were in flight. Another species, *Glypta rufopleuralis* Walsh, I found on April 27 and 28, 1896, on a few twigs of *Negundo aceroides* in my yard. They were in abundance on these dates on this one spot on this single tree, but were not to be found on any of the trees of same kind growing near although carefully searched for. The only other specimens found were three on

windows of my house which were undoubtedly stragglers from the lot just described.

In fact, the collector of the parasitic and smaller Hymenoptera can find an extensive collecting ground almost anywhere. Wherever there is vegetation there are insects and their insect enemies, and abundant material can ever be found to interest and keep busy the active entomologist and student.

The identifications in this list of Ichneumonidæ were made by Prof. Geo. C. Davis, formerly of Michigan Agricultural College and author of a Review of the Ichneumonid Subfamily Tryphoninæ.

ICHNEUMONIDÆ.

ICHNEUMON L.

I. maurus Cress.
Oct. 1, 1893.
4 specimens.

I. viola Cress.
July 23, 1895.
Aug. 8, 1896.
4 specimens.

I. cincticornis Cress.
2 specimens.

I. navus Say.
May 15, 1894.
June 15–17, 1896.
3 specimens.

I malacus Say.
Oct. 2, 1895.
July 6, 1896.
2 specimens.

I. flavicornis Cress.
2 specimens.

I. galenus Cress.
1 specimen.

I. cærulens Cress.
May 26, 1896.
4 specimens.

I. pepticus Cress.
1 specimen.

I. subcyaneus Cress.
Aug. 6, 1896.
3 specimens.

I. azotus Cress.
Sept. 17, 1895.
1 specimen.

I. brevicinctor Say.
July 17, 26, 29, 1895.
10 specimens.

I. extrematatis Cress.
2 specimens.

I. sagus Cress.
1 specimen.

I. jejunus Cress.
2 specimens.

I. sublatus Cress.
July 24, 1895.
1 specimen.

I. sublatus, var. *proximus*.
14 specimens.

I. unifascialorius Say.
June 2, 23, 26, 1896.
July 4, 1894.
Sept. 12, 1893.
26 specimens.

I. brontens. Cress.
1 specimen.

I. helvipes Cress.
June 14, 1894.
June 5, 1895.
7 specimens.

I. consignatus Cress.
1 specimen.

I. vittifrons Cress.
July 21, 1896.
Aug. 22. 1896.
2 specimens.
I. wilsoni Cress.
1 specimen.
I. comes Cress.
Sept. 15, 1895.
Oct. 16, 1895.
10 specimens.
I. lætus Brulle.
July 3, 1894.
July 7, 10, 1895.
Sept. 22, 1895.
Aug. 6, 13, 22, 1896.
14 specimens.
I. lætus, var. red.
1 specimen.
I. lætus, var.
2 specimens.
I. mimicus Cress.
1 specimen.
I. flavizonatus Cress.
2 specimens.
I parvus Cress.
1 specimen.
I. parvus var.
June 28, 1894.
1 specimen.
I. vescus Prov.
1 specimen.
I. jucundus Brullé.
July 16, 1893.
June 4, 1896.
4 specimens.
I succinctus Brullé.
June 4, 1896.
2 specimens.
I canadensis Cress.
1 specimen.
I. paratus Say.
June 13, July 24, 1895.
7 specimens.
I. vulviventris Brullé.
June 3, 13, 14, 1895.
3 specimens.
I. vicinus Cress.
2 specimens.
I. seminiger Cress.
June 21, 27, 1895.
Aug. 13, 1896.
4 specimens.
I. vivax Cress.
Sept. 17, 1895.
1 specimen.
I. longulus Cress.
Aug. 9, 13, 1896.
2 specimens.
I. funestus Cress.
June 4, 1896.
3 specimens.
I w-album Cress.
May 25, 1894.
2 specimens.
I. duplicatus Say.
June 8, 1895.
4 specimens.
I. scitulus, Cress.
3 specimens.
I. scitulus, var.
1 specimen.
I. rubicundus Cress.
Sept. 11, 1894.
4 specimen.
I. soror Cress.
1 specimen.

HOPLISMENUS Grov.

H. morulus Say.
June 19, 1894.
2 specimens.

TROGUS Grov.

T. obsidianator Brullé.
1 specimen.

EURYLABUS Wesm.

E. varufus Davis.
1 specimen.
E. separatus Davis.
1 specimen.

AMBLYTELES Wesm.

A. anceps Cress.
June 10, 1894.
Sept. 17, 1895.
2 specimens.

A. hiulcus Cress.
5 specimens.

A. ornatus Cress.
Aug. 1, 1895.
1 specimen.

A suturalis Say.
Nov. 6, 1895.
2 specimens.

A. tetricus Prov.
1 specimen.

PHÆOGENES Wesm.

P. ater Cress.
June 26, 1894.
Aug. 31, 1894.
Aug. 12, 1895.
7 specimens.

P. discus Cress.
July 4, 1894.
July 31, 1895.
3 specimens.

P. fungor Norton.
June 28, 1894.
June 10, 1896.
Aug. 1, 1895.
3 specimens.

P. ? *hemiteloides* Ash. (Davis.)
June 13, 23, 1896.
July 17, 1896.
3 specimens.

P. ? *missouriensis* Ash. (Davis.)
July 1, 1896.
1 specimen.

P. n. sp. (Davis.)
1 specimen.

P. n. sp. (Davis.)
1 specimen.

CENTETERUS Wesm.

C. tuberculifrons Prov.
1 specimen.

C. n. sp. (Davis.)
July 25, 1895.
1 specimen.

COLPOGNATHUS Wesm.

C. helous.
April 14, 1896.
2 specimens.

HERPESTOMUS Wesm.

H. alternatus (Davis.)
Aug. 8. 1895.
1 specimen.

H. marginatus (Davis.)
Oct. 16, 1895.
1 specimen.

H. n. sp. (Davis.)
Sept. 27, 1895.
1 specimen.

H. n. sp. (Davis.)
July 26, 1895.
1 specimen.

H. orbus Prov.
Aug. 30, 1894.
1 specimen.

EXOLYTUS Forst.

E. aciculatus Davis.
5 specimens.

E. cultus Davis.
2 specimens.

STILPNUS Grav.

S. americanus Cress.
June 2, 15, 1895.
Aug. 27, 1895.
Sept. 8, 15, 22, 27, 1895.
June 8, 1894.
July 7, 1894.
May 21, 1896.
June 4. 1896.
15 specimens.

PHYGADEUON Grov.

P. caudatus Prov.
Sept. 10, 1895.
1 specimen.

P. impressus Prov.
1 specimen.
P. inflatus Prov.
1 specimen.
P. ? *lucens* Prov.
1 specimen.
P. marginatus Prov.
Sept. 4, 1894,
2 specimens.
P. nitidulus Prov.
July 25, 1895.
1 specimen.
P. parallelus Prov.
2 specimens.
P. rotundiceps Prov.
June 24, 1895,
1 specimen.
P. subfuscus Cress.
Aug. 8. 1895.
Oct. 16, 1895.
May 18, 29, 1895.
July 28, 1896.
5 specimens.
P. subspinosus Prov.
1 specimen.
P. vulgaris Cress.
May 24, Aug. 7, 1895.
2 specimens.
P. n. sp. (Davis.)
1 specimen.
P. n. sp. (Davis.)
1 specimen.

CRYPTUS Fabr

C. alacris Cress.
May 20, 1896.
1 specimen.
C. albicollaris Cress.
June 23, 1896.
2 specimens.
C. albitarsis Cress.
1 specimen.
C. americanus Cress.
May 8, June 2, July 3, 1894.
June, July, Aug., Sept., 1895.
22 specimens.
C. apicatus Prov.
Sept. 21, 1894.
1 specimen.
C. brevicauda Ashm.
June 7. 8, 1895.
3 specimens.
C. canadensis Prov.
May 22, 1895.
2 specimens.
C. ? *elongatus* Prov.
June 23, 1899.
1 specimen.
C. incertus Cress.
May 25, 1895.
1 specimen.
C. limatus Cress.
June 18, 1896.
1 specimen.
C. luctuosus Cress.
Aug. 26, 1894.
1 specimen.
C. montivagus Prov.
2 specimens.
C. mundus Prov.
July 8, 1894.
1 specimen.
C. nigricornus Prov.
3 specimens.
C. notatus Prov.
2 specimens.
C. nuncius Say.
2 specimens.
C. ? *perditus* Prov.
June 23, 1894.
Sept. 15, 1894.
Oct. 18, 1894.
3 specimens.
C. persimilis Cress.
Aug. 8, 1894.
May, June, July, Aug., 1894.
June, July, Aug., 1896.
26 specimens.
C. similis Cress.
June 15, 1895.
3 specimens.

C. soror Cress.
1 specimen.
C. vinctus Say.
June 4, 1896.
July 8, 17, 1896.
3 specimens.
C. n. sp. (Davis.)
2 specimens.
C. n. sp. (Davis.)
July 18, 1895.
1 specimen.

MESOSTENUS Grav.

M. gracilis Cress.
June 12, 14, 26, 1894.
July 4, 9, 1894.
Sept. 24, 1895.
7 specimens.
M. thoracicus Cress.
June 13, 1895.
July 26, 1895.
Oct. 5, 1896.
6 specimens.

HEMITELES Grav.

H. aletiæ Riley,
2 specimens.
H. crassus Prov.
Sept. 5, 1895.
1 specimen.
H. humeralis Prov.
May 29, June 9, 1894.
May 7, July 12, 1895.
May 20, June 20, 1896.
54 specimens.
H. syrphicola Ashm.
Aug. 1, 1895.
1 specimen.
H. pallipennis Prov.
July 10, 1895.
1 specimen.
H. n. sp. (Davis.)
1 specimen.
H. n. sp. (Davis.)
1 specimen.
H. utilis Norton.
Aug. 12, 1895.
1 specimen.

ORTHOPELMA.

O. bedelliæ Ashm.
Sept. 19, 1895.
1 specimen.

OPHION Fabr.

O. bifoveolatum Brullé,
2 specimens.
O. bilineatum Say.
May 8, 28, 1895.
April 18, May 12, 1896.
17 specimens.
O. purgatum Say.
July 26, Aug. 1, 1895.
June 15, July 17, 1896.
7 specimens.

EXOCHILIUM Wesm.

E. mundum Say.
June 19, 1894.
9 specimens.

ANOMALON Grav.

A. curtum Norton.
1 specimen.
A. ferrugineum Norton.
April 21, 1894.
June 8, 1894.
3 specimens.
A. nigrorufum Norton.
6 specimens.
A. ? *semirufum* Norton.
May 23, 1895.
1 specimen.
A. rufulum Prov.
2 specimens.

OPHELTES Holmgr.

O. glaucopterus Linn.
July 8, 1894.
1 specimen.

PANISCUS Grav.

P. geminatus Say.
May 8, 1894.
June 3, Sept. 12. 1895.
19 specimens.

CAMPOPLEX Grav.

C. alius Norton.
2 specimens.
C. argenteus Norton.
June 16, 1896.
2 specimens.
C. expertus Cress.
July 7, 1896.
3 specimens.
C. scalarius Prov.
June 26, 1894.
June 4, 1895.
3 specimens.
C. vicinus Prov.
3 specimens.
C. vitticollis Norton.
June 8, 1895.
1 specimen.

LIMNERIA Holmgr.

L. argentea Prov.
June 10, 1896.
1 specimen.
L. argentifrons Cress.
May 15, Oct. 20, 1894.
May 30, Sept. 3, 1895.
May 21, July 21, 1896.
68 specimens.
L. compressa Cress.
June 24, Sept. 15, 1895.
June 2–10, 1896.
7 specimens.
L. conjuncta Cress.
June 4, Sept. 15, 1894.
Aug. 1, Oct. 27, 1895.
12 specimens.
L. dentata Prov.
July 15, 1894.
Sept. 21. 1894.
2 specimens.
L. ductilis Say.
June 21, 1895.
2 specimens.
L. dubitata Cress.
Sept. 2–20, 1895.
May 16–20, 1896.
5 specimens.
L. flavicincta Davis.
June 29, 1895.
1 specimen.
L. flavirista Cress.
June 15, 1895.
June 18, July 21, 1896.
8 specimens.
L. fugitiva Say.
1 specimen.
L. fura Cress.
June 27, 1895.
1 specimen.
L. guignardi Prov.
July 18, 1895.
June 23, 1896.
2 specimens.
L. hostilis Cress.
June 19, Aug. 26, 1894.
2 specimens.
L. marginata Prov.
1 specimen.
L. obscura Cress.
L. oxytus Cress.
May 7, Oct. 16, 1895.
21 specimens.
L. pilosula Prov.
June 15, Aug. 22, 1895.
2 specimens.
L. plena Prov.
May 23, 1896.
1 specimen.
L. rivalis Cress.
1 specimen.
L. rufipes Prov.
1 specimen.
L. subrubida Cress.
Aug. 30, 1894.
May 29, 1896.
6 specimens.

(To be continued.)

Notes on the Larvae of Certain Lepidoptera.

By F. X. Williams, San Francisco, Cala.

Spinx sequoiæ Shasta County, Cala. Larva hatches from large pale green egg, oval and eliptically flattened, laid usually singly on the underside of leaf of *Cerasus sp.* (wild cherry). Full grown larva about two inches long, sea green in color, head triangular and greenish as in *Smerinthus*. Body very rough and granular; anal horn green, straight and rather short. The lateral oblique lines are scarlet and spots of the same color are scattered sparsely over the body, their number and distinctness different in different individuals. The larva much resembles a *Smerinthus* caterpillar and the pupa resembles the pupa of the latter, being stout reddish brown in color and having no protruding tongue case.

Larva and eggs of *P. Sphinx? perelegans* were found on *manzanita*.

Calosaturnia mendocino Behr. Eggs laid from one to about ten on leaf of *manzanita*; many eggs parasitized. Full grown larvæ of two colors, one a beautiful green, the other a rich reddish brown. The larva is armed with bristles which sting painfully. The cocoon is hidden cunningly. It is sometimes spun between leaves but more often at the base of the trunk of the *manzanita*, which is covered with the curling bark. The cocoon is spun closely compressed to the trunk and covered with the curling bark in imitation of its surroundings. The larva is rather difficult to rear.

Larvæ of *Papilio daunus* were observed feeding on the Oregon ash.

A very dark *Attacus* was reared from a caterpillar feeding on spruce (Shasta County). Larvæ were also taken on *manzanita* and willow.

I have taken what I believe to be the larva of *Hepialus sequoiolus* Behr. I took several in November feeding in the decumbent stems of yellow lupine and in the thicker roots. The larvæ resembles the Hepialid larvæ having large dorsal plates of different sizes on the first four segments.

Variation in Callimorpha.

By George Coverdale, Hart P. O., Vernon Parish, La.

I read with much interest the article in the January, 1903 number of the Entomological News, entitled "Variation in Haploa," by H. W. Merrick. After inspecting the plate I decided to send you a pen and ink sketch of some forms of a moth which I supposed must be a "*Callimorpha*," as in habits and structure it seemed to me closely to resemble the European species *Callimorpha dominula* and *C. hera* with which I used to be acquainted in the old country. This sketch was made long ago, in 1888, and I am sure they are all of the same species, being taken at one time and place. The European *Callimorpha*, as you probably know, are more gorgeous than this insect, being bright scarlet, yellow and black, but if this is not a *Callimorpha* it is very close kin. I don't know how I came to call it *C. suffusa*. I suppose I gave it that name myself as I have had to do with hundreds of American species, as I have very little American literature and no correspondents who seem to know anything. When I take a specimen, for instance, a *Eupethecia* or *Grapholitha*, *Lithocolletes* or *Nepticula*, I place it in that genus (European) where it seems best to belong, then give it a specific name of my own, label it and record it, and afterwards record it in my journal by the same name. I should be glad of any help you could give me in the identification of species.

After comparing your plate in the Entomolooical News with my sketch I am compelled to state that I do not consider *C. suffusa* to be the same species as *Haploa contigua* or *H. militaris*. The character of the markings is essentially different and they do not vary along the same lines. It is very interesting to note these wonderful differences and resemblances, and is a source of exquisite pleasure to the genuine student of nature. I should be glad if you could give me the name of my species or name it for me if it has not one.* I remember to have taken a few specimens of another species which I call *C. ochrea*. These species of *Callimorpha* are both extremely local, as are also the European species. When pinned they both exude a bright yellow fluid, and there are other points of resemblance which I could enumerate. If the enclosed sketch would, in your opinion, be of any interest to the readers of the News, you are at liberty to reproduce it or make any use you like of it.

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* Specimens of these *Callimorphas* were sent to Dr. Dyar who replied as follows: "The *Callimorpha* is *colona* var. *reversa* Stretch. *Suffusa* Smith, is a synonym thereof. *Colona* is a yellow form with the same marks. The white form is *fulvicosta* Clemens."

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., MAY, 1905.

When we see descriptions and dichotomies with indefinite statements of fact we feel some one has offended science and that the culprit has lost sight of the use to which his description or dichotomy is to be put. One needs only to contemplate a moment to realize how meaningless it is to say smaller and in the alternative larger: isn't this, to say the least, ambiguous? Why not give the size in millimeters and thus give the next person a chance. Antennæ slender, antennæ thick, is another case in point. Here again science would certainly be better served if the width of the antenna were compared with some other constant appendage of the same specimen or the width of certain joints of an antenna as compared to the length would be close to a positive statement.

When we come to describe punctures and punctuation there is more excuse for ambiguity in saying smaller and large or sparse and close, respectively. But here again we would urge comparison with something fixed. The spacing of the punctures could be indicated by giving the interstices in terms of individual puncture widths.

All portions of an insect and peculiarities of the several orders might be drawn upon for examples to demonstrate this one principle, *i. e.* the principle of general utility, which can only be served by the person who undertakes to convey an idea in print to some one else, by constantly repeating "How will this appear to the other person, especially the person handicapped by lack of material?"—H. L. V.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

PROF. H. A. MORGAN's present address is University of Tennessee, Knoxville, Tennesee.

EDITOR OF NEWS:—There have been found, stored away in the Smithsonian Institution, a number of copies of the Hayden Report of U. S. Geological Survey for 1871 and 1872. The entomological contents of these volumes are as follows:

1871.—Coleoptera by G. H. Horn, pp. 382–392.

Hemiptera of Western U. S., by P. R. Uhler, pp. 392–423 inc. (Many new species described).

Saltatorial Orthoptera, by C. Thomas, pp. 423–466 inc. (Many new species described).

Butterflies, by Edwards, pp. 466–467. (List collected in 1871, and one new species).

1872.—Coleoptera, by G. H. Horn, p. 717. (List and notes).

Orthoptera, by C. Thomas, p. 719–725. (Description of species).

Odonata from Yellowstone, by H. Hagen, pp. 727–729. (List and n. sp).

Description of New Species of *Mallophaga*, by A. S. Packard, Jr., pp. 735–737. (New species described).

Description of New Insects, by A. S. Packard, Jr., pp. 739–741. (Dipterous larva and Arachnids).

Insects Inhabiting Great Salt Lake, etc., by A. S. Packard, Jr., pp. 743–746. (General notes).

If any readers of ENTOMOLOGICAL NEWS, who are doing special work in these groups, will write to me, I will send the volume so long as they last.—L. O. HOWARD, Chief of Bureau of Entomology, Washington, D. C.

Samia gloveri Strecker.—A specimen (male) of this species emerged to-day after being in pupation over two winters. The full-fed larva was taken in the foothills near Fort Collins during the summer of 1903 by Prof. Gillette. Soon after being brought into the laboratory the larva spun a cocoon in the upper part of a glass jar, which was covered with a thin cloth, thus exposing the pupa to the very dry and warm conditions of the laboratory. In the summer of 1904 the cocoon was moistened with the hope that the adult would emerge, but without success. The cocoon was then split open and the pupa found to be alive. It remained in this condition until February, 1905, when it was placed outside of the window in freezing weather for two or three days. On being brought into the laboratory a little water was put in the bottom of the jar. On March 8th a beautiful moth emerged, perfect in every respect and which does not appear to have suffered from its long sleep.—S. ARTHUR JOHNSON, Fort Collins, Colo.

Doings of Societies.

Insect Names.

At the Seventeenth Annual Meeting of the Association of Economic Entomologists, held in Philadelphia on December 29–30, 1904, the Society, with the object of conducing to uniformity in the use of common names of insects, adopted a report of its Committee on Nomenclature, consisting of Prof. Herbert Osborn, of the University of Ohio, Columbus, Ohio, Chairman; Prof. F. M. Webster, of the University of Illinois; and Prof. C. P. Gillette, of the University of Colorado; recommending the publication of the accompanying list of common names of insects, these names being the ones current throughout a large part of the world and throughout the region of the species. They urged that every entomologist use these names and these only, for English names; that the Latin name be included but once in as inconspicuous a manner as possible; and that copies of this list be furnished to the leading agricultural papers of the country, and that the editors of such papers be requested to use these, and these only, in all articles referring to such species.

Only names were placed upon the list that were agreed to *unanimously*, a much larger list remaining under consideration for future action.

H. E. Summers, *Secretary A. E. E.*

List of Names Recommended for Exclusive Use.

American cockroach,	*Periplaneta americana* L.
Angoumois grain-moth,	*Sitotroga cerealella* L.
apple-leaf skeletonizer,	*Canarsia hammondi* Riley.
apple-aphis,	*Aphis pomi* L.
army-worm,	*Heliophila unipuncta* Haw.
asparagus beetle,	*Crioceris asparagi* L.
bag-worm,	*Thyridopteryx ephemeraeformis* Haworth.
bean-weevil,	*Bruchus obtectus* Say.
bedbug,	*Klinophilos lectularia* L.
boll-weevil,	*Anthonomus grandis* Boh.
boll-worm,	*Heliothis obscura* Fab.
brown-tail moth,	*Euproctis chrysorrhœa* L.
buffalo tree-hopper,	*Ceresa bubalus* Fab.
cabbage aphis,	*Aphis brassicæ* L.

carpet-beetle,	*Anthrenus scrophularius* L.
carpet-moth,	*Trichophaga tapetzella* L.
cattle-tick,	*Boophilus annulatus* Say.
cecropia-moth,	*Platysamia cecropia* L.
chinch-bug,	*Blissus leucopterus* Say.
clover-hay worm,	*Hypospygia costalis* Fab.
codling-moth,	*Carpocapsa pomonella* L.
Colorado potato-beetle,	*Leptinotarsa decemlineata* Say.
cotton-stainer,	*Dysdercus suturellus* H. Schf.
cottony maple-scale,	*Pulvinaria innumerabilis* Rathv.
cottony cushion-scale,	*Icerya purchasi* Mask.
fall canker-worm,	*Alsophila pometaria* Harr.
fall web-worm,	*Hyphantria cunea* Drury.
granary-weevil,	*Calandra granaria* L.
grape-phylloxera,	*Phylloxera vastatrix* Planch.
gypsy-moth,	*Porthetria dispar* L.
harlequin cabbage-bug,	*Murgantia histrionica* Hahn.
Hessian-fly,	*Cecidomyia destructor* Say.
honey-bee,	*Apis mellifera* L.
hop-aphis,	*Phorodon humuli* Schrank.
horn-fly,	*Hæmatobia serrata* R-D.
horse bot-fly,	*Gastrophilus equi* L.
house-fly,	*Musca domestica* L.
indian-meal moth,	*Plodia interpunctella* Hübn.
larder-beetle,	*Dermestes lardarius* L.
leopard-moth,	*Zeuzera pyrina* L.
Mediterranean flour moth,	*Ephestia kuehniella* Zell.
onion thrips,	*Thrips tabaci* Lind.
oyster-shell scale,	*Lepidosaphes ulmi* L.
peach-borer,	*Sanninoidea exitiosa* Say.
peach-scale,	*Eulecanium persicæ* Fabr.
pear-slug,	*Ericampoides liminica* Ratz.
pea-weevil,	*Bruchus pisorum* L.
plum-curculio,	*Conotrachelus nenuphar* Hbst.
plum-gouger,	*Anthonomus prunicida* Walsh.
rice-weevil,	*Calandra oryza* L.
red-legged locust,	*Melanoplus femur-rubrum.* Deg.
rose-chafer,	*Macrodactylus subspinosus* Fab.
San José scale,	*Aspidiotus perniciosus* Comst.
scurfy scale,	*Chionaspis furfura* Fh.
silkworm,	*Bombyx mori* L.
spring canker-worm,	*Paleacrita vernata* Peck.
squash-bug,	*Anasa tristis* Deg.
striped blister-beetle,	*Epicauta vittata* Fab.
tarnished plant-bug,	*Lygus pratensis* L.
tomato-worm,	*Phlegethontius sexta* Joh.

At the meeting of the Feldman Collecting Social held March 11, 1905, at the residence of Mr. H. W. Wenzel, 1523 South 13th Street, Philadelphia, eleven members were present and Mr. Carl Schaeffer, of Brooklyn, visitor.

Mr. Schaeffer spoke of his table of genera of the *Cassidini* and showed color drawings of *Coptocycla bicolor*, and spoke of the difficulty of separating the same.

Prof. John B. Smith spoke of the great attack of the maple scale *Pulvinaria innumerabilis* on the shade maples in the eastern part of New Jersey, and stated that a large proportion of the insects are dying off. There were an enormous number of young larvæ discovered last fall, but by shaking and hitting trees they drop off and gradually dry up; there was some parasitism discovered at the same time; at the present time it is too early to know just what the outcome will be. There was a soot fungus present in the same localities where scales were seen.

Mr. Wenzel spoke of the scarcity of insects last year which was discussed by the members. Prof. Smith remarked that New Jersey was practically exempt from *Heliothis armiger* last year and suggested that the heavy frosts were likely responsible for their extermination. Prof. Smith further stated that absence of parasites last year will very likely account for the many larvæ which have been turned up by the collectors during winter.

Mr. Wenzel exhibited a large number of specimens of *Rhagium lineatum*, collected on March 12th at Red Bank, Gloucester County, N. J.

Mr. Daecke spoke of progess in all orders, and particularly in Tabanidæ. He remarked that he had taken 20 species of *Chrysops* in New Jersey, 3 of which are new to list, and 1 or 2 new to science.

Mr. Laurent spoke of collecting *Heterachthes quadrimaculatus* from twigs of hickory.

Mr. Haimbach spoke about *Desmia funeralis* and variety *subdivisalis*, pointing out that, so far as he had observed, all *funeralis* specimens are males, and all *subdivisalis* specimens females, which necessarily will drop out name *subdivisalis*.

FRANK HAIMBACH, *Secretary*.

OBITUARY.

FRIEDRICH MORITZ BRAUER.

The two distinguished entomologists who took such large parts in the formation of our later classifications of insects, Packard and Brauer, have passed away almost together. In the April NEWS we gave a sketch and portrait of the former. To-day we give a brief account of the Austrian naturalist taken mainly from the Necrology published by his colleague in Vienna, Dr. Anton Handlirsch, in the Deutsche Entomologische Zeitschrift for 1905, Heft I.

Brauer was born in Vienna May 12, 1832 and died in the same city December 29, 1904. He studied medicine, but early began to publish on insects, first on Neuroptera, later on Diptera. His connection with the Natural History Museum in his native city began in 1861 and continued to his death. He became Privat-dozent at the University in 1872 and Professor in 1874.

His chief works were *Neuroptera Austriaca*, 1857, Reports on the Neuroptera of the *Novara* expedition 1863–66, *Verzeichniss der Neuropteren im Sinne Linne's* 1868, *Monographie der Œstriden* 1863, *Zweiflügler der Kaiserlichen Museums*, partly in collaboration with von Bergenstamm, seven parts, 1880–1894, and *Systematisch zoologische Studien*, 1885.

To Brauer naturalists are indebted for the division of the Diptera into Orthorrhapha and Cyclorrhapha, as well as for minor improvements in the arrangement of that order, for the splitting up of the Linnean Neuroptera and other ordinal changes, for the *Campodea* theory and for numerous observations on the life history and postembryonic development of many Diptera and Neuroptera. He was elected a corresponding member of the American Ent. Soc. October 28, 1897.

ALBERT A. WRIGHT.

Albert A. Wright, professor of geology and zoology at Oberlin College, at Oberlin, as the result of a paralytic stroke, aged 59 years. Professor Wright was a native of Oberlin and a graduate of Oberlin College. He obtained the degree of Ph. B. from the School of Mines of Columbia University in 1875.

The deaths of the following entomologists have also been announced: Ernst Brenske, student of the Melolonthidæ, in Potsdam, August 13, 1904; George Maximilian von Hopffgarten, Coleopterist, in Dresden, November 23, 1904; Prof. H. Landois, physiologist and entomologist, in Munster, January 29, 1905, and Dr. Henri Louis Frederic de Saussure, February 20, 1905, Geneva, Switzerland.

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JUNE, 1905.

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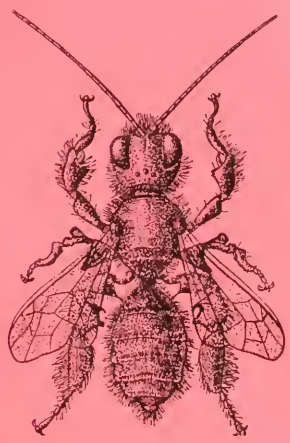

Cryptohalictoides spiniferus Viereck.

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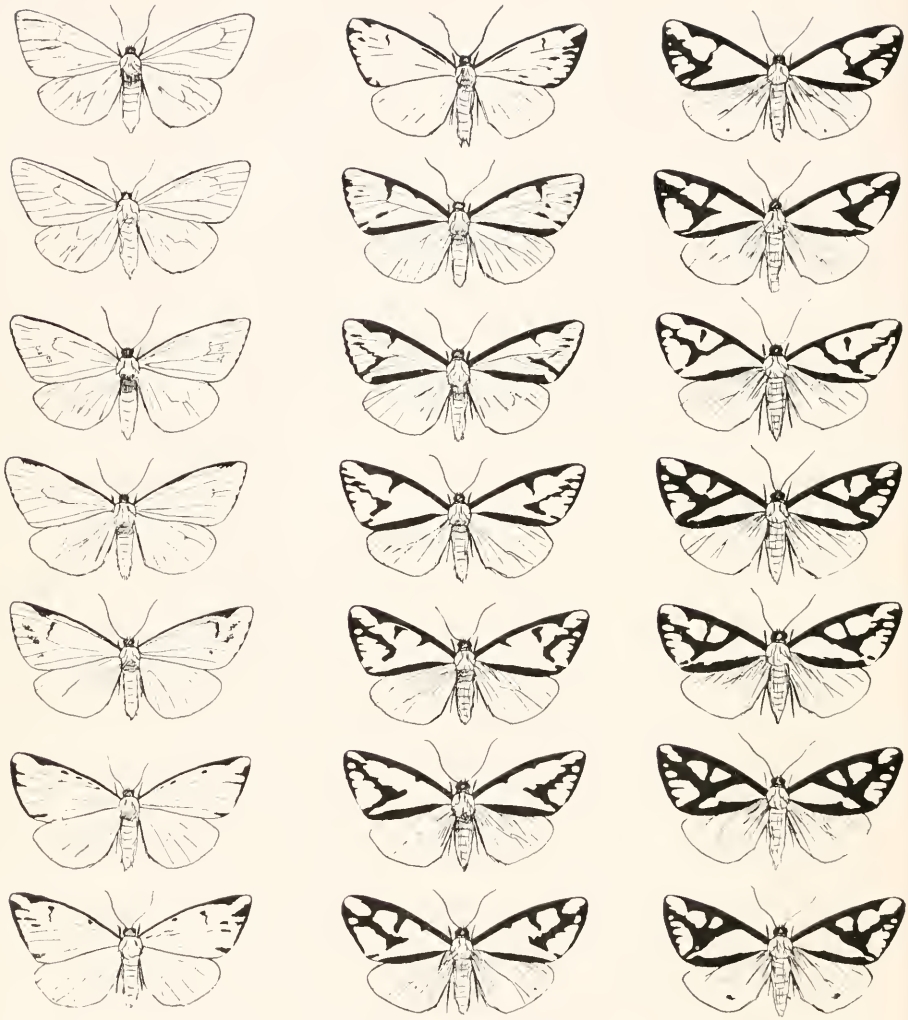

VARIATION IN CALLIMORPHA.

C. COLONA VAR. REVERSA STRETCH.

(See May News, p. 154.)

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. JUNE, 1905. No. 6.

CONTENTS:

Three New South American Coccidae.

BY T. D. A. COCKERELL.

Aspidiotus riveræ n. sp.

♀.—Scale about 3 mm. long, oval, moderately convex, rough, grayish brown, with the large uncovered ochreous exuviæ near one end.

♀.—Length about 1890 μ; mouth-parts large, about 137 μ broad; antennæ represented by a minute tubercle with about five short bristles; anal orifice about 137 μ from hind end, and about 15 μ long; hind end not strongly chitinized, and with no long fusiform processes, but with many submarginal glands, and a row of transverse ones, very much as in *Chionaspis hikosani* Kuwana: five groups of circumgenital glands, median 7, cephalolaterals 21 to 22, caudolaterals 22 to 23; no noticeable spines or squames; lobes little developed, represented by three pairs of broad low rounded prominences, all wide apart, the margin between them, and especially beyond the third, irregular with more or less angular prominences; sides of hinder part of insect finely transversely striated.

Larva with antennæ 75 μ long, last joint long and slender, about 25 μ long; eyes (after mounting) very dark blue.

Hab.—Province of Arauco, Chile, on stems of *Chusquea* sp., graminaceous plant (Manuel J. Rivera). This is not a genuine *Aspidiotus*; it looks like an *Odonaspis* or possibly a *Pseudaonidia*, but it seems to represent a new group not yet named.

What I take to be male scales are small, oval, white, with exuviæ colored as on the female.

It is worth while to record that Mr. Rivera sent me *Epidiaspis piricola* (Del Guercio), collected at Santiago, Chile.

Ceroplastes schrottkyi n. sp.

♀.—Scale circular or nearly flattish, rounded above, dull ochreous, length and breadth each about 8 mm., height about 4½ mm., wax 1 to nearly 2 mm. thick; wax rough, no distinct plates; some obscure patches of snow-white secretion; beneath, the four lines of white secretion are close together, converging to a central point; crushed, the insects give a light vermillion color; boiled, they stain the liquid dark cherry red. Denuded ♀ about 6 mm. by 5½, height 3; dark red at the sides; region of anal plates black and thickened; caudal horn reduced to a low broad mammiform protuberance, directed upwards. Skin dark colored and strongly chitinous, with hyaline spots. Mouth-parts about 210 μ broad. Tarsus very short, about 37 μ long. Antennæ slender, apparently 7-jointed, but the segmentation obscure, joint 2 with a very long hair near the end; measurements of joints in μ: (1) 55? (2), 42, (3) 42, (4) prox. 50, (5) 25, (6) 25, (7) 35.

Hab.—Villa Encarnacion, Paraguay, on *Salix chilensis* Mol. (*S. humboldtiana* Willd.), sent by Mr. Schrottky, who recognized it as a new species. The denuded ♀ is suggestive of *C. africanus* Green, especially by the mammiform caudal prominence. The antennæ are rather like those of *C. sinensis* Del Guercio, which is otherwise very different, being doubtfully separable from *C. mexicanus* Ckll.*

Ceroplastes sanguineus n. sp.

♀.—Scale about 5 mm. long, 4 broad and about 1½ high; very flat, whitish strongly suffused with pink, dark red in middle, with the usual elongate boss of white secretion; division into plates very distinct. Denuded insect oval, soft, 3½ mm. long, 3 broad, about 1½ high, very dark caudal horn a black mammiform protuberance. Skin of dorsum with numerous dark tubular glands; margin with dark tubular glands, ending in sharp dark spines: coxæ very long; femur and trochanter about 187 μ; tibia 130; tarsus (excl. claw) 95; claw-digitules with large knobs; antennæ long and slender, 7-jointed, joints measuring in μ: (1) 62, (2) 52, (3) 90, (4) 62, (5) 25, (6) 25, (7) 40. On the ventral surface of

* Specimens collected by Mr. Marlatt on orange twigs at Monte Carlo and Mentone, have been compared with genuine *C. sinensis* from Liguria, and with *C. mexicanus* from Zapotlan, Mexico. I find some differences in the different lots, but the antennæ and legs are of the same type in all, and I do not feel satisfied that there is more than one species concerned.

the insect (as seen without preparation) the segmentation is indicated by black lines. The specimens described have not produced young; it is probable that they eventually become somewhat more convex.

Hab.—Villa Encarnacion, Paraguay, on the bark of small branches of a shrub (*Maytenus ?*), sent by Mr. Schrottky. It was suggested by Mr. Schrottky that the insect might prove identical with *C. communis* Hempel, but I have specimens of the latter from Mr. Hempel, and it is very different. The flattened shape is strongly suggestive of *C. depressus* Ckll., and *C. formicarius* Hempel; but *C. sanguineus* lacks the whitish ring and radiating purplish lines of the former, and differs from the latter in color, antennæ and legs, etc. The antennæ of the new species are not much like those of any other species known to me; they are quite different from those of *C. albolineatus* Ckll., which has the pink color. When *C. depressus* was discovered, living under bark, it was remarked that the flattened form was excellently adapted to the habitat; but now we have in *C. sanguineus* a much flattened species living entirely exposed.

The Type of the Genus Sphex.

By H. T. Fernald, Ph. D., Amherst, Mass.

Apparently no determination of the type of the genus *Sphex* has hitherto been made, and modern writers seem to have accepted the group as a natural one without considering whether the name is the one Linnæus intended for these insects. Recent investigation of this question by the writer, taken up on the supposition that the nomenclature of the group had long been settled, has led to such unexpected results, however, that it seems advisable to present them in connected form at this time.

In the tenth edition of the Systema Naturæ, Linnæus describes twenty-five species of *Sphex*: nine of these he places in the subdivision "Abdomine petiolato; petiolo elongato;" while the other sixteen are located in the division "Abdomine subsessili." Seven of the species are exotic from the standpoint of the author, hence of course are not available as possible types, leaving eighteen for consideration. Of these, all

have been removed from *Sphex* and placed in other genera, so that there is now no Linnæan species of *Sphex* of the tenth edition of the Systema Naturæ remaining, though the genus is well supplied with species.

How this came about is interesting. The twelfth edition of the Systema Naturæ and the works of succeeding writers added new species to the genus—species which met the diagnostic requirements of *Sphex*, but which nevertheless were not congeneric with any of those originally placed there. And while this process of addition was going on different writers were subtracting the original members of the genus and placing them elsewhere. Thus gradually and unconsciously the genus *Sphex* came to signify to the entomologists of the nineteenth century a group of insects quite different from any of those to which Linnæus had assigned it, and in 1805 the last species of the original list—*Sphex pectinipes*—was transferred by Panzer to *Larra*, and has finally found a resting place in *Tachysphex*.

If determination of the type by elimination were to be given inflexible acceptance it would follow from the above that *pectinipes* should never have been removed from *Sphex*, but should have been left as the type of the genus. But to correct this mistake, one hundred years old as it is, would involve such vast changes that it seemed better to the writer to seek for other methods of settling the case, and that of citation was therefore tested.

In 1761 appeared the "Fauna Suecica," by Linnæus, its dedication page dated "Upsaliæ, 1761, d. 28 Julii.," and the "Die Kennzeichen der Insekten" by J. H. Sulzer, containing an introduction by Dr. John Gesner which is dated "Den 26 Aug., 1761." These dates are presumptive evidence that the "Fauna Suecica" was the earlier publication of the two. In this work Linnæus lists under *Sphex* thirteen of the species of the Systema Naturæ, while Sulzer gives two. But one of these two had been removed by Linnæus to the genus *Chrysis*, leaving but one species common to both works—*Sphex sabulosa*—which would accordingly become the type of the genus.

If the writings of subsequent entomologists down to the nine-

teenth century be examined it will be found that whatever changes in the list of species of *Sphex* were made, *sabulosa* was always retained in that genus, showing that the older entomologists regarded it as a true *Sphex*. Thus Blumenbach, in his "Handbuch der Naturgeschichte," gives brief descriptions of the different genera with the names of one (sometimes two) species as examples, and under *Sphex* he gives *sabulosa* as the sole example. Fabricius, in his "Systema Piezatorum" in 1804, also recognizes the way in which the name *Sphex* was being used, for, rejecting Kirby's genus *Ammophila* established in 1798, in which *sabulosa* had been placed, he restores this species to *Sphex* and establishes the genus *Pepsis* for the post-Linnæan insects which had been placed in *Sphex* by later writers.

Linnæus' own rule that where a genus is divided the old generic name should be retained for that part of the genus including the most common or medicinal species should surely have weight in any case dealing with a Linnæan type, and the two species best known and best described by him appear to be *sabulosa* and *spirifex*. The latter being omitted from his "Fauna Suecica," three years later, however, again leaves *sabulosa* as the type of the genus *Sphex*.

This result is far less disturbing to nomenclature than the alternative one making *pectinipes* the type as it leaves the name of the family as before. The main changes produced will be that *Ammophila* will become a synonym of *Sphex* and the subfamily *Ammophilinæ* will become the *Sphecinæ*, and a new name will be needed for the genus recently known as *Sphex*. As there seem to have been no synonyms for this which can now be revived, the oldest subgenus *Chlorion* may be raised to generic rank (which was its original standing) as the generic name. A new name for the former subgenus *Sphex* will also be needed and for this the writer proposes the name *Proterosphex* (from πδοτερος older Σφήξ wasp) suggesting the name used for the insects of this group during the last century.

The results of these changes may perhaps be better appreciated by a comparison of the following tables :

PRESENT ARRANGEMENT.

Family.	Subfamilies.	Genera.	Subgenera.
Sphecidæ	Sphecinæ	*Sphex*	*Chlorion* *Palmodes* *Parasphex* *Prionony.x* *Sphex* *Isodontia*
	Ammophilinæ	*Ammophila* *Psammophila*	
	Sceliphroninæ		

PROPOSED ARRANGEMENT.

Family.	Subfamilies.	Genera.	Subgenera.
Sphecidæ	Chlorioninæ	*Chlorion*	*Chlorion* *Palmodes* *Parasphex* *Prionony.x* *Proterosphex* *Isodontia*
	Sphecinæ	*Sphex* *Psammophila*	
	Sceliphroninæ		

The type of the subgenus *Proterosphex* thus established is *Sphex maxillosus* Fab., as was designated for the subgenus *Sphex* by Kohl., as *Proterosphex* replaces that name.

Throughout this investigation it has been a great satisfaction to have had the active co-operation of Dr. W. H. Ashmead, and of Dr. C. W. Stiles, who is a member of the Commission on Nomenclature of the International Zoölogical Congress. These gentlemen have gone over the whole subject thoroughly and have fully endorsed the views herein presented, and the writer desires to express his deep appreciation of their kindness.

It may be added that the family name for this group of insects should be Sphecidæ rather than Sphegidæ, the genitive of *Sphex* being *Sphecos*, not *Sphegis*. The correct formation has already been indicated in the Century Dictionary.

Standards of the Number of Eggs Laid by Insects—III.*

Being averages obtained by actual count of the combined eggs from twenty (20) depositions or masses.

By Arsene Girault.

4 Hemerocampa (Notolophus) leucostigma Smith and Abbot.

No.	Date 1903-1905	No. counted per mass	Successive Totals	Av. per Egg mass	Max.	Min.	Range
1	March 25, 1903	764	764	764	764		764
2		531	1295	647.5			
3		533	1728	576			
4		495	2223	559			
5	Jan. 17, 1904	539	2763	552			
6		461	3223	537			
7		507	3730	532.9			
8		561	4291	536			
9	Jan. 25, 1905	509	4800	533.3			
10		347	5147	514.7			
11		173	5320	483.6			
12		250	5570	464			
13		362	5932	456			
14		331	6263	447			
15		594	6857	457			
16		282	7139	446			
17		300	7439	438			
18		163	7602	422		163	163
19		521	8123	427.5			
20		184	8307	415			
20			8307	415	764	163	601

Although this insect has been studied thoroughly, the estimates of the number of eggs deposited by it vary from one to eight hundred. On the whole, however, the estimates approch the average here obtained.

The egg-masses, from which these counts were made, were taken from various trees in Maryland, Virginia and the District of Columbia.

Prof. Jas. S. Hine, of the Ohio State University, who has spent the winter collecting in Guatemala, has returned with an excellent collection in various groups of animals but especially of insects, it being particularly rich in Diptera and Hemiptera.

* For the first and second of these series, see Ent. News, 1901, p. 305, and 1904, pp. 2-3.

Parasitic Hymenoptera of Algonquin, Illinois.—I.

By Wm. A. Nason, M. D.

(Continued from page 152, Vol. xvi, No. 5.)

L. ? *solenobiæ* Ashm.
May 6, 1894.
Sept. 17, 1895.
2 specimens.
L. tibator Cress.
3 specimens.
L. valida Cress.
1 specimen.
L. vicina Cress.
Sept. 19, 1894.
May 29, Oct. 13, 1895.
24 specimens.
L. ? *occidentalis* Ashm.
Aug. 8, 1895.
1 specimen.

CREMASTUS Grav.

C. ferrugineus Davis.
2 specimens.
C. hartii Ashm.
June 11, Sept. 10, 1895.
June 14, July 1, 1896.
20 specimens.

MESOCHORUS Grav.

M. americanus Cress.
Aug. 26, 30, 1894.
2 specimens.
M. luteipes Cress.
Sept. 21. 1894.
1 specimen.
M. aprilinus Ashm.
1 specimen.

PORIZON Grav.

P. ? *albipennis* Cress.
May 25, 1894.
1 specimen.

EIPHOSOMA Cress.

E. texana Cress.
July 10, 1895.
1 specimen.

THERSILOCHUS Holmgr.

T. metlipes Ash.
1 specimen.
T. micans Prov.
May 6, 1894.
Aug. 29, 1894.
2 specimens.
T. pallipes Prov.
May 23, June 6, 1895.
5 specimens.
T. montanus Ashm.
May 5, 1894.
1 specimen.
T. provancheri Ashm.
June 6–8, 1895.
2 specimens.

CERATOSOMA Cress.

C. rubyata Davis.
1 specimen.

TRICLISTUS Foerst.

T. curvator Fab.
June 23, 1896.
1 specimen.

METACŒLUS Foerst.

M. tævis Cress.
June 11, Oct. 9, 1893.
June 4, July 25, 1894.
May 8, Aug. 2, 1895.
May 21, Oct. 5, 1896.
24 specimens.

EXOCHUS Grav.

E. semirufus Cress.
1 specimen.

DELETAR Foerst.

D. undulatus Davis.
1 specimen.
D. obscurus Davis.
1 specimen.

ATMETUS Foerst.

A. nigritus Ashm.
May 7-9, 1895.
May 3, 1896.
3 specimens.
A. carniatus Prov.
July 19, 1895.
Aug. 2, 1895.
2 specimens.

ORTHOCENTRUS Grav.

O. nigricoxus Prov.
O medialis Davis.
1 specimen.
O. canadensis Prov.
July 23, 1895.
1 specimen.

CAMEROTOPS Foerst.

A. asperus Davis.
1 specimen.

BASSUS Grav.

B. lætatarius Fabr.
April 29, Sept. 19, 1894.
May 8, June 12, 1895.
May 20, Aug. 2, 1896.
27 specimens.
B. lætatarius var. *sycophanta* Walsh.
June 12, Sept. 10, 1895.
10 specimens.
B. lætatarius var. *tripicticrus* Walsh.
2 specimens.
B. scutellaris Cress.
May 12, Aug. 8, 1895.
9 specimens.

PROMETHUS Foerst.

P. elongatus Prov.
Aug. 31, 1894.
1 specimen.
P. ruficrus Walsh.
June 21, 1896.
2 specimens.

ZOOTREPHES Foerst.

Z. inconstans Davis.
May 14, 1894.
1 specimen.
Z. montanus Davis.
Aug. 10, 1895.
1 specimen.

ENIZEMUM Foerst.

E. tibiale Cress.
June 10, 1895.
1 specimen.

SYRPHOCTONUS Foerst.

S. agilis Cress.
May 10, 1896.
June 10. Oct. 16, 1895.
4 specimens.
S. pleuralis Cress.
June 13, 1895.
1 specimen.
S. pacificus Cress.
May 29, 1895.
July 12, 1895.
2 specimens.

HOMOTROPUS Foerst.

H. bicapillaris Walsh.
June 14, 1896.
1 specimen.
H. bicapillaris var. *albopictus* Walsh.
June 14, 1895.
1 specimen.

EXCAVARUS Davis.

E. annulipes Cress.

ADELOGNATHUS Holmg.

A. flavopictus Davis.

CATASTENUS Foerst.

C. glabrifrons Davis.
1 specimen.
C. valerius Davis.
1 specimen.

MIOMERIS Foerst.

M. nasoni Davis.
1 specimen.

HELICTES Haliday.

H. ruficornis Davis.
1 specimen.

CAMPOTHREPTUS Foerst.

C. nasutus Cress.
May 21, 1896.
1 specimen.

ŒTOPHORUS Foerst.

O. nasoni Davis.
1 specimen.

ECZETESIS Foerst.

E. paniscoides Ashm.

EUCEROS Grav.

E. obesa Davis.
1 specimen.
E. medialis Cress.
June 3, 1895.
1 specimen.
E. flavescens Cress.
2 specimens.

MONOBLASTUS Hartig.

M. varifrons Cress.

POLYBLASTUS Hartig.

P. varitarsus Grav.
June 6, 1895.
1 specimen.

LATHROLESTES Foerst.

L. nasoni Davis.

RHIMPHALEA Foerst.

R. brevicorpa Davis.
1 specimen.

DIALGES Foerst.

D. frontalis Davis.
May 19, 1896.
1 specimen.

QUADRIGANA Davis.

Q. americana Cress.
8 specimens.

TRYPHON Fallen.

T. seminiger Cress.
June 4, 1894.
June 19, July 10, 1895.
May 29, June 4, 1896.
21 specimens.
T. communis, var. *atripes*.
May 23, 1895.
1 specimen.

CALLIPHRURUS Foerst.

C. granulosus Davis.
1 specimen.

MESOLEIUS Holmg.

M. submarginatus Cress.
1 specimen.

SPANOTECNUS Foerst.

S. concolor Cress.
June 10, 1896.
1 specimen.

PROSMOSUS Foerst.

C. cymbaformus Davis.
1 specimen.

CATOGLYPTUS Foerst.

C. furcatus Cress.
June 4–13, 1895.
2 specimens.

ALEXETER Foerst.

A. honestus Cress.

POLYONCUS Foerst.

P. mentalis Davis.
July 12, 1895.
1 specimen.

AROTES Grav.

A. amœnus Cress.
2 specimens.

THALESSA Holmgr.

T. lunator Fabr.
June 23, 1895.
10 specimens.

T. sp.
2 specimens.

PERITHOUS Holmgr.

P. pleuralis Cress.
June 3, 1895.
3 specimens.

THERONIA Holmgr.

T. melanocephala Brulli.
1 specimen.

EPHIALTES Grav.

E. albipes Cress.
1 specimen.

E. irritator Fabr.
May 9, July 24, 1895.
April 25, July 4, 1896.
15 specimens.

E. rex Kriechb.
1 specimen.

E. thoracicus Cress.
Sept. 7, 1896.
1 specimen.

PIMPLA Fabr.

P. æqualis Prov.
Aug. 31, 1894.
1 specimen.

P. alboricta Cress.
June 15, 1895.
1 specimen.

P. annutipes.
May 13, June 28, 1894.
June 20, Sept. 17, 1895.
July 1, Aug. 8, 1896.
46 specimens.

P. conquisitor Say.
July 22, Oct. 17, 1894.
June 3, Sept. 10, 1895.
16 specimens.

P. conquisitor, var. *rufuscula* Davis.
June 7-14, 1895.
July 2, Aug. 2, 1896.
5 specimens.

P. indagatrix Walsh.
May 3, Aug. 30, 1894.
June 7, Sept. 29, 1895.
10 specimens.

P. inquisitor Say.
June 19, Aug. 29, 1894.
June 10, 1895.
June 23, 1896.
10 specimens.

P. investigatrix Walsh.
1 specimen.

P. pedatis Cress.
20 specimens.

P. picticornis Cress.
1 specimen.

P. pterelas Say.
Aug. 26–30, 1894.
Sept. 2, Oct. 16, 1895.
6 specimens.

P. rufopectus Cress.
Oct. 9, 1893.
June 11-14, 1895.
5 specimens.

P. rufovariata Cress.
June 20, Oct. 5, 1895.
July 17, Aug. 11, 1896.
4 specimens.

P. scriptifrons Cress.
Aug. 8, 1895.
2 specimens.

P. tenuicornis Cress.
4 specimens.

P. vidua Walsh.
June 10, 1894.
1 specimen.

CLISTOPYGA Grav.

C. nigrocephalus Davis.

GLYPTA Grav.

G. erratica Cress.
July 17, 1896.
1 specimen.

G. impressa Davis.
1 specimen.
G. pulchripes Cress.
Aug. 11, 1896.
1 specimen.
G. rufipleuralis Walsh.
April 27, June 14, 1896.
26 specimens.
G. rufiscutellaris Cress.
July 12, 1895.
1 specimen.
G. simplicipes Cress,
June 24, 1894.
June 13, 1895.
4 specimens.
G. varipes Cress.
1 specimen.

ARENETRA Holmgr.

A. canadensis Cress.
March 3-10, 1894.
11 specimens.

CYLLOCERIA Schiödte.

C. occidentalis Cress.
Aug. 31, 1894.
May 29, 1896.
2 specimens.

LAMPRONOTA Curtis.

L. americana Cress.
Sept. 19, 1894.
July 24, Sept. 17, 1895.
8 specimens.
L.? breviventris Walsh.
June 10, 1896.
1 specimen.
L. fractus Prov.
Sept. 17, 1895.
1 specimen.
L. exilis Cress.
June 10, 1896.
2 specimens.
L. montana Cress.
Oct. 4-10, 1895.
2 specimens.
L. parva Cress.
2 specimens.
L. varia Cress.
July 22, Aug. 3, 1894.
July 20-26, 1875.
5 specimens.

PHYTODIETUS Grav.

P. vulgaris Cress.
June 1, 1896.
3 specimens.

EUXORIDES Cress.

E. americanus Cress.
June 10, 1895.
1 specimen.

XYLONOMUS Grav.

X. stigmapterus Say.
1 specimen.

APLOMERUS Prov.

A. nasoni Davis.
1 specimen.

LABENA Cress.

L. apicalis Cress.
Sept. 10, 1895.
1 specimen.
L. grallator Say.
July 2, 1896.
5 specimens.

GROTEA Cress.

G. anguina Cress.
June 21, 1894.
2 specimens.

MAMMA, I don't understand these fire-flies.
Mamma—What puzzles you, dear?"
Well, ain't it funny that the wind don't blow their lights out?

Notes on a Small Collection of Orthoptera from the Lesser Antilles, with the Description of a New Species of Orphulella.

By James A. G. Rehn.

(Plate VIII.)

The collection from which the following notes were made was transmitted to the author by Mr. H. A. Ballou, Entomologist of the Imperial Department of Agriculture for the British West Indies. The bulk of the material was presented to the Academy of Natural Sciences of Philadelphia, a small number of uniques and species confused under one number being returned to the Department.

With few exceptions the following records are the first from the islands represented, several South American forms being here recorded from the West Indies for the first.

On comparison with the lists of St. Vincent and Grenada Orthoptera published by Brunner and Redtenbacher,* the number of species is found to be much less as the material is much less extensive, twenty-eight in number, while the St. Vincent and Grenada papers list eighty-two, but of the twenty-eight forms here treated, thirteen are not contained in the two previous papers.

Probably the most striking fact noticed in studying this collection is that regarding the distribution of the two species of *Orphulella* here treated. The widely distributed *O. punctata* is represented by specimens from Dominica and St. Lucia, having also been recorded from Grenada, St. Vincent and Trinidad, while on Barbados it is apparently replaced by a quite distinct species, which, judging from the amount of material examined, is as abundant as *O. punctata* is in the localities where found.

Family FORFICULIDÆ.

ANISOLABIS Fieber.

Anisolabis maritima (Gené).

Barbados. September 13, 1901. (In seaweed; H. M. Le-

* Proc. Zoöl. Soc., London, 1892, pp. 196-221; 1893, pp. 599-611.

froy.) [No. G 363.] Five specimens ranging in size from small immature individuals to adults.

This species was taken in October under dead wood in St. Vincent.

Anisolabis janeirensis (Dohrn).

1864. *F*[*orcinella*] *Janeirensis* Dohrn, Entom. Zeit. Stettin, xxv, p 285. [Rio de Janeiro, Brazil.]

Barbados. February 13, 1902. [No. 383.] One broken specimen. August 12, 1903. (Dr. Deane.) [No. 529.] One specimen. September 10, 1003. (H. A. Ballou.) One specimen.

Dominica. April 5, 1902. (Rotten wood.) One specimen.

This species has been recorded from St. Vincent, taken in January and October, under wood and leaves and in fruit.

One specimen examined (September 10, 1903) has the tegmina decidedly elongate and lateral, instead of broad and separated mesad by a slight space. This may be due to the specimen not having quite reached the imago state.

Family BLATTIDÆ.

ISCHNOPTERA Burmeister.

Ischnoptera occidentalis Saussure.

1862. *I*[*schnoptera*] *occidentalis* Saussure, Revue et Magasin de Zoologie, 2e ser., xiv, p. 170. [New Orleans.*]

Barbados. July 10, 1903. (H. A. Ballou.) [No. 213.] Three specimens.

Dominica. (H. M. Lefroy.) [No. G 213.] One specimen.

This species has previously been recorded from Grenada, San Domingo, Mexico, Peru and the type locality.

BLATTELLA Caudell.

Blattella supellectilium (Serville).

Barbados. November 5, 1901 (one). (H. M. Lefroy.) [No. G 107.] Two males. Bay Mansion. July, 1903. (H. A. Ballou.) [No. 560.] One female.

This species has previously been recorded in America from

* The original description simply gives "Nova" as the locality, but in the Mémoires (Mém. l'Hist. Nat. Mexiq., iv, p. 88) the locality New Orleans is indicated for the single specimen described.

southern Florida, Cuba, San Domingo, Jamaica, Porto Rico and Brazil.

Blattella conspersa (Brunner).

1865. *Ph[ylodromia] conspersa* Brunner, Nouv. Syst. Blatt., p. 106. [Brazil].

Barbados. [No. G 408.] One male.

This specimen agrees very well with the original description of this species, except that the lines on the pronotum are not apparent, only small spots being present. The great number of fine blackish dots sprinkled over the tegmina appears to be diagnostic of the species.

CERATINOPTERA Brunner.

1865. *Ceratinoptera* Brunner, Nouv. Syst. Blatt., pp. 46, 75.

Included *C. diaphana* (Fabricius), *picta*, *castanea* and *peruviana* Brunner, *pœyi* and *porcellana* Saussure. Of these *pœyi* and *porcellana* have been removed to *Plectoptera*, and *picta* has been selected as the type by Kirby.*

Ceratinoptera diaphana (Fabricius).

1793. [*Blatta*] *diaphana* Fabricius, Ent. Syst., ii. p. 11. [Islands of equatorial America.]

Barbados. Easy Hall. September 24, 1902. (H. M. Lefroy.) [No. 560.] One female.

This species has previously been recorded from Cuba, Porto Rico, St. Thomas and Bermuda.

PERIPLANETA Burmeister.

Periplaneta americana (Linnæus).

Barbados. June, 1901 and October 18, 1902. [No. 163.] Three specimens.

Periplaneta australasiæ (Fabricius).

Barbados. February 12, July and December, 1903. [No. 163.] Three specimens.

CHORISONEURA Brunner.

Chorisoneura mysteca (Saussure)?

1862. *Bl[atta] mysteca* Saussure, Revue et Magasin de Zoologie, 2e ser., xiv, p. 167. [Tropical Mexico.]

Barbados. October, 1902. (Miss Field.) [No. 408.] One specimen.

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* A Synonym. Catal. Orth., i, p. 98, 1904.

This individual is referred to *mysteca* with some doubt. This species has been recorded from Grenada, as well as Bogota and several localities in Guatemala and Mexico.

LEUCOPHÆA Brunner.

Leucophæa maderæ (Fabricius).

Barbados. December 30, 1902, and September 26, 1902. [No. 108.] Three specimens.

This widely distributed tropical species has previously been recorded from St. Vincent.

PYCNOSCELUS Scudder.

Pycnoscelus surinamensis (Linnæus).

Barbados. February, 1900. (H. M. Lefroy, in part.) [No. G 20 and G 153.] Four specimens.

One individual (G 153) is very pale and considerably shrivelled, a condition probably due to it having been captured when freshly transformed into the condition of the imago.

This tropical and subtropical species has been taken in Grenada and St. Vincent.

PANCHLORA Burmeister.

Panchlora virescens (Thunberg).

"*Blatta virescens* Thunberg, Mém. Acad. Sci. St. Petersb., x, p. 278."

Montserrat. January, 1904. (H. A. Ballou.) [No. 153.] One female.

This species has previously been recorded from Cuba, Porto Rico, Mexico, Cayenne and Brazil and questionably from Costa Rica.

Family MANTIDÆ.

MUSONIA Stal.

Musonia surinama (Saussure).

Barbados. Bay Mansion. December, 1903. [No. 102.] One male, one female. November 7, 1903. (H. A. Ballou.) [No. 600.] One male. (H. M. Lefroy.) [No. G 102.] Two males.

This species has previously been recorded from Grenada, St. Vincent, Trinidad, Surinam and Venezuela.

PARASTAGMATOPTERA Saussure.

1871. *Parastagmatoptera* Saussure, Mém. l'Hist. Nat. Mexiq., ii, pt. I, p. 83.

Type: *Mantis flavoguttata* Serville.

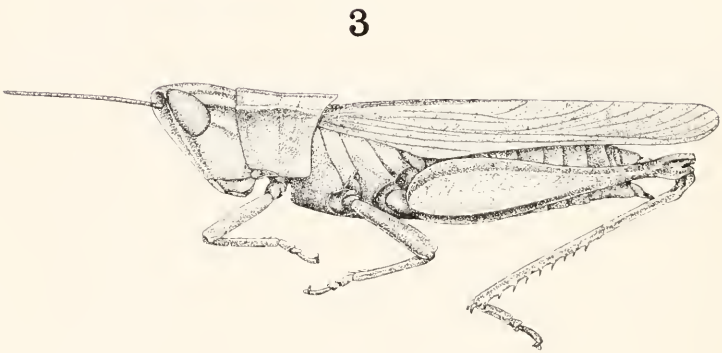

Fig. 1.—*Orphuella punctata* (De Geer). Female. Dominica. Dorsal view of head and pronotum. Fig. 2.—*Orphulella balloui* n. sp. Dorsal view of head and pronotum of female type. Fig. 3.—Lateral view of specimen represented in fig. 2 (× 3).

Parastagmatoptera lobipes Redtenbacher.

1892. *P[arastagmatoptera] lobipes* Redtenbacher, Proc. Zoöl. Soc. London, 1892, p. 206, pl. xv, fig. 8. [South end, St. Vincent.]

St. Vincent. August 30, 1902. (T. W. Campbell.) [No. G 453.] One female.

This species was originally described from St. Vincent, and has since been recorded from Grenada.

Family PHASMIDÆ.

CLONISTRIA Stal.

Clonistria linearis (Drury)?

St. Lucia. July, 1904. (H. H. Ballou.) [No. 622.] One male.

This species has been recorded from St. Vincent and Grenada, and the specimen listed above is placed here with a query, as true *linearis* (from Antigua) was very imperfectly described.

CALYNDA Stal.

Calynda keratosqueleton (Olivier).

1762. *Mantis keratosqueleton* Olivier, Encyc. Method., Ins., vii, p. 639. [Based on Stoll; Surinam.]

Barbados. September and October, 1902. [No. 623.] Two females.

This species has never before been recorded definitely from any one of the West Indies, several authors having credited it to the islands as a whole. A closely allied form, *C. cyphus* (Westwood) has been recorded from St. Vincent and Grenada, but in the absence of a description of the female sex of that species, and the apparently close relationship to Stoll's figure,* I prefer to tentatively use a name based on the same sex as the material in hand.

Family ACRIDIDÆ.

ORPHULELLA Giglio-Tos.

Orphulella punctata (De Geer). (Pl. viii, Fig. 1.)

St. Lucia. (No. 440.) One male, one female, one nymph.

Dominica: Middleham. November 25, 1891. (W. R. Elliot.) [No. 319.] One female.

* Natuurl. Afbeeld. Besch. Spooken, pl. xv, fig. 57.

Not separable from specimens from St. Vincent, Vera Cruz and Costa Rica. The species has previously been recorded from Grenada and St. Vincent, in the Lesser Antilles, as well as from Trinidad.

Orphulella balloui n. sp. (Pl. viii, Figs. 2 and 3).

Types: ♂ and ♀; Bay Estate, Barbados, West Indies, September 9, 1902 (♂) and September 30, 1902 (♀). (H. M. Lefroy.) [A. N. S. Phila.]

Allied to *O. punctata* (DeGeer) but differing in the slenderer form, the more retreating face, the narrower excavation of the fastigium, the longer eye, narrower costal expansion of the tegmina and the much slenderer caudal femora.

Size medium; form elongate, slender. Head with the occiput and vertex hardly rounded, the interspace between the eyes slightly less than the greatest width of the fastigium; fastigium acute in both sexes, the margins raised and cingulate, excavation limited to a narrow depression caudad of the margins in the female, the greater portion of the dorsal aspect of the fastigium depressed in the male and without any very distinct excavation; lateral foveolæ elongate trigonal; frontal costa strongly constricted dorsad, regularly and gradually expanding ventrad; lateral ocelli rather large, placed by the eye at the ventro-caudal angle of the lateral foveola; eye acute ovate, the apex directed dorso-cephalad, length over half again that of the infra-ocular portion of the genæ; antennæ depressed, subensiform, slightly shorter than the head and pronotum together. Pronotum slightly less than twice as long as the greatest dorsal width, slightly tectate, median and lateral carinæ distinct, the lateral parallel on about the cephalic half, slightly and gradually diverging on the caudal half; cephalic margin subtruncate, caudal margin obtuse-angulate; metazona slightly shorter than the prozona; lateral lobes with the ventro-caudal angle rectangulate. Tegmina elongate, considerably exceeding the apex of the abdomen and slightly exceeding the femora; apex rounded, costal expansion low. Interspace between the mesosternal lobes very distinctly (male) or slightly (female) longitudinal; interspace between the metasternal lobes very narrow and strongly longitudinal in the female, the lobes contiguous in the male. Cephalic and median limbs little inflated. Caudal femora slender, over four times as long as the greatest width, which is in the basal third, genicular region very slightly arched, lobes narrowly rounded; caudal tibiæ with eleven spines on the external and twelve on the internal margins.

General color varying from wood brown to russet, overlaid with the usual markings found in the brown phase of species of the genus; the male type having the base color buff on the head and pronotum. Postocular bars and rather weak longitudinal occipital bars bistre; eyes raw umber.

Pronotum with the lateral lobes marked dorsad with bistre in the male, all except a distinct bar of buff on the ventral portion of the lateral lobes being obscured. Tegmina of the general color, the anal areas lighter than discoidal in the male, maculations exceedingly faint in the female, and practically absent in the male. Caudal femora with the genicular arches burnt umber; ventral surface and the tips of the spines on the tibiæ bistre.

MEASUREMENTS:

	♂		♀	
Length of body, ...	15.	mm.	21.5	mm.
Length of pronotum, ...	3.	"	4.4	"
Greatest dorsal width of pronotum, .	1.9	"	2.9	"
Length of tegmen, ...	14.	"	17.5	"
Length of caudal femur, ...	10.	"	12.	"

A series of twenty-one Barbados specimens have been examined in addition to the types, taken in the months of January, August, September and October. Considerable variation is exhibited in the size of the females, two specimens particularly (Bay Estate, September 20 and 25, 1902) being little larger than males. The coloration exhibits the great range of variation noticed in the species of this genus, a distinct green phase being contained in the collection and represented by two specimens, one of each sex. Some females are extremely dark colored, which condition is also found in *O. punctata*, while others are quite pale.

This species can readily be separated from *O. punctata* by the characters given in the diagnosis, the more appreciable being the more retreating face and the slenderer caudal femora.

I take pleasure in dedicating this species to Mr. H. A. Ballou, Entomologist to the Imperial Department of Agriculture for the West Indies, through whose kindness I received the present collection for study.

SCHISTOCERCA Stal.

Schistocerca pallens (Thunberg).

Barbados. November 15, 1902, and June 2, 1903. [No. 10.] One male, three females.

These specimens have the tegmina more pantherine than in Cuban specimens of this species which have been examined in this connection, but they are no doubt the same.

This species has been recorded from Cuba, Hayti, Jamaica and St. Vincent in the Antilles.

Family TETTIGONIDÆ.

TURPILIA Stal.

1874. *Turpilia* Stal, Recensio Orthopterorum, ii, p. 16, 31.

Type: *T. punctata* Stal.

Turpilia punctata Stal.

1874. *Turpilia punctata* Stal, Recensio Orthopterorum, ii, p. 31. [Island of St. Bartholomew.]

Dominica. October, 1901. (H. M. Lefroy.) [No. 221.] One female.

Montserrat. August, 1901 (on lime tree). (H. M. Lefroy.) [No. 221.] One female.

This species has previously been recorded only from the type locality.

XEROPHYLLOPTERYX * new name.

1895. *Xeropteryx* Brunner, Monographie der Pseudophylliden, p. 102. (Not of Butler, Journ. Linn. Soc., London, xvii, p. 203, 1883.)

Xerophyllopteryx fumosa (Brunner).

1895. *Xeropteryx fumosa* Brunner, Monographie der Pseudophylliden, p. 103, fig. 45. [South America; Guadeloupe.]

St. Lucia. February 25, 1902, and March, 1902. (H. M. Lefroy, in part.) [Nos. 223 and 405.] Three males, one female.

This species has not been recorded since the original description, and from the known localities would appear to have a rather wide distribution. Some variation is apparent in the size of the male individuals.

CONOCEPHALUS Thunberg.

Conocephalus obscurellus Redtenbacher.

Barbados. (H. M. Lefroy, in part.) September 27, 1903. [No. 80.] Six males, nine females.

This series exhibits a great amount of variation in the intensity of the coloration, the size being quite constant. This species ranges from the Gulf States to Venezuela.

Conocephalus macropterus Redtenbacher.

Barbados. September 7, 1903. [No. 384.] Two females.

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* ξηρος dry, φυλλας leaf, πτερυξ wing.

St. Lucia. February, 1902. [No. 384.] One female.

Montserrat. January, 1904. [H. A. Ballou.) [No. 384.] One female.

The individual from Montserrat considerably exceeds the others in size, equalling the Venezuela female mentioned by Redtenbacher.*

They all agree with a series of specimens from Jalapa, Vera Cruz, Mexico, which also exhibits considerable variation in size. This species ranges from Cuba to Buenos Ayres, and has been definitely recorded from Martinique and St. Vincent in the Lesser Antilles.

Family GRYLLIDÆ.

SCAPTERISCUS Scudder.

1868. *Scapteriscus* Scudder, Proc. Boston Soc. Nat. Hist., xi, p. 385.

The original description mentioned no included species, and in a later work † he includes eight species—*oxydactylus*, *tenuis*, *mexicanus*, *didactylus*, *vicinus*, *agassizii*, *variegatus* and *abbreviatus*. Of these the one standing first, *oxydactylus* (Perty), can be considered the type.

Scapteriscus variegatus (Burmeister).

1838. *Gr[yllotalpa] variegata* Burmeister, Handb. der Entom., ii, Abth. ii, i, p. 740. [Colombia.]

Barbados. July 10, 1903. (H. A. Ballou.) [No. 224.] One male.

This specimen has the wings shorter than the tegmina, in this resembling *S. abbreviatus* Scudder, which, however, has the tegmina of a very different shape. The species has been recorded from St. Lucia by Saussure.

GRYLLOTALPA Latreille.

1802. *Gryllotalpa* Latreille, Hist. Nat. Génér. et Partic. des Crust. et des Ins., iii, p. 275.

Type: *Gryllus gryllotalpa* Linnæus.

Gryllotalpa hexadactyla Perty.

1830–34. *Gryllotalpa hexadactyla* Perty, Delect. Anim. Art. Bras., p. 119, tab. xxiii, fig. 9. [In mountains of the Province of Minas Geraes, Brazil.]

St. Vincent. (H. M. Lefroy.) One specimen.

* Verh. K. K. Zool.-bot. Gesell. Wien, xli, p. 402, 1891.

† Mem. Peabody Acad., i, pp. 7–15, 1869.

Montserrat. January, 1904. (H. A. Ballou.) [No. 224.] One specimen.

This widely distributed species has been previously recorded from Guadeloupe, St. Vincent and Grenada in the Lesser Antilles.

GRYLLUS Linnæus.

Gryllus assimilis Fabricius.

Barbados. September 22, October 25, 1902 and February 6, 1903. (C. Todd, H. M. Lefroy and H. A. Ballou.) [No. 81.] Six males, nine females.

Dominica, Middleham. Nov. 25, 1901. (W. R. Elliot.) [No. 318.] One broken specimen.

St. Lucia. September 5, 1903. (H. A. Ballou.) [No. 81.] One female.

This species has been recorded from Martinique, St. Vincent and Grenada.

AMPHIACUSTA Saussure.

1874. *Amphiacusta* Saussure, Miss. Scient. Mex. et l'Amer. Cent., Orth., p. 444.

Included *annulipes* (Serville), *grandis* (Saussure), *fuscicornis* (Serville), *azteca* (Saussure), and *phalangium* (Saussure). Of these the first, *annulipes*, may be considered the type.

Amphiacusta caribea Saussure.

1897. *Amphiacustes caribeus* Saussure, Biol. Cent.-Amer., Orth., i, p. 248. [Guadeloupe.]

Barbados, Cottage. December 31, 1903. (R. Brown.) One male. Belleville. October 18, 1902. (R. Hamlyn-Harris.) [No. 616.] One female.

This species was previously known only from the type locality.

OROCHARIS Uhler.

1864. *Orocharis* Uhler, Proc. Ent. Soc. Phila., ii, p. 544.

Type. *O. saltator* Uhler.

Orocharis antillarum Saussure.

1874. *Orocharis Antillarum* Saussure, Miss. Scient. Mex. et l'Amer. Cent., Orth., p. 496. [Guadeloupe.]

Antigua, Bath. January 8, 1903. [No. 617.] One male.

Barbados. (H. M. Lefroy.) [No. 617.] One male.

This species was previously known only from the original description and type locality.

Destructiveness of the Australian Roach Periplaneta australasiae.

By Henry Skinner.

January 14th, last, Mr. David Rust, Secretary of the Pennsylvania Horticultural Society, sent me some living specimens of this rather handsome roach and said it was eating everything from orchids to overcoats. I wrote to him for further information and received the following interesting reply. "The roaches came from the estate of Mr. James W. Paul, Jr., at Radnor, Pennsylvania. Joseph Hurley, the superintendent, informs me that the greenhouses, adjoining sheds, offices, etc., are swarming with them at night. They are also in the home of every man employed around the greenhouses. It is Mr. Hurley's opinion that these roaches came there last fall in the buckwheat chaff in which hyacinths, tulips, etc., are packed and in which they arrived from Holland. The roaches do not show any particular preference for any one plant, but their devastation has been general. Orchids, roses, carnations, both plants and flowers have been eaten. The workmen's clothes left hanging in the greenhouse had holes eaten in them. Mr. Hurley's office was invaded and a quantity of postage stamps in his desk were devoured. In this case he used a strong solution of lemon oil which killed every roach that it touched, but this remedy could not be used so strong in the green house. A few nights ago he put part of an apple with "rough on rats" on it on the kitchen floor in his house, and the next morning found seventy-five dead roaches. Pyrethrum powder, Petermen's roach food, Maurer's roach paste, etc. were used."

Not having heard anything further I suppose the roaches were kept in check or exterminated.

The species is so widely spread that it is a question whether they were introduced in the buckwheat chaff from Holland, although there is nothing improbable about it.

Mr. Wilhelm Junk, of Berlin, Germany, has recently published a directory of the entomologists of the entire world. It contains a full alphabetical index and will doubtless prove very useful for those persons wishing to exchange for exotic material. The price is five marks.

The Odonata of British Columbia.

By Raymond C. Osburn, New York City.

The Dragonflies of British Columbia have been much neglected. Until very recently (Mr. Currie's paper referred to below was issued in February, '05, as the present paper was nearing completion), only ten species were known from this region and these only by much scattered references. This fact led the writer to prepare for publication the results of some rather meagre and very much scattered collecting done during the summers of '01 and '02. Although the collecting was done merely as a side issue while connected with the Minnesota University Sea-side Station, the number of specimens taken by the writer amounts to over 350. This number has been somewhat augmented by the receipt of specimens from Messrs. R. V. Harvey of Queen's School, Vancouver, and E. M. Anderson of the Provincial Museum at Victoria. A still larger addition to the material has been made by Mr. Rolla P. Currie of the U. S. National Museum, who has very kindly turned over to me for study the material—about 140 specimens—taken by himself and Dr. Harrison G. Dyar, while on an expedition into the Kootenay District, southeastern British Columbia, in the summer of 1903. Mr. Currie has just published the results of the trip (Dragonflies of the Kootenay District of British Columbia, by Rolla P. Currie, Proc. Ent. Soc., Wash., VII, No, 1, pp. 16–20, January, '05, issued February 9, '05), but his records, as well as all previous records that could be obtained, are included here to show, as far as known, the range of the species within the province.

Mr. Harvey's material was taken at Vancouver, Mr. Anderson's chiefly at Shawnigan Lake, 20 miles northwest of Victoria, and Mr. Currie's at Kaslo, Loon Lake and Bear Lake, in the Kootenay District, together with a few specimens taken at Wellington, 75 miles north of Victoria. My own material ranges all the way across the province along the line of the Canadian Pacific Railway, about Victoria and Langford Lake at Port Renfrew. The last-mentioned place, the site of the Minnesota University Station, near the entrance to the Strait of Fuca, is unfavorable for Odonata, and during two months

spent here in 1901 and '02 only two specimens were taken, a male *Somatochlora forcipata* and a male *Enallagma carunculatum*. A trip of several miles up the Gordon River, a clear, cold, rapid, mountain stream, failed to bring to light a single dragonfly. On the other hand the region about Victoria is exceedingly rich. Near a country tavern known as the "Four-mile House," a small pond has been made by a railroad embankment cutting off a little corner of a tidal mud-flat. Around this artificial pond all the species mentioned for Victoria were taken. Langford Lake, about 12 miles from Victoria, was also found to be exceedingly rich collecting ground. A glance through the list will show that about half of the species mentioned for the province were taken here in a single day's collecting. At Glacier, near the top of the pass over the Selkirk Range, some collecting was done about pools in a small mountain meadow at about 6000 feet, and about Lake Marion at the same altitude. A few specimens were picked up also at Agassiz and Field.

The Odonate fauna of the region about Victoria is quite southern in character when compared with the remainder of the province. Under the influence of the warm Sound region a number of distinctly southern species, which do not occur elsewhere in the province, are found. Also, it will be seen from the list that there is a noticeably larger number of what we have been accustomed to call "eastern" forms than is the case farther to the south,—several of the species not having been previously reported west of the Rockies. This same feature of the distribution the writer has already noted in the Dipterous family Syrphidæ and has offered the suggestion (Diptera of B. C., Part II, The Syrphidæ, Canadian Entomologist, Aug., 1904) that it may be explained by the much lower mountain passes, while the region of high altitude is much narrower from east to west, and deserts do not exist. These conditions, with the practically continuous water way, would render the passage of species much easier than in regions farther south.

The list of species now known positively from British Columbia numbers 23. The ten species known for this region before the appearance of Currie's paper are: *Æschna constricta*, *Æ.*

californica, *Æ. multicolor*, *Somatochlora semicircularis*, *Tetragoneuria spinigera*, *Sympetrum madidum*, *S. illotum*, *Libellula forensis*, *L. exusta* and *Pachydiplax longipennis*. The present list can be considered only as a fair beginning in the study of British Columbia dragonflies. The collecting thus far has been very limited both as to time and locality and careful work throughout the season and extending over this wide and exceedingly varied region would doubtless add many species to the catalogue. The following species have been taken in adjoining territory and may be looked for in British Columbia with some confidence: *Calopteryx yakima* Hag., *Hetærina californica* Selys., *Lestes unguiculatus* Hag., *L. disjunctus* Selys., *Herpetogomphus compositus* Selys., *Ophiogomphus occidentis* Hag., *O. severus* Hag., *Gomphus confraternus* Selys., *G. sobrinus* Selys., *Anax junius* Drury, *Æschna sitchensis* Hag., *Æ. clepsydra* Say, *Somatochlora albicincta* Burm., *Sympetrum scoticum* Donov., *Libellula nodosticta* Hag., and *L. saturata* Uhler.

In the following list are includied a few notes on certain species taken at Seattle, Washington, and at Laggan and Banff, Alberta. The writer's thanks are due to Messrs. Currie, Harvey and Anderson for valuable material, and to Dr. P. P. Calvert for the comparison of certain specimens with authentic species in his collectiou.

LIST OF SPECIES.

Lestes congener Hagen.

Mr. Currie records a single male from Wellington, taken by Dyar, September 2, '03.

Lestes uncatus Kirby.

One male and two female specimens taken by Currie at Kaslo, August 5–7, '03.

Lestes forcipatus Rambur.

While the other species of *Lestes* appear to be rather rare, *forcipatus* is common in a number of widely separated localities. The writer found it common and pairing at Langford Lake, July 20, '02, and again at Glacier where it was common about Lake Marion. Two male specimens from Mr. Anderson are labeled Victoria, June, 1900, and Currie records ten specimens of both sexes from Kaslo on July 9 and August 6, '03.

Argia vivida Selys.

The occurrence of this species at Glacier, British Columbia, is somewhat surprisng as it is considerably farther northwest that any species of this genus has been known to occur. The record rests on a single male specimen taken by the writer over a stagnant pool in a small mountain meadow at an altitude of 6000 feet, August 22, '02. Dr. Calvert has kindly examined the specimen and finds it to compare closely with more southern examples. Three specimens, a male and two females all very teneral, were taken at Banff, Alberta, June 17, '01, near warm springs on the side of Sulphur Mt., and Dr. Calvert has also reported the species from Lo Lo Hot Springs, Mont. However, I have been informed by the manager of the C. P. R. hotel at Glacier that there are no warm springs known in that vicinity.

Amphiagrion saucium (Burmeister.)

Two male specimens taken at Victoria, July 17, '01. Both sexes taken at Seattle, Wash., July 14, '01. As Mr. E. B. Williamson has shown the identity of *Pyrrhosoma abbreviatum* Selys., with this species (Notes on a few Wyoming Dragonflies, ENTOMOLOGICAL NEWS, May, 1900), it needs only to be added that my specimens fall in line with his observations. Compared with Ohio material, my western specimens measure a trifle larger all around and are distinctly darker, more robust and more villose, especially on the legs, but the appendages of both sexes agree closely.

Enallagma cyathigerum Charpentier.

A common species taken from May to August. Victoria, July 19, '02, two males. Mr. Anderson has sent the writer a number of males (and questionable females also) from Shawnigan Lake, and Mr. Currie has reported it—33 specimens in all—from Kaslo, Loon Lake and Bear Lake on dates ranging from May 29th to August 6th. The writer found it very common and took several pairs *in coitu* at Seattle, Wash., July 14, '01.

Enallagma calverti Morse.

Mr. R. V. Harvey has sent me quite a number of specimens, among them a pair taken *in coitu*, from Vancouver, May 10 to

July 13, '02. Currie found it, 5 males and 1 female, at Loon Lake, Ainsworth, July 11, '03.

Enallagma carunculatum Morse.

This species seems as common in British Columbia as anywhere in the east and is one of the most abundant species noted for the province. About Langford Lake and Victoria it fairly swarms and many were taken pairing July 17, '01 and July 19, '02. Agassiz, July 18, '02, common. A single male was taken at Port Renfrew hovering about a tide-pool. Kaslo, 10 specimens, July 17th and August 6th, pairing (Currie). The writer has taken the species commonly also at Seattle, Wash., July 14, '01.

Ischnura erratica Calvert.

Not common but probably distributed throughout the warmer part of the Sound region of British Columbia and Washington. A pair was taken *in coitu* by Mr. R. V. Harvey on May 10, 1902, and later, June 2d, two more male specimens were taken. A single male was taken by the writer at Langford Lake, July 20, '02, and a pair was taken *in coitu* at Seattle, Wash., July 14, '01. The species has hitherto been known only from a male and female from Mendocino County, California, and a male and female from Olympia, Wash. In his description of the species (Odonata of Baja California, Proc. Calif. Acad. Sci., Series 2, Vol. iv, 1895), Dr. Calvert was unable to affirm positively the identity of the female though the probabilities were very great. The writer is able, by means of the above-mentioned material, to substantiate Dr. Calvert's assumption, and to confirm his description as well. It is a rather curious fact that the two female specimens, in my possession, which were taken *in coitu* with typical male specimens show exactly the same differences as the two described by Calvert. That is to say, my Vancouver specimen has the abdomen colored like that of the male, while my Seattle specimen has 8 and 9 black above without a trace of blue. It must be added that while the former has the post-ocular spots, thoracic stripes, etc,, blue as in the male, the second has not a trace of blue anywhere but all these markings are yellowish brown. These differences in color cannot be due to age as both were sexually mature and

both appear equally fresh, and there can be but one interpretation, viz., that there is here a color dimorphism in the females such as is known to exist in some other species of the genus.

Another fact of still greater interest bears on the relationship of the species to the genus. In describing the species Dr. Calvert places it doubtfully in this genus with the remark (*l. c.*, p. 492), "to write of the female that it possesses no ventral spine to the eighth segment is almost equivalent to excluding this species from the genus *Ischnura*." One of the females in my possession shows a very small though perfectly distinct ventral spine, the other agrees with Calvert's description in not possessing it. This variation has already been shown to exist in *I. denticollis* Burm., and *I. demorsa* Hag. (Calvert, Biol. Centr. Am., Neur., pp. 128–129).

Ischnura perparva (McLachlan MS.) Selys.

Quite common at the small pond near the Four-mile House at Victoria. The habits of the female are much like the bluish female of *verticalis* which it closely resembles in color. On my first visit to the pond only the females were noted, but on the second visit, July 19, '02, several pairs were taken *in coitu*. The females seemed much more common than the males. A single female was taken at Langford Lake, July 20, '02. Seattle, Wash., July 14, '01, two males.

Ischnura cervula Selys.

Common and widely distributed. Victoria, July 17, '01, and July 19, '02, both sexes abundant; Langford Lake, July 20, '02, abundant; Agassiz, July 18, '02, common. Shawnigan Lake, (Anderson). Kaslo, July 17, one male, and August 6, '03, one male (Currie). Seattle, Wash., July 14, '01, common.

(**Ophiogomphus occidentis** Hagen.

Two males of this species were taken along Pine Creek at the head of Lake Washington near Seattle, Wash., July 14, '01. It has not yet been noted for British Columbia but may be looked for in the swift streams of the southern part of the province).

(**Gomphus confraternus** Selys.

Five specimens, both sexes, of this species were taken about

Lake Washington, near Seattle, Wash., July 14, '01. May be looked for in British Columbia with confidence.)

(**Gomphus sobrinus** Selys.

Dr. J. G. Needham has described as the nymph of this species [New Dragonfly Nymphs in the U. S. National Museum, Proc. U. S. Natl. Mus., Vol. xxvii, p. 692 and Pl. 43], several *exuviæ* taken by the writer along the shore of Lake Washington near Seattle, July 14, '01. The imago was not observed, probably because it was too late in the season for the species.)

Cordulegaster dorsalis Hagen.

Two males and one female were taken at Vancouver, July 13, '02, by Mr. R. V. Harvey. Heretofore the species has been known from Alaska and Oregon.

Æschna juncea Linné.

This species is very widely distributed over northern North America, but only a single male specimen has been recorded for British Columbia. This was taken by Mr. Currie at Kaslo, August 7, '03.

Æschna californica (Hagen MS.) Calvert.

This species has already been recorded for British Columbia on the authority of Hagen. It was common at Victoria, July 17, '01, pairing and ovipositing. Two males taken at Langford Lake, July 19, '02. Seattle, Wash., July 14–15, '01.

Æschna multicolor Hagen.

Reported for Victoria, British Columbia, by Hagen (Colorado Report). Victoria, July 19, and Langford Lake, July 20, '02, common at the latter place, both sexes taken. Vancouver, July 8, '02, one male (Harvey). Loon Lake, July 11, '03, two males (Currie).

Æschna constricta Say.

This widely distributed species has already been reported for the province (Hagen, Colorado Report). Currie reports it as taken at Shawnigan Lake, August 31st, one male, and at Wellington, September 2, '03, one male, by Dr. H. G. Dyar. The writer has taken it at Laggan, July 22, '01, and at Banff, Alberta, July 17, '02.

Æschna sp.

Under this head Currie records four unidentifiable females taken at Kaslo, July 8th ; S. Fork Creek, August 11th ; Bear Lake, July 21st ; and at Banff, Alberta, August 16, '02.

Tetragoneuria spinigera (Selys).

Common, flying over a low pasture near Langford Lake, July 20, '02. A number of specimens of both sexes were taken. The species seems much more active on the wing than *T. cynosura*. A male from Goldstream, July 16, 1899, and another from Victoria have been sent me by Mr. Anderson. Previously recorded from British Columbia by Hagen.

Somatochlora semicircularis (Selys).

Widely distributed. Two males taken at Langford Lake, July 20, '02, in company with *Tetragoneuria spinigera*. Six males at Glacier (Lake Marion), August 22, '02, Loon Lake, Ainsworth, July 11, 1 male, and Bear Lake, July 20, '03, 1 female (Currie). A single male specimen taken at Laggan, Alberta, August 24, '02, is very much smaller than my more western specimens, but Hagen (U. S. Geol. Surv. of Colorado, 1873, p. 591), mentions the same difference in his Colorado specimens as compared with a pair from Vancouver Island.

Somatochlora forcipata (Scudder.)

A single male specimen taken in a small sphagnum swamp on high ground at Port Renfrew, August 16, '02. Dr. Calvert, to whom it was referred for comparison, writes, "The Port Renfrew specimen is nearer my New England specimens of *forcipata* than to *semicircularis*, but I am very doubtful whether these two nominal species can be kept distinct." The extreme western occurence of this specimen in the range of *semicircularis* is interesting considering the doubtful validity of the latter as a species.

Cordulia shurtleffi Scudder.

This species has only been taken in the southeastern part of British Columbia where Mr. Currie found it common. Kaslo, May 29th, 1 male, June 10th, 3 males, and Loon Lake July 11th, 17 males. A single female was taken at Kaslo, June 7th, by Dr. Dyar.

Leucorhinia hudsonica (Selys).

A pair *in coitu* and a separate male taken May 10th, and a female taken July 13, '02, have been sent me from Vancouver by Mr. Harvey, and Currie has the following records: Kaslo, June 7th, 1 female (Dyar), June 11th, 1 male, and Ainsworth, June 8, '03, 1 male and 1 female (Dyar). The writer has taken the species at Banff, Alberta, July 15, '02.

Leucorhinia proxima (Hagen MS.) Calvert.

Currie records this species for Kaslo on dates ranging from June 1 to July 9, '03, six specimens in all, both sexes represented.

Sympetrum rubicundulum (Say) var. **assimilatum** (Uhler).

Two females from Harrison River taken by Mr. R. V. Harvey, June 30, '03, apparently belong here. While they are somewhat paler than *assimilatum* in my collection from North Dakota and the wings are flavescent only at the base, the size and general appearance correspond well and the vulvar lamina is exactly the same. The female, which Currie records as *S. madidum*, taken at Kaslo, August 5, '03, also belongs here. I have examined this specimen very carefully and Mr. Currie has reexamined it and writes me under date of March 22d, "I am inclined to agree with you in considering it *assimilatum*."

Sympetrum obtrusum (Hagen).

Currie records two females of this species from Kaslo, Aug. 7, '03. A female from Langford Lake, July 20, '03, and another from Victoria (Anderson) I would place here on account of the size and general appearance, but as the end of the abdomen is lacking in both they cannot be determined with certainty.

Sympetrum pallipes (Hagen).

Five males and two females of this species were taken at Langford Lake, July 20, '03. Two females were taken at Seattle, Wash., July 15, '01. Dr. Calvert has kindly compared these with authentic specimens and writes me that they "agree perfectly."

The writer feels quite certain that this and the two preceding nominal species are only varieties of *S. rubicundulum* Say.

The *S. decisum* of Hagen is also probably only another variety. Needham (Aquatic Insects in the Adirondacks, N. Y. State Mus., Bul. 47, September, '01, p. 521), has remarked in regard to *assimilatum*, *rubicundulum* and *obtrusum* that "they intergrade completely." *Decisum* has been recognized as a synonym of *obtrusum* by Calvert. *Pallipes* has the size and form of *assimilatum*, the genital hamules of the male are almost indistinguishable from those of *obtrusum*, while the vulvar lamina of

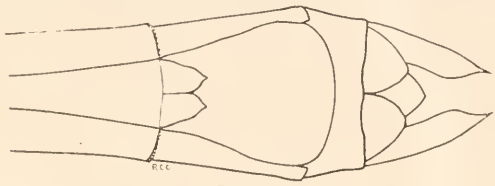

Fig 3.

Sympetrum pallipes, ventral view of ♀ app.

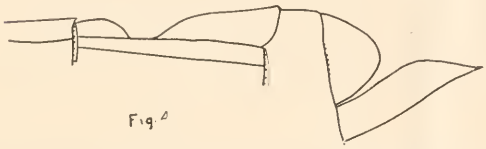

Fig. 4

Sympetrum pallipes, lateral view of ♀ app. inverted.

the female resembles that of *rubicundulum* most closely, only in some cases it is a trifle more inflated. While combining the structural characters of these three forms, *pallipes* differs from all of them somewhat in coloration. Perhaps it would be better to list these as separate species until some one with abundant material and the types at hand has threshed the matter over thoroughly, especially as there is usually no difficulty in distinguishing them.

Sympetrum vicinum (Hagen).

Two teneral females taken at Langford Lake, July 20, '03. Currie reports one male from Wellington, September 2, '03 (Dyar).

Sympetrum semicinctum (Say).

Three females from Langford Lake, July 20, '02. Kaslo, August 6th, 1 female, and August 7, '03, 1 male (Currie).

Sympetrum costiferum (Hagen).

Victoria, July 19th, 1 female, and Langford Lake, July 20, '03, 1 male and 1 female. Dr. Dyar took a specimen also at Wellington, September 2, '03. I believe these are the first records for this and the two preceding species from the far west.

Sympetrum madidum (Hagen).

Previously recorded by Hagen (Notes and Descriptions of some North American Libellulinæ, Psyche, August–October, 1890), for Victoria where it was taken by H. Edwards. The writer has found it fairly common at Victoria, July 17, '01 and

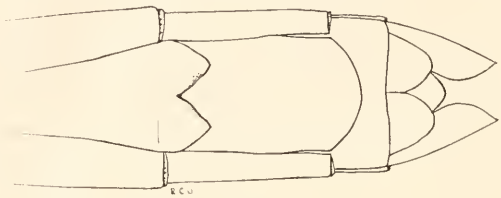

Fig 1.

Sympetrum madidum, ventral view of ♀ app.

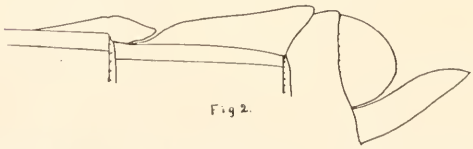

Fig 2.

Sympetrum madidum, lateral view of ♀ app. inverted.

July 19, '02, and at Langford Lake, July 20, '02. The sexes were about equally common and oviposition was going on at this season. Mr. Anderson has sent me a male taken at Shawnigan Lake. A male and two females from Seattle, Wash., July 15, '01. The specimen recorded by Mr. Currie (*l. c.*, p. 19) from Kaslo, belongs probably to *S. assimilatum* (q. v.). At any rate it cannot belong here.

Hagen mentioned as a separate species *Diplax flavicosta* (Proc. Bost. Soc. Nat. Hist., 1875). Later he came to the conclusion that it is only a variety of *madidum* (Psyche, August–October, 1890), but he recorded four females from Victoria in

July under this head. The variety has not been noticed among my specimens.

Sympetrum illotum (Hagen).

Two females and one male were taken at Victoria, July 17, '01. Mr. Anderson took a single male at Shawnigan Lake. The species has been previously recorded for British Columbia. Taken also at Seattle, Wash., July 14, '01. The British Columbia and Washington specimens all seem to belong to the type form of the species.

Sympetrum corruptum (Hagen).

Mr. Currie found this species common at Kaslo in the Kootenay District from June 7 to July 2, '03, both sexes taken, 22 specimens in all. One male was also taken at Loon Lake, July 11, '03.

Mesothemis simplicicollis Say var. **collocata** Hagen.

Common about Victoria July 17, '01 and July 19, '02. On both of these dates it was taken pairing and observed ovipositing. Also a pair taken *in coitu* at Langford Lake, July 20, '02.

Ladona (Libellula) julia (Uhler).

Needham (Aquatic Insects in the Adirondacks, pp. 528–30) has recently re-separated *Libellula exusta* into the three original species: *exusta* Say, *deplanata* Ramb., and *julia* Uhler, on what seems to be a safe basis. At Langford Lake on July 20, '02, a number of specimens of both sexes were taken, and Mr. Anderson has sent me a male from Shawnigan Lake. These I can say without hesitation all belong to *julia*, as Needham indicates the species, agreeing exactly with specimens from North Dakota and Ohio. *L. exusta* has been recorded for British America, Vancouver Island and Washington, but these records were made while the species was in the undifferentiated condition, so to speak, and it seems probable that if they could be analyzed they would all be found to refer to *julia*.

An interesting habit of this species was observed at Langford Lake. Late in the afternoon many were found in woodland on high ground above the Lake resting on stones with the wings outspread against the side of the rock. When one was dis-

turbed it would fly to another stone and alight in the same position. Their brownish and pruinose colors were quite inconspicuous in such places except where the rocks had been blackened by a recent forest fire when they would stand out like silhouettes. Stumps and tree trunks seemed to have no special attractions for them except that one would occasionally alight, *libellula*-fashion, on the tip of a dead twig.

Ladona (Libellula) exusta (Say).

Recorded for Vancouver Island. (See *L. julia.*)

Libellula quadrimaculata Linné.

Very common. Victoria, July 17, '01 and July 19, '02. Pairing and ovipositing. Langford Lake, July 20, '02. Shawnigan Lake (Anderson). Currie records it from Kaslo on dates ranging from May 29 to July 2, '03, both sexes taken and two pairs *in coitu.*

Libellula forensis Hagen.

Common. Taken pairing and ovipositing. Victoria, July 17, '01 and July 19, '02, and Langford Lake, July 20, '02. Hagen (Colorado Report) records it also for Victoria. Mr. Anderson has sent me a number of specimens from Shawnigan Lake.

Plathemis lydia (Drury).

A single female taken at Victoria, July 17, '01, and Mr. Harvey has sent me a specimen, female, from Vancouver, July 14, '02. The writer took another specimen, also a female, at Seattle, Wash., July 14, '01.

Pachydiplax longipennis (Burmeister).

Hagen records this species from Victoria (Proc. Bost. Soc., Nat. Hist., xviii, p. 78, 1875), but it has not been noted recently.

Different Kinds of Types.

By H. T. Fernald, Ph.D., Amherst, Mass.

The increasing importance attached to type specimens in Entomology at the present time is a tendency which should be

encouraged. With a poor describer at work a description may be so indefinite as to give at most but an approximate idea of the insect and its relations to its nearest allies. In such cases the type becomes a "court of last resort" to which to refer, and anyone who has attempted to solve Walker's descriptive puzzles will appreciate the necessity of seeing the type specimens on which these descriptions were based.

But types are scattered in all portions of the globe and it is frequently the case that the personal study is impossible. Specimens may be sent for comparison with the type however, and if the comparison be made by a good authority, the specimens concerned should have an increased value over those not thus compared.

These and other facts have led to the establishment of various grades of relation between the type and other specimens of the species, and differing in their degree of importance. So far as the writer can learn, this was first suggested by Mr. Oldfield Thomas, F. Z. S., in a paper entitled "Suggestions for the more definite use of the word 'Type' and its compounds, as denoting specimens of a greater or less degree of Authenticity," published in the Procceedings of the Zoological Society of London for 1893, page 241, where the statement is made that the term "co-type" had already been introduced by Mr. C. O. Waterhouse.

The ideas and definitions suggested in this paper were later developed and somewhat modified by Lord Walsingham and J. H. Durrant in a pamphlet "Rules for Regulating Nomenclature," etc., published November 2, 1896, by Longmans, Green & Co., this pamphlet being generally referred to as the "Merton Rules."

This paper seems to have had a rather limited circulation; at least it is now almost impossible to obtain a copy of it, for the writer knows of cases where standing orders for it have been placed for several years in this country and in Europe without result. It seems desirable, therefore, to place the definitions of types as given in that paper before the Entomological public in some easily accessible place for reference. These rules are as follows:

No. 38. The type of a species belongs to one of the following categories:

(1) *Type* (described from a unique specimen or from a single specimen selected from a series).

(2) *Type* (= type ♂ + type ♀ described from a single specimen of each sex).

(3) *Co-types* (described from more than one specimen, no single one being selected as the type. The type = the sum of the co-types).

No. 39. Each of the remaining specimens of a series from which the type was selected is called a *Paratype*.

A specimen subsequently named by the author after comparison with the type, is called a *Metatype*.

A specimen named by another than the author, after comparison with the tvpe, is called a *Homotype*.

A specimen collected in the exact locality whence the type was obtained is called a *Topotype*.

"[We have added the term *Homotype* to those proposed by Mr. Oldfield Thomas (Pr. Z. Soc. Lond., 1893, 241–2, and have slightly restricted the original definition of *Metatype* to the exclusion of its necessarily being topotypical]."

It is evident from these rules that the "court of last resort" above mentioned must consist only of the classes defined under Rule 38, and that insects falling in any of the classes defined under Rule 39 are of less value. In fact a Topotype has no actual *type* standing whatever, as an insect from "the exact locality whence the type was obtained" may have been identified by a poor description, and not having been compared with the type itself may possibly even be an entirely different species!

A Homotype, to have its full value, should always bear on its "Homotype" label the name of the person making the comparison, for the personal equation in such cases is a factor which cannot always be safely neglected.

In spite of these facts, Paratypes, Metatypes and Homotypes are certainly more reliably named than insects identified by descriptions only, and their presence in a collection should make that collection far more valuable and trustworthy than would otherwise be the case.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., JUNE, 1905.

We have often noticed the apparent lack of knowledge shown by some European writers in regard to the literature on Entomology in this country, and have wondered whether it was through ignorance or by design. There may be some excuse for this where articles appear in little known or sporadic publications that are not only difficult to obtain in this country but also in Europe. But there is no excuse when the well-known publications which go to all the important societies and scientific institutions abroad are taken into consideration. The Entomological work done in this country compares favorably with that of any other and should receive due consideration.

This contention can readily be substantiated by referring to Wytsman's "Genera Insectorum," a recent publication which reminds us of these facts. All the work is not faulty in this respect, but a number of the papers illustrate it. The most glaring is the work on the family Hesperidæ, by Mabille, where a list of the species of the world is supposed to be given. There are eighty-nine valid North American species omitted, and probably if it had not been that the Biologia Centrali-Americana had been referred to none of our American species since the time of Linnæus and Fabricius would have been mentioned.

A JOINT field meeting of the Entomological Societies of New York, Brooklyn, Newark and Philadelphia will be held at Jamesburg, N. J., on Tuesday, July 4th, 1905. All entomologists interested will be welcome to attend.

Entomological Literature.

MENGEL'S CATALOGUE OF THE ERYCINIDÆ OF THE WORLD.—Accurate catalogues are indispensible to the systematic worker in Entomology. In some families and even orders it is not a hopeless task to find out whether a given species is described, but without a good catalogue it involves far more labor than many of us have time to give it. A catalogue is always an inducement for others to study the group treated. Prof. Mengel has given us an accurate and painstaking piece of work, and has published it at his own expense. A good general catalogue of the butterflies is badly needed, and we hope some one will do for the other families what Prof. Mengel has done for the Erycinidæ.

The very interesting and instructive paper by Mr. and Mrs. G. W. Peckham on "The Instincts and Habits of the Solitary Wasps," published by the Wisconsin Biological Survey, Madison, 1898, has been revised and, with much additional matter, appears under the title "Wasps, Social and Solitary," by George W. Peckham and Elizabeth G. Peckham. With an Introduction by John Burroughs. Illustrations by James H. Emerton. Boston and New York, Houghton, Mifflin & Co. [April], 1905. Pp. xv, 311. The titles of the chapters are: Communal Life, Ammophila and and her Caterpillars, The Great Golden Digger, Several Little Wasps, Crabro, An Island Settlement, The Burrowers, The Wood-Borers, The Spider-Hunters, The Enemies of the Grasshopper, Workers in Clay, Sense of Direction, Instinct and Intelligence. From the Introduction we quote: "I am free to confess that I have had more delight in reading this book than in reading any other nature-book for a long time. Such a queer little people as it reveals to us, so whimsical, so fickle, so fussy, so forgetful, so wise and yet so foolish, such vicrims of routine and yet so individual, with such apparent foresight and yet such thoughtlessness, . . . hardly any two alike. . . ."

Miss Isabel McCracken has a paper on "A Study of the Inheritance of Dichromatism in *Lina lapponica*" in The Journal of Experimental Zoology, Vol. ii, No. 1, Baltimore, 1905, giving the results of breeding experiments on this Chrysomelid beetle carried on during 1904 at the Entomological Laboratory of Stanford University, California. There are two color forms of this species in both sexes, one with black elytra, the other with each elytron brown with 7 black spots. By breeding, cross-breeding and interbreeding these two forms through several generations, the experimenter sought to test Mendel's principles of dominance and segregation as shown by the color of the elytra. The results are expressed in a series of valuable tables, and from their summary we can quote only the following: "No amount of crossing between the two characters in question accomplishes any disintegration or breaking up of either one. These are absolutely fixed with reference to each other in this species. . . . Blacks appearing in a cross between the two opposing characters transmit black

only to the offspring when similars are bred together. The black character is, therefore, stable, or self-perpetuating in the first generation. Spotted [individuals appearing in a cross between the two opposing characters] transmit both opposing characters to the offspring, the offspring likewise transmitting both characters though bred from similar parents. In the third generation from similar parents the spotted appear to breed true." The article is well worthy of careful study.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

MRS. A. T. SLOSSON has changed her address from 38 E. 23d Street to 83 Irving Place, New York city. She will probably spend July and August in the White Mountains.

MESSRS. DAECKE, H. W. WENZEL, H. A. WENZEL AND SKINNER had a pleasant collecting trip on April 30th; Iona, N. J., was visited. *Bombylius pygmæus*, *Basiæschna janata*, *Neurocordulia uhleri*, and *Pyrgus centaureæ* were among the species taken. This is apparently the first record for *P. centaureæ* south of the Orange Mountains. Mr. Wenzel took many rare Scolytidæ and some new to his collection. Iona is in Goucester county about 26 miles south of Camden.

WE HAVE received a circular of announcement of the courses offered at Cedar Point Lake Laboratory, of the Ohio State University, for the coming summer and which calls attention to the course in entomology. This embraces a study of different orders of insects, gives practical training in collecting, preparing, mounting, labeling and identifying insects, and is intended to furnish a practical field and laboratory experience for those who wish to get started in the methods of entomological study. Particulars may be had from PROF. HERBERT OSBORN, Columbus, Ohio.

ATLANTICUS (Orthoptera.)—On October 16, 1904, I took a female *Atlanticus* in dry upland woods near Cold Spring, Long Island, which is interesting for two reasons. First, because members of this genus are very rare in this vicinity; and, second, because it is almost absolutely intermediate beween the only two species that do occur here—*A. pachymerus* (Burm.) and *A. dorsalis* (Burm.).

The ovipositor of this specimen is 22 mm. long. Beutenmüller ('94, Bull. of Am. Mus. Nat. Hist., VI.) gives 30 mm. as the length of the ovipositor of *dorsalis* and 20 mm. of *pachymerus*. It is, thus, in this, nearer *pachymerus*. Its femur is 25 mm. long. Beutenmüller gives (p. 290 *loc cit*) for the female (?) *dorsalis* femur 27 mm. and for *pachymerus* 22 mm. This is, then, in this nearer *dorsalis*; and if we accept the measurement given on page 285, where no mention is made of the sex for

dosalis, it is undoubtedly *dorsalis* in this character. But *pachymerus* is the more common here. Furthermore the body-length is nearer *pachymerus* than *dorsalis*. I have no male from here, so cannot say concerning the tegmina, but according to Scudder ('94, Can. Ent. XXVI., p. 179 *seq.*) the only difference is that in *pachymerus* the exposed portion of the ♂ tegmina is almost as ample as the pronotum, and in *dorsalis* is less than ⅓ as ample.

Can it be that one of Burmeister's species is a synonym of the other? If not, I suppose we must call this specimen *dorsalis* on the ground that animals tend to be small at the extremes of their range.—FRANK E LUTZ.

AS TO GLOSSARIES.—It was interesting to me to see the list of Glossaries in the April number of the "NEWS" because I have another about ready for the printer. It is the revision of the Brooklyn "Explanation of Terms," referred to by Mr. Girault; but it is much more than a revision.

In the original edition there were 90 terms defined under the letter A; the revision definies nearly or quite 400. There were 34 terms under B; there are now 140, and the other letters have increased in proportion. Instead of less than 1500 terms, my cards number over 5000, and I am not sure that I have all the terms even now.

It is my intention to submit the manuscript to a number of specialists before it is sent to the printer, so it is not certain just how soon it will be in type; I hope to have it bear date in 1905. Meanwhile, I will be glad to receive suggestions and to get terms that have a special application in any order. I do not pretend to that technical acquaintance with other than the Lepidoptera and Coleoptera that is necessary to make sure of including all the terms used in descriptive work.—JOHN B. SMITH.

LAST AUGUST while reading Clarence Moore Weed's Life History of American Insects, on page 23, I came across the following quotation from Prof. J. H. Comstock. He was writing about the Cicindelas. "Before alighting they always turn so that they face us, and can then watch our movements."

Such action on the part of the beetle, if voluntary, would indicate greater intelligence than should be expected from an animal whose mental development is as low. I had seen similar statements before and determined to investigate their truth.

Seeking a place where these beetles were abundant, I began to flush them and watch closely when they alighted. Sure enough they all turned so as to face me. Satisfied that Prof. Comstock's statement was correct I began to retrace my steps still watching the alighting of the insects, but now they did not alight facing me but dropped to the ground in the direction of their flight. Pondering why in so short a time there should be such different action on the part of the insects when alighting, I cast about for an explanation. The place I had chosen for observing them was a sandy lane facing east and west; at the time there was a moderate breeze blowing from the west. At first I had walked with the wind then

against it. Could it be the wind that caused the insects to turn at one time and not at another.

That I might observe the action of the insects more closely a friend undertook their flushing while I stood by the side of the road hoping they would alight near me. Soon one did so. My friend was walking with the wind and the startled beetle after a short flight dropped to the ground just in front of me. Before alighting it made a quick sharp turn into the wind, folding its wings and dropped to the ground running a few steps as if unable to overcome the impetus of its flight. My friend then began to flush the beetles while walking against the wind. After a while I was again fortunate to have one alight near me. It did not turn before dropping to the ground but alighted in the direction in which it flew, that was against the wind. These observations were repeated many times with the same results. The insect observed was *Cicindela repanda*, and the deduction is that the turning of the insect just before alighting is more to alight easily by turning against the wind than for the purpose of facing the pursuer.—R. M. MOORE, M. D., Rochester, New York.

A CURIOUS disease from caterpillar hairs. Drs. G. E. de Schweinitz and E. A. Shumway in the Transactions of the American Ophthalmological Society for 1904, describe a peculiar disease of the eye known as Conjunctivitis nodosa. "The patient stated that while playing in the yard of the asylum her eye became inflamed, owing, as she expressed it, to something getting into the eye. . . . . Downward and inward on the bulbar conjunctiva were a number of flattened, grayish-yellow nodules, between which was a marked congestion of the conjunctival and episcleral vessels. Twenty-seven nodules could be differentiated. The whole condition strongly suggested tubercle of the conjunctiva. . . . . Directly in the centre of a certain number of the nodules is the section of a hair. . . . The children are much accustomed to playing with caterpillars, and are in the habit, as one of the children stated, of scaring the young ones by throwing caterpillars at them. The caterpillar which is most used in this playful proceeding is the wooly bear (*Spilosoma virginica*)." —Brief abstract from the original paper.

Doings of Societies.

The February meeting of the Newark Entomological Society was held on the 12th, with President Keller in the chair and 20 members present. The minutes of the previous meeting were read and approved. Mr. L. Hafner, of Jersey City, and Mr. E. W. Scheuber, of Hoboken, were proposed and unanimously elected to membership. The Field Committee reported progress, also the Curators.

Mr. Dickerson showed a twin cocoon of *A. promethea.*

Prof. Smith presented to the Society a copy of his latest "report on mosquitos," containing nearly 500 pages and giving in detail a full account of the work of the last five years.

A vote of thanks was extended to Mr. Keller for a copy of "Comstock's Manual."

Mr. Grossbeck read a paper written by himself* on the life history of *Anthocharis genutia* based upon his own experiences and observations and showed imagos, chrysalis and parasites.

A vote of thanks was also extended to Mr. Reineker for presenting to the Society a picture frame and framing the enlarged photograph of the members.

On account of bad weather the discussion on *Xylina* was laid over till next meeting as Prof. Smith did not risk carrying his collection. After that adjournment.

OTTO BUCHHOLZ, *Secretary.*

The March meeting of the Newark Entomological Society was held on the 12th, with President Keller in the chair and 23 members present. Visitors were Dr. Vael, of Jersey City, and Mr. Buffen, of Newark. The minutes of the previous meeting were read and approved. Mr. George Franck, of Brooklyn, was proposed by Mr. Buchholz and unanimously elected to membership. The Field Committee reported that they were communicating with the other Societies and progressing favorably.

Mr. Brehme presented about 350 specimens of Coleoptera to the Society for which a vote of thanks was extended to him. Mr. Wormsbacher also received a vote of thanks for some specimens of Coleoptera; among them was found *Dynastes tityus* taken at Jersey City.

Prof. Smith had his entire collection of *Xylina* at hand.

A series of 9 specimens of Mr. Keller's collection proved to be new.

Another new species was reared by Mr. Doll in Utah.

OTTO BUCHHOLZ, *Secretary.*

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* Published in the NEWS for May, 1905, pp. 131-134.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held January 26, 1905. Mr. Philip Laurent, Director, presiding. Nine persons were present.

Mr. Rehn exhibited Vol. I of Kirby's Catalogue of the Orthoptera. It contains the earwigs, roaches, mantids and walking-sticks. It represents the first general catalogue of the roaches since 1869; the first important work on mantids and the first since 1859 on phasmids. The speaker said it was an excellent work and most useful in fixing the types of Francis Walker.

Mr. Fred. Weigand and Mr. Newton Harvey were elected associates of the Section.

HENRY SKINNER, *Recorder.*

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia was held March 23, 1905. Vice-Director H. W. Wenzel presiding. Fifteen persons were present.

Mr. Viereck exhibited a series of bees of the genus *Perdita*, and remarked on the association of the species of this genus with the peculiar vegetation noticed in the Tularosa Valley, New Mexico.

The distribution through the several life zones was discussed, the greatest number of forms being peculiar to the Lower Sonoran Zone. The greater portion of the species are found in the southwestern United States, few species being recorded from the east.

Mr. Huntington exhibited some excellent photographs of Diptera and Coleoptera.

Mr. Daecke remarked on the great number of larvæ of Micro-lepidoptera and minute Diptera found in the twigs of annuals.

Dr. Calvert exhibited a series of the genus *Perithemis* and commented on the intermediates between the four nominal North and Central American species, the color pattern and certain characters of the venation being rather plastic. A discussion as to the method of treating and designating these

types and their intermediates was participated in by Messrs. Viereck, Wenzel, Daecke, Calvert and Rehn.

Dr. Calvert illustrated by diagram an involved nomenclatural problem regarding the Odonate genera *Erythemis* and *Mesothemis*.

J. A. G. REHN, *Recorder pro tem.*

A meeting of the American Entomological Society was held February 23, 1905. Dr. D. M. Castle in the chair. Fourteen persons were present.

The death of Dr. A. S. Packard, a corresponding member elected October 14, 1861, was announced.

An invitation from the Newark Society to join in a field meeting on July 4th was accepted.

Mr. Viereck said Prof. C. V. Riley had estimated the number of species of insects at ten millions and the Hymenoptera outnumbered all the other orders. The speaker commented on the great amount of time necessary to study the species of one continent alone, and all this time could be taken up with systematic work. He spoke of the value of segregating Lepidopterous larvæ in rearing them, so as to retain all Hymenopterous parasites so as to know their hosts. Mr. Rehn said there was but one true parasite known in the Orthoptera and that lived on a rat. He said another species oviposits in wood.

H. SKINNER, *Secretary.*

Minutes of meetings of Brooklyn Entomological Society held at the residence of Mr. George Franck, 1040 DeKalb Avenue, Brooklyn, N. Y.

December 1, 1904.—Nineteen persons present, the President in the chair. Mr. Edgar L. Dickerson, of Newark, N. J., was elected a member.

The President announced the death on November 10, 1904, at San Antonio, Texas, of Prof. F. G. Schaupp, the founder of the society, which announcement was followed by due expressions of regret by those present who had been formerly associated with him.

Mr. Wasmuth exhibited some specimens of *turnus* larvæ which he had taken in the latter part of November on wild cherry, the leaves of which, still green, he had heretofore found in December in sheltered localities in Brooklyn.

Mr. Engelhardt reported taking in November, 1903, a brood of *antiopa* larvæ which emerged January, 1904, the imagines being small with marginal maculation materially changed.

Dr. Zabriskie exhibited a section of a nest of an unusually large colony of the "Yellow Jacket," *Vespa germanica*, which he had excavated near his residence in Flatbush, L. I., upon the advent of cold weather. The nest originally consisted of nine combs, the diameters of the central one measuring 6½ inches by 9 inches respectively. The combs on either side decreased gradually in size and their aggregate thickness including the pedicels with which they were joined was some 6 inches to 7 inches. The exterior coverings adjacent to the earth were so loose and flaky in texture as to render preservation in their original form impossible. Many mature insects were found and three queens which were revived when warmed.

Messrs. Smith and Weeks both gave instances showing the unusually abundant occurrence of this insect during the past season, while on the other hand, as Prof. Smith stated, no *Heliothis armiger* had been observed on the corn in southern New Jersey.

General discussion as to the cause of variation in frequency of various species in certain years.

Mr. Weeks, while admitting that parasites and other natural enemies were factors, claimed that sudden climatic changes were most fatal to insect life. So long as the process of development of an egg or pupa had not been initiated great extremes could be safely endured, but if, through the influence of favorable temperature, the egg or pupa were partially developed, the larva recently hatched or about to moult, or the imago just prepared for flight, the sudden advent of severe cold accompanied by violent winds and more or less long continued chilling rains would almost inevitably result in the total annihilation of a species for the time being within the territory affected,

and these conditions would readily account for its subsequent rarity in certain years. As to the future effect of any particular storm or extreme in temperature it would be necessary to know the extent of development of each insect and the stage through which it was passing at the time to be able to predict with any degree of certainty upon its resultant abundance or rarity.

Messrs. Smith, Roberts, Wasmuth, Engelhardt and Doll gave instances in support of the above theory.

January 5, 1905.—Twenty-two persons present, the President in the chair. Mr. John Lewis Childs, of Floral Park, L. I., and Mr. William C. Wood, of 51 Fifth Ave., New York City, were elected members. The following officers were elected for the ensuing year: Jeremiah L. Zabriskie, President; Edward L. Graef, Vice-President; Christopher H. Roberts, Treasurer; Richard F. Pearsall, Librarian; George Franck, Curator; Archibald C. Weeks, Secretary. John B. Smith and Carl Schaffer, members of Executive Committee in conjunction with above-named officers.

At the suggestion of a delegation from Mr. Bischoff, of the Newark Entomological Society, Messrs. Smith, Franck and Schaffer were appointed a committee to arrange for a joint meeting on July 4th of the Philadelphia, Newark, New York and Brooklyn Societies.

Prof. Smith briefly reviewed the salient changes in entomological effort which had occurred during the past thirty years. At first when there was so much material which was comparatively new and undescribed, considerable attention was devoted to collecting and field work. Then followed systems of classification and studies in anatomy, physiology, histology and œcology and attempts at regulation of nomenclature; but experience had shown that the most effective work was that of the collector and observer of life histories and in these lines there had been a renewal of interest, not only in the verification of species and varieties, but in the details of insect existence, to our knowledge of which even the most indifferent worker is often able to contribute observations of value.

ARCHIBALD C. WEEKS, *Secretary.*

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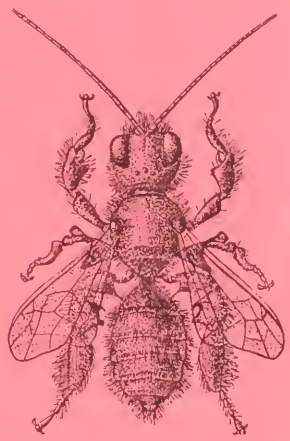

Cryptohalictoides spiniferus Viereck.

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CRINODES BIEDERMANI SKINNER.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. SEPTEMBER, 1905. No. 7.

CONTENTS:

A New Crinodes from Arizona (Lepidoptera, Heterocera, Notodontidae).

BY HENRY SKINNER.

See Plate IX.

C. biedermani n. sp. ♂.—Head light grey. Thorax grey, with a triangular area of velvety brown. Abdomen yellowish grey. *Primaries:* Inner half of the costa and the base yellowish grey; central area seal brown; outer half of the wing obscure lighter and darker brown markings. *Secondaries:* Yellowish grey with an almost obsolete anal spot. Expanse of ♂ 68 mm.

The female is a little larger but is marked in practically the same way; it lacks the brush at the end of the abdomen. There are nine species in the genus and this is related to *besckei* Hübner. Described from one male and one female reared from pupæ sent by C. R. Biederman from Reef, Cochise Co., Arizona. It is to be hoped that Mr. Biederman will supply the life history of this interesting moth.

COLLECTING DRAGONFLIES BY A DECOY.—At Astoria, Oregon, July 20, 1902, I tried a very successful experiment. I took a conspicuous dragonfly, asphyxiated with cyanide, and pinned him to the top of an unusually tall reed. By standing motionless, I had little difficulty in securing many specimens of the same and other species that would dip down and even alight on the dead insect, or beside it on the reed.—O. S. WESTCOTT, Chicago, Ill.

Coleoptera at Light in Delaware.

By C. O. Houghton.

The present list, aside from representing a part of the Coleoptera to be found at Newark, Delaware, may be of some interest to the collector of beetles as illustrating what may be done by means of collecting with a trap-lantern and the species which are attracted thereto. It should also be of some value to the economic entomologist for the latter reason, and it is principally on this account that the material has been worked up and the data placed in shape for publication.

During a part of the season of 1901, Prof. E. D. Sanderson ran a series of trap-lanterns at Newark and at other places in this State with a view of determining something relative to their value from an economic standpoint. These lanterns were of various makes and sizes, and an immense amount of material was collected, hardly any of which has been worked up, however, and concerning which nothing has as yet been published. The writer has been working on the Coleoptera thus taken at Newark, and this list embraces only those species taken during one night, the 13th of June, 1901, in a Gillette trap-lantern,* with reflectors. Carbon bisulphide was used as a killing agent and all specimens were bottled in alcohol the following morning. Prof. Sanderson's notes regarding weather conditions for that night were "cooler and cloudy," the night previous having been "quite warm."

The question as to the value of trap-lanterns, from the standpoint of an economic entomologist, is one that has been much discussed during the past few years, and is one upon which all entomologists do not agree; and it would seem desirable therefore that we have more data upon the subject from various sections of the country. As is well known, certain species of beetles (to take the Coleoptera for illustration) are strongly attracted to light, and at certain times these may be taken in great numbers in trap-lanterns. This fact is well

* For a description of this type of lantern see Proc. 9th Ann. Meeting Assoc. Economic Entomologists, p. 75, and for illustration of whole apparatus, Bul. 43 Colo. Agric. Expt. Sta., p. 22.

evidenced in this list, as will be seen by referring to the numbers following *Clivina impressifrons*, *Agonoderus pallipes*, *A. partiarius*, *A. pauperculus*, *A. testaceus*, *Stenolophus ochropezus*, etc., etc. Other species are rarely or never attracted to lights, and it would be folly to attempt to reduce their numbers by the use of trap-lanterns.

If entomologists in various parts of the country would endeavor to get data upon the insects of each order as to what forms are and what are not noticeably attracted to light, it would be possible to settle once and for all the question as to the value of the trap-lantern for all of our principal insect pests. Nor would data of this sort be of value to the economic entomologist alone; the collector and systematic worker should get from such data points which ought to be of great value to him, and there is no doubt that work of this sort would add greatly to our knowledge of the geographical distribution of our insects.

There are included in this list twenty-five families representing seventy genera and one hundred and twelve species. Nearly twenty-five hundred specimens were taken. Nearly one-half of these, including most of the small Caribidæ, was determined by Mr. Chas. Liebeck. About fifty species were named by Mr. E. A. Schwarz through the kindness of Dr. L. O. Howard; the writer is responsible for the determination of the remainder. The numbers following the names indicate the number of specimens that were taken of each species.

CARABIDÆ.

Dyschirius erythrocerus *Lec*	2
" filiformis *Lec*	2
Clivina impressifrons *Lec*	121
" bipustulata *Fab.*	33
Bembidium variegatum *Say*	5
" versicolor *Lec*	1
" affine *Say*	6
Tachys proximus *Say*	3
" scitulus *Lec*	3
" corruscus *Lec*	1
" vivax *Lec*	1
Pterostichus sayi *Brulle.*	49
Loxandrus erraticus *Dej.*	1
Badister elegans *Lec*	1
Platynus tenuis *Lec*	1
" atratus *Lec.*	4
" æruginosus *Dej*	12
" lutulentus *Lec.*	1
Casnonia pennsylvanica *Linn*	43
Lebia grandis *Hentz*	13
" atriventris *Say*	19
" pulchella *Dej.*	1
" viridis *Say*	1
" viridipennis *Dej*	1
" analis *Dej*	1
Helluomorpha bicolor *Harr*	3
Chlænius tomentosus *Say*	4

Geopinus incrassatus *Dej* . . . 1
Agonoderus lineola *Fab* 4
" pallipes *Fab* . . . 630
" partiarius *Say* . . . 89
" pauperculus *Dej* . 151
" indistinctus *Dej* . 61
" testaceus *Dej*. . . 444
Harpalus spadiceus *Dej*. . . . 1
Stenolophus conjunctus *Say* . . 1
" ochropezus *Say*. . 147
" alternans *Lec*. . . 1
Acupalpus hydropicus *Lec*. . . 21
" carus *Lec* 3
" longulus *Dej* . . . 2
" rectangulus *Chd* . . 73
Bradycellus rupestris *Say* . . . 45
Anisodactylus carbonarius *Say* 2
" baltimorensis *Say* 3
" cœnus *Say* . . . 3
" sericeus *Harr* . 5

DYTISCIDÆ.

Bidessus affinis *Say* 1

HYDROPHILIDÆ.

Berosus subsignatus *Lec*. . . . 1
Cercyon prætextatum *Say* . . . 4

PSELAPHIDÆ

Decarthron abnorme *Lec* . . . 6

STAPHYLINIDÆ.

Cryptobium badium *Grav* . . . 2
" bicolor *Grav* . . . 1
Lathrobium longiusculum *Grav* 1
" collare *Er* 8
" ventrale *Lec* . . . 69
Lithocharis corticina *Grav* . . 1
Pinophilus latipes *Grav* 1
Bledius semiferrugineus *Lec* . . 1

PHALACRIDÆ.

Phalacrus pumilio *Lec*. 36

CUCUJIDÆ.

Læmophlœus biguttatus *Say* . . 5

CRYPTOPHAGIDÆ.

Tomarus pulchellus *Lec* 1

MYCETOPHAGIDÆ.

Litargus 6-punctatus *Say* . . . 6
Typhœa fumata *Linn* 13

NITIDULIDÆ.

Carpophilus brachypterus *Say* . 3
Soronia undulata *Say* 2

LATRIDIIDÆ.

Melanophthalmus distinguenda *Com* . 22

TROGOSITIDÆ.

Monotoma picipes *Hbst* 1
Bactridium striolatum *Reit* . . 1

DASCYLLIDÆ.

Ptylodactyla sernicollis *Say* . . 3

ELATERIDÆ.

Monocrepidius bellus *Say* . . . 53
Drasterius elegans *Fab* 10
Glyphonyx quietus *Say* 1
Melanotus communis *Gyll*. . . 2
" dubius *Lec* 1
Limonius auripilis *Say*. 3

THROSCIDÆ,

Throscus chevrolati *Bonv* . . . 14

LAMPYRIDÆ.

Plateros floralis *Melsh*. 1
Photuris pennsylvanica *DeG*. . 4
Chauliognathus marginatus *Fab* 1
Podabrus basilaris *Say* . . . 2
Telephorus lineola *Fab*. 7
" rectus *Melsh*. . . . 1

PTINIDÆ.

Hemiptychus gravis *Lec*. . . . 2

SCARABÆIDÆ.

Atænius gracilis *Melsh*. 4
" cognatus *Lec* 1

Aphodius ruricola *Melsh.* . . . 33
" rubeolus *Beauv.* . . . 1
" stercorosus *Melsh* . . 2
Bolboceras lazarus *Fab* 1
Diplotaxis frondicola *Blanch.* . 1
Anomala undulata *Melsh* . . . 1

CERAMBYCIDÆ.

Elaphidion parallelum *Newm* . 2
Heterachthes ebenus *Newm.* . 2

CHRYSOMELIDÆ.

Diabrotica 12-punctata *Oliv.* . . 15
" vittata *Fab.* 8
Haltica ignita *Ill* 14

TENEBRIONIDÆ.

Hypophlœus piliger *Lec* 1

MELANDRYIDÆ.

Eustrophus bicolor *Say* 1

MORDELLIDÆ.

Mordellistena vapida *Lec* . . . 1
" nigricans *Melsh* . 1
" pustulata *Melsh* . 1

ANTHICIDÆ

Notoxus bicolor *Say* 15
" monodon *Fab* 19
Anthicus haldemani *Lec.* . . . 1
" cervinus *Laf.* 1

CURCULIONIDÆ.

Listronotus latiusculus *Boh* . . 2
Macrops delumbis *Gyll* 1
" sparsus ? *Say.* 2
" porcellus *Say* 16
Eudalus limatulus *Gyll* 1
Lissorhoptrus simplex *Say.* . . 2
Conotrachelus nenuphar *Hbst* . 2
" senicuius *Lec.* . 13

Two New Mymaridae from Russian Turkestan.

By William H. Ashmead, M.A., D.Sc.

Recently, Prof. L. Berg, Custodian of the Department of Ichthyology, of the Zoological Museum of the Imperial Academy of Sciences, of St. Petersburg, Russia, sent me two parasitic Hymenoptera for names, taken by him in sweet water, at Syr-darja, Russian Turkestan, which prove to be new species in the family Mymaridæ.

They are without doubt parasitic in the eggs of some aquatic insect, probably in the eggs of Dragon-flies (Odonata), as Polynemæ have been bred in the United States by Prof. James G. Needham from the eggs of these insects.

Genus **ANAGRUS** Haliday.

Anagrus hydrophilus n. sp.—♀.—Length 0.5 mm. Black and shining, the head in front brownish, the mandibles, the legs, except the last joint of the tarsi, and the antennæ, except the last joint of the club, pale yellowish ; the last joint of the tarsi is fuscous, the last joint of the antennæ brownish ; the wings are hyaline longly fringed, with the short marginal vein brown. The 9-jointed antennæ end in a large ovate single jointed

club, which is as long as the scape but much stouter; the pedicel is obconical, longer than thick at apex; the basal three or four joints of the funicle are very small, not longer than thick, the others to the club being larger, longer than thick. The abdomen, in outline, is broadly oval, sessile and a little depressed.

Type.—No. 8,393, U. S. N. M.
Taken by Prof. L. Berg in 1901.

Genus **POLYNEMA** Haliday.

Polynema bergi n. sp.—♀.—Length about 0 6 mm. Head, thorax and abdomen uniformly brownish-yellow, smooth and shining, the antennæ and legs pale yellowish, the wings hyaline, the margins fringed with long hairs.

The head is transverse quadrate, as wide as the thorax, the mouth parts pale yellowish; the antennæ are long, 9-jointed, the scape rather long, the flagellum clavate, the last joint enlarged almost egg-shaped and forming an unjointed club, the penultimate joint small but a little stouter than the preceding joints which are cylindrical.

Type.—No. 8,394, U. S. N. M.
Taken by Prof. L. Berg in 1901.

Two New South American Grasshoppers.

By Lawrence Bruner, Lincoln, Nebr.

Some time ago I received a small collection of Orthoptera from Sapucay, Paraguay. In studying them it was found that perhaps as many as a dozen of the species are new to science. Although it is quite desirable that these should have been described before now, my time has been too thoroughly occupied to do this. Since it has been necessary for Mr. Rehn to refer to two of them, these are briefly described herewith. It is to be hoped that the remainder may be likewise described before long.

Plectrotettix varipes n. sp.

In structure very similar to *P. pictus* Bruner, and *P. brunneri* Giglio-Tos, but differing decidedly from both of these in its general appearance and coloration. In size smaller than *pictus* which it approaches in structure. The hind femora moderately robust, as long as (♀) or considerably surpassing (♂) the abdomen. Tibiæ 10 to 12 spined.

General color of insect rather dark cinereo-testaceous, inclining to wood-brown about the head and thorax as indicated by the material at hand,

but no doubt more or less variable as indicated by the presence of a greenish tinge about the head and thorax of one of the male specimens. Tegmina darker brown, the mottlings more or less scattered and composed of rather small irregular flecks instead of large blotches or well defined transverse bands, though at times there is a tendency toward the latter near the apex. Both females possess a pale median dorsal stripe which reaches from the fastigium to the tip of the closed tegmina, while in the males it is absent. Pronotum above with the usual decussate or x-shaped pale lines along the lateral carinæ and the dark discal markings common to most of the members of this and related genera; sides with a median obscure patch (♂) or scarcely so provided (♀). Hind femora heavily marked above and internally with three dusky bands which are continued on the outer disk as oblique bars; apices of femora and extreme base of tibiæ also black; lower edge and tibiæ largely blood-red, the former sometimes inclining to testaceous, base of latter broadly pale on outer and inner faces, most pronounced in the female. In the male the apical third of hind tibiæ is strongly tinged with bluish purple.

Length of body, ♂, 26, ♀, 35; of pronotum, ♂, 5, ♀, 6.75; of tegmina, ♂, 24.5, ♀, 28; of hind femora, ♂, 17, ♀, 21 millimeters.

Habitat.—Two males and two females, Sapucay, Paraguay.

Tropinotus regularis n. sp.

A rather small but robust insect in which the tegmina and wings extend but little beyond the apex of the hind femora. In color it is nearly uniform wood-brown above becoming paler below. The dark markings of the discal field of tegmina are quite uniform and separated by transverse parallel dirty white bars.

Length of body, 28 mm; of pronotum, 9, of tegmina, 23, of hind femora, 16.5 millemeters.

Habitat.—A single male specimen from Sapucay, Paraguay.

This insect was referred to by James A. G. Rehn in his paper entitled "Records of some Paraguayan Orthoptera with the Description of a New Genus and New Species," (Ent. News, xvi, p. 38).

The insect falls into the section of the genus where the members have the pronotal crest smooth throughout. The four species of the region which belong here may be separated by the annexed table:

A. Crest of the pronotum more or less crenulate, or even serrulate, posteriorly. Genicular angles of hind femora acute, a little lengthened . . . . . **discoideus, rosulentus,** etc.

A². Crest of the pronotum smooth posteriorly. Genicular angles of hind femora more rounded.

b. Color largely green; the discal area of tegmina with, or without, dark spots.

c. Posterior femora punctate, and with all the carinæ nigro-serrate. Hind tibiæ armed with 11 or 12 spines on outer side (San Leopold, Central Brazil) . . . . . **scabripes** Stal.

*c*². Posterior femora nearly smooth, only partially nigro-punctate on the carinæ. Hind tibiæ armed with 13 to 16 spines on outer row.

d. Larger and more robust (36, ♂, 51 ♀ mm): the disk of tegmina provided with a row of prominent dark subquadrate spots. Hind femora rather robust basally. The tibiæ 13 or 14 spined . . . . . **lævipes** Stal.

*d*². Smaller and slenderer (30 ♂, 40 ♀, mm.) Disk of tegmina immaculate or only showing traces of the discal spots. Sometimes with the body and tegmina more or less infuscated. Hind femora slender. The tibiæ 15 to 16 spined. (San Paulo, Brazil). . . . . **gracilis** n. sp.*

*b*². Color brownish testaceous; the discal quadrate spots of tegmina very regular . . . . . **regularis** n. sp.

Notes on some Florida Orthoptera.

By A. N. Caudell, Washington, D. C.

During the month of March of the present year Dr. Dyar and I traveled in Florida. Our time was so completely taken up in collecting and rearing mosquitoes that we had little time for making general collections of insects. A few Orthoptera, as well as a small number of other insects, were however taken, and the Orthoptera are here noted for the records, a couple of which are new for the State, and a few notes on habitats and variation. There were about one hundred and fifty specimens comprising twenty-seven species as follows:

Anisolabis azteca Dohrn.

One pair taken in early March under bark of live oak at Jacksonville.

Eurycotis floridana Walk.

Many specimens of this large roach were taken under palmetto leaves lying on the ground at New Smyrna. One speci-

* This third undescribed South American locust is contained in a collection received some time ago from the museum located at San Paulo, Brazil. Its chief characteristics are given in the synoptic table.

men was also taken across the bay from Miami. The young of this species, or what I believe to be the young, the *E. sabalianus* of Scudder, occurred with the mature individuals. A number of the young were brought to Washington and placed in cages with the hopes of rearing the adult, thus proving or disproving the correctness of Rehn's union of these two forms.

Leucophæa surinamensis Linn.

One adult specimen taken under a log at Miami in early March.

Blatta orientalis Linn.

Immature specimens taken indoors at Miami and West Palm Beach.

Anisomorpha buprestoides Stoll.

One young nymph taken in the woods near Palm Beach.

Tettigidea lateralis Say.

One adult female from Sanford. Others were seen at various points but not taken. This specimen from Sanford jumped into a shallow pool of water in its efforts to escape, and when I attempted to pick it up it deliberately dove to a blade of grass fully an inch beneath the surface of the water. Here it remained, grasping the stem with its legs, for several seconds. This is the first time I ever witnessed the voluntary immersion of one of these locusts.

Rhadinotatum brevipenne Thom.

Specimens, adult and nymphs, taken at Miami and Arcadia.

Dichromorpha viridis Scudd.

Nymphs of this species were taken at Orange City Junction and at Palm Beach. One adult was also taken at the latter place.

Orphulella pelidna Burm.

Both brown and green forms of this species were taken at Key West and at Palm Beach. This is very near the *O. pratorum* of Scudder. The length of the antennæ varies as does also the size and color.

Arphia sulphurea Fabr.

Specimens taken at Key West. The hind tibiæ of these specimens are distinctly marked on the basal as well as on the apical half with a pale band, while in the north the basal half is unicolorous or faintly banded.

Arphia xanthoptera Burm.

A few young specimens taken at Orange City Junction.

Chortophaga viridifasciata De Geer.

Nymphs of this species were taken at Key West and Palm Beach.

Scirtetica picta Scudd.

Across the bay from Miami I took this species in company with *Psinidia fenestralis*. They were taken several rods back from the beach on the white hot sand.

Psinidia fenestralis Serv.

Taken across the bay from Miami as mentioned under the previous species.

Encoptolophus costalis Scudd.

This species, both adults and nymphs, was taken at Key West and Sanford. A specimen of this species from Texas, now preserved in the National Museum, is remarkable for having the hind tibiæ bright red. Otherwise it is normal.

Trimerotropis maritima Harr.

Typical specimens of this species were taken at Palm Beach, both young and adults. Its congener, *T. citrina*, was not seen. This is the first time, so far as recorded, that this species has been found so far south, the species being generally there replaced by the nearly related species *citrina*. These specimens from Palm Beach are entirely similar to ones taken in Virginia and Rhode Island, showing no indications of variation towards *citrina* as mentioned recently by Morse.*

Dictyophorus reticulatus Thunb.

Several dozens of recently issued nymphs of this fine large insect were found congregated together in the edge of a swamp near Miami in early March.

Arnilia chlorizans Walk.

Miami.

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* Publication No. 18 of the Carnegie Institute, 1904.

Leptysma marginicollis Serv.

Miami. Both this species and the last were taken in a swamp of reeds and coarse grass along the Miami River.

Schistocerca americana Dru.

This species was taken at Key West, Miami and Palm Beach.

Schistocerca damnifica Sauss.

One adult female taken at Orange City Junction.

Melanoplus paroxyoides Scudd.

Key West and Miami. One male from Miami has the elytra slightly surpassing the tips of the posterior femora and the hind tibiæ are wholly glaucus, the base not luteous. This was taken near the everglades back of Miami in a low wet locality, such as is frequently inhabited by species of the genus *Paroxya*. Two nymphs were taken in a similar locality. The hind tibiæ of the nymphs, at least in dried specimens, are brownish rather than glaucus.

Aptenopedes aptera Scudd.

Miami.

Aptenopedes clara Rehn.

Two males from Miami. They agree with Rehn's description except the size is considerably less, the measurements being as follows :

Length pronotum, 3.5 ; elytra, 1.3 ; posterior femora, 9 mm.

Conocephalus nietoi Sauss.

One male taken at Miami in early March. It was singing just after dark and was traced with much difficulty. It sounded as if the songster was in a nearby bush, but as I approached the sound receded. The insect was finally sighted half a block down the street, and on the opposite side from where it at first seemed to be. This specimen has the posterior portion of the pronotum discolored as though acted upon by some caustic agent, making conspicuous yellowish white stains on the green surface. But it was present on the freshly captured specimen and was not done after capture.

Atlanticus dorsalis Burm.

Nymphs at Jacksonville and Miami.

Gryllus pennsylvanicus Burm.

Both long and short winged adults and several nymphs taken at Orange City Junction.

Anaphes conotracheli species novem. An Important Egg-parasite.

A. Arsene Girault.

Male.—Length, variable, 0.47-0.50 mm.; 0.48 mm. average.—Body black, shining; legs (with the exception of most of the middle of the femora, portions of the tibiæ, and tips of the tarsi, all of which are darker), apical two-thirds of the scape, and venation pale yellowish. Antennæ and legs with whitish pubescence. Head narrow, transverse, wider than the thorax, bearing sparse short whitish hairs, minutely striate; the ocelli inconspicuous; the mandibles yellowish brown, falcate, bidentate at the tips. Thorax convex, longer than head and abdomen combined, irregularly striate, the dorsum of the mesothorax with a deep round fovea on each side near the insertion of the wings. Abdomen subglobate, small, the dorsum hispid. Wings irridescent; the venation pale, inconspicuous.

Antennæ 12-jointed, longer than the body, the funicle filiform, hirsute; joint 1, curved, convex, subreniform; 2, globate; 3-12, cylindric, subequal in length becoming gradually longer cephalad; 3 and 4, thicker than the following joints; length, 0.70 mm. Eyes very dark garnet, oval, coarse.

From twenty specimens.

Female.—Length variable; 0.53-0.60 mm.; 0 55 mm. average. The same. Larger; joints 1 and 2 of the antennæ dilute yellow. Abdomen longer, cylindrical, oval, glabrous black, the anal segment hairy. Oral area yellowish, the mandibles brown. Ovipositor slightly protruding, long and slender, acute.

Antennæ 9-jointed, pubescent, not as long as the body; joint 1 curved, twice the length of 2, more slender than the corresponding joint in the male; 2, globate; 3, globate, abruptly smaller; 4, columnar; 5, 6, 7, 8, cylindrical oval, subequal; 9, or the club, much longer, larger, ovate; length, 0.40 mm.

From twenty specimens.

Forty specimens; 20 males, 20 females.

From the naked eye, visible; small, active creatures which jump suddenly when disturbed.

First bred from eggs of *Conotrachelus nenuphar* Herbst, sent in by Professor A. L. Quaintance from Fort Valley, Georgia, in connection with the deciduous fruit-insect investigations, Bureau of Entomology, U. S. Department of Agriculture, May 9, 1905. Since obtained from Arundel, Md., (May 16th), Charlottesville, Va. (May, 18th W. M. Scott), and Tryon, N. C. (May 20th, W. F. Fiske). Common. Bred at Washington, D. C.

Type deposited in the United States National Museum.

A Bibliography of Entomological Glossaries. II, Supplementary and Amendatory.

By Alec. Arsene Girault.

In preparing the bibliography of entomological glossaries published a short time ago (Ent. News, xvi, 1905, pp. 105–108), it was not intended to make the list of titles a complete one. The list was simply compiled for the use of workers, and to serve as a guide to the selection of a suitable glossary or glossaries for laboratory work or for reference. By no means was it intended as a bibliography of entomological terminology or nomenclature.

Since its preparation, however, the writer has obtained access to more literature, and as a result, some miscellaneous titles are herewith offered as supplements. With these, the bibliography of entomological glossaries may practically be called complete and, incidentally, a bibliography of entomological terminology well started. The latter, however, is a complicated subject, and one which the writer does not feel able to handle at present, except in this preliminary and desultory manner. The two are, of course, intimately related, and the more general remarks following are made in reference to scientific terminology or nomenclature.

Through gross carelessness, the writer has also made some important mistakes. The first of these was kindly pointed out by Dr. L. O Howard and, at his suggestion, is corrected. On page 105 (*l. c.*), it is stated that the entomological terms in the Standard Dictionary (Funk and Wagnall's Co., N. Y., 1902), were defined by Dr. Howard. It should be understood by this, that the terms in the morphological branch only of entomology were thus defined including also a few terms in economic entomology; the more general zoölogical terms were defined by Dr. Theodore N. Gill, to whom credit should be given.

ERRATA ET CORRIGENDA. Part 1.

Page 105, line 9, Insert *Full* before vocabularies.

" 105, lines, 15-16, *Funk and Wagnall's Company. N. Y.*, read Funk and Wagnall's Company, N. Y., *1902.*

Page 106, line 2, *Intro. to Entom., IV., pp. 257-354*, read Intro. *Ent., London*, IV, pp. 257-354.

" 106, line 17, *Fundamenta Entomologiæ*, read Fundamenta Entomologiæ, *Upsaliæ, 31 pp.*

" 106, line 24, Hamburg, 1778, read *Hamburgi et Kilonii, MDCCLXXVIII. 178 pp.*

" 106, lines 27, 28, *1788*, read *1789*.

" 106, lines 38-40, *1829. Anon. Description and History of some of the Principal British Insects. Terminology. Mag. Nat. Hist., 1829, t. I, pp. 421-424, fig.* read 1829. Anon. (A. J. N.) Description and History of some of the Principle British Insects: Terminology. Mag. Nat. Hist., *and Jour. Zool., Bot., Minerology, etc., London*, I, pp. 421, 424, *figs. 180-181. Brief on a few general anatomical terms.*

" 106, line 41, *Terminologie* read *Terminologia*.

" 107, line 1, *1867. Anon. Glossary. Amer. Naturalist, I, pp. 681-868*, read 1867-*1868*. Anon. Glossary. Amer. Naturalist, *Salem, Mass.*, I, pp. 681-*688*.

" 107, line 6, Read *1880*. Brooklyn Entomological Society. Explanation of Terms used in Entomology. Bull. Brook. Ent. Soc., *II, 26 pp.* Repr., Brooklyn, N. Y., 1883, 38 pp.

" 107, line 17, *in Trans. Dept. Agr. Ill., 1881*, read in Trans. Dept. *Agric. Illinois f. 1880, xviii.*

" 107, lines 32-33, *Pp. 397-380* read *Pp. 397 398*.

The writer's attention has been called to the Century Dictionary, The Century Company, New York, 1889, 6 vols. The general biological terms were defined by Dr. Elliot Coues, assisted in entomology by Dr. Howard, and Mr. Herbert H. Smith, and by the late Dr. Charles V. Riley, who also contributed figures. The work is a most important one.

A very important article on general anatomical nomenclature was published in Science, N. Y., *1881*, II, pp. 122-126, 133-138, by Dr. Burt G. Wilder, entitled *A Partial Revision of Anatomical Nomenclature, with Especial Reference to that of the Brain*. This deals, in part, with the old ambiguous or equivocal terms of direction, such as *front, behind, before, below*, and so forth. For these, suitable scientific terms are proposed.* Comstock, in some of his writings (Guide to Practical Work in Elementary Entomology, An Outline for the use of Students in the Entomological Laboratory of Cor-

* And compare Wilder and Gage, as cited by Comstock in the work next mentioned.

nell University, Ithaca, N. Y., 1882), has applied these terms to entomology. They are such well known toponymic terms as *cephalic*, *caudal*, *dorsal*, *ventral*, and so forth, and their adverbial forms. Wilder gives important references, as does also Comstock (*l. c.*).

I am indebted to Dr. Frank H. Chittenden for reference to *A Nomenclature of Colors for Naturalists, and Compendium of Useful Knowledge for Ornithologists*, by Robert Ridgway, Boston, 1886, 129 pp., plates i-xvii, treating of the physics of colors in their relation to natural sciences, with a comparative vocabulary, and a good glossary of ornithological terms. A feature of this work is that some of the morphological or descriptive terms are illustrated by outline drawings, a most commendable and the only clear way of fixing definitions of terms. The color schemes are also good. As a whole, the work deserves attention from the entomologist, as much of it is applicable to his science, if judgment is used. It is to be regretted that the author did not carry his work further, and include more of the descriptive terms in the plates. The writer's attention has also been called to the following, which are important contributions to special terminology. They are listed because treating of minor or little known groups of insects or for other special reasons. They are: *1782. Moses Harris. Exposition of English Insects. Including the several Classes of Neuroptera, Hymenoptera and Diptera, or Bees, Flies, and Libellulæ, etc. London, MDCCLXXXII. Introductory Preface, pp. ii–viii, figs. I-IV, color plate.* (Illustrates terms used, and gives a color scheme).—*1835. Edward Newman. The Grammar of Entomology, London, Bk. II, Physiology, pp. 97-159.* (General terminology).—*1848. Friderico Antonio Kolenati. Genera et Species Trichopterorum Pars prior, Heteropalpoidea. Pragæ, pp. 8-17, tabeln.* (Terminology).—*1861. Franz Xaver Fieber. Die europäischen Hemiptera. Halbflügler (Rhynchota Heteroptera), Wien. pp. 2-14, tafeln I-II.* (Terminology.) —*1865. Charles Brunner de Wattenwyl. Nouveau Système des Blattaires, Vienne, pp. 1-16.* (Terminology).—*1875. Franz Xaver Fieber. Les Cicadines d'Europe, Strasbourg, première partie, pp. 9-25, pls.—1896. L. Melichar. Cicadinen (Hemip-*

tera-Homoptera) von Mittel-Europa, Berlin, pp. XV-XXII, tafeln.—1878. Carl Brunner von Wattenwyl. Monographie der Phaneropteriden. Herausgegeben v. der K. K. Zool.-Bot. Gesellschaft in Wien. Introduction, tafeln. (Nomenclature of the neuration). The terminology of the Hymenoptera may be found in E. Saunder's *The Hymenoptera Aculeata of the British Islands*, 1896; and in P. Cameron's *A Monograph of the Phytophagous Hymenoptera, I.*

Forbes, in the letter of transmission, in his second annual report as State Entomologist of Illinois (13th Rept. State Ent. on the Noxious and Beneficial Insects of the State of Illinois, Springfield, 1884, pp. 9, 12. S. A. Forbes), refers to a glossary of the terms used in the preceding twelve reports of the State Entomologist of that State as being withheld for publication because of the lack of space. The glossary could not be found in the place indicated (the 14th report), and was never published, as a recent letter from Dr. Forbes assures the writer.

A portion of the MS. of the revision of *Explanation of Terms used in Entomology*, Brooklyn Entomological Society (1880), by Dr. John B. Smith, has just recently been seen (May 13th). Many new terms are added, together with illustrations of the venation in the different orders of insects, and a plate of colors. The venation will be that adopted by Comstock. The revision will bring the older glossary up to date, and will appear opportunely.

It will be noticed, that in part I, and here also, certain very general or so-called popular works have been listed as containing glossaries. These are given more for the purpose of showing what they are, than for what they are worth. Avoidance of useless trouble is gained by so doing, in case reference has been, or is, made to them in the literature. Also, it may be worthy of note, that certain terms commonly used in describing insects, are not included in any of the glossaries listed, excepting the large dictionaries mentioned in the general text. It is impossible to give references to the writings containing these, and for this reason, a bibliography of this subject is apparently always more or less incomplete.

It seems almost absurd to speak of the importance of nomenclature. A science is indeed at fault, if its language is not accurate. Every word or term should have a solid foundation, and should designate but one definite thing, in the clearest and most concise way possible. They should be, "So far as practicable, only such terms as are brief, simple, exact, significant, of classical origin and capable of inflection." "Everything in science ought to be real, ingenuous and open; every expression that indicates duplicity or equivocation, reservation, wavering or inconsistency is a reproach to it." There is certainly room for improvement in the science of entomology.

The supplementary titles follow.

1746. Linnæus, Carolus. Termini Artis. Fauna Svecica Sistens Animalia Sveciæ: Quadrupedia, Aves, Amphibia, Pisces, Insecta, Vermes. Distributa per classes et ordines, genera et species, &c Lugduni. Edit. 2, Stockholmiæ 1761.
Defines 14 general terms in the first, and 15 in the second, edition.

1800. Illiger, Karl. (J. K. W.) Versuch einer systematischen vollständigen Terminologie für das Thier u. Pflanzenreich. Helmstædt, Fleckeisen. 432. pp.
Valuable. Vide Illiger (1805).

1805. Illiger, Karl. (J. K. W.) Zusätze zu der Terminologie der Insekten. Illiger's Magazin f. Insektenkunde, Braunsvigæ, V. pp. 1-27.
A good systematic discussion bearing on terminology, and supplementary to Illiger (1800).

1824. Samouelle, George. An Explanation of the Terms Used in Entomology. The Entomologists' Useful Compendium; or an Introduction to the Knowledge of British Insects, comprising, etc. a glossary of about 700 terms, conveniently grouped.
London, pp. 338-356

1825. Say, Thomas.
Vide Psyche, Cambridge, Mass., IV, 1883-1885, p. 145. The original edition in separate binding, antedating Kirby & Spence (1826). Very rare, and has not been seen.

1826. Kirby, William, and William Spence. Definitions.
Intro. Ent.: or Elements of the Natural History of Insects, London, III, pp, 354-393, table, pls.
Treats of about 230 terms used in reference to the external anatomy of insects. Compare the rest of the volume. Important.

1828. Boitard, Pierre. Explication des Termes Entomologiques. Manuel D'Entomologie, ou Histoire Naturelle des Insectes. Paris, Tome premier, pp. 13-54.
A glossary of about 560 terms, the latter given in French.

1828. Wiedemann, Christ. Rud. Wilh. Aussereuropäische Zweiflügelige Insekten, Hamm., I, pp. XXIII–XXVII.
Briefly explains dipterous terms.

1834. Lacordaire, Jean Théodore. Introduction a L'Entomologie, comprenant les principles généraux, de l'anatomie et de la physiologie des insectes, des détails sur leurs moeurs et un résumé des principaux systemes de classification proposés jusqu'a ce jour pour ces animaux. Paris, tome premier, 463+pp., pls.
Discusses terminology throughout the volume.

1834. Macquart, J. Histoire Naturelle des Insectes. Diptères. Paris, tome premier, pp. 2-5.
Forty-three dipterous terms, mostly French.

1845. Kolenati, Friderico A. Orismologia. Hemiptera Caucasi. Tesseratomidæ Monographice Dispositæ, etc., in Meletemata Entomologica, Petropoli. Fasc. II, pp. 33-42 tabeln.
The terms are illustrated only.

1851. Meigen, Johann Wilhelm. Ueber die Terminologie. Systematische Beschreibung der bekannter Europäischen Zweiflügeligen Insekten. Halle, I, pp. XVII–XX.
Explanations of dipterous terms.

1857. Haliday, A. H. Explanation of Terms used by Dr. Hagen in his Synopsis of the British Dragon-flies (ante, pp. 39-60). Entomologist's Annual, London, MDCCCLVII, pp. 164-165, figs. I-IV.
The few terms are explained by means of outline figures, and are not arranged in glossarial form.

1861. Uhler, Philip Reese. Glossary. Synopsis of tho Neuroptera of North America, by Hermann Hagen, Smithsonian Miscellaneous Collections, Smithsonian Institution, Washington, pp. 337-344.
Defines about 300 terms, especially in their application to the old order Neuroptera.

1866. Rye, E. C. On the Terms Used in Descriptions of Coleoptera. British Beetles: An Introduction to the Study of Our Indigenous Coleoptera. London, pp. 16-20.
About 120 descriptive terms. (Through Dr. F. H. Chittenden.)

1870–1874. de Saussure, Henri. Mission Scientifique au Mexique et dans l'Amérique Centrale, ouvrage publié par ordre du Ministre de l'Instruction Publique. Recherches Zoologiques pour servir a l'Histoire de la Faune de l'Amerique Centrale et du

Mexique. Paris, Première section. Etudes sur les Orthoptères, 1 livr., 1870, pp. 4-9.
Nomenclature of the organs of flight. Not seen.

1872. Müller, Julius. Terminologia Entomologica, Brünn. Edit. 2, 268+pp., 987 figs., color table.
Defines about 2250 terms, with explanatory figures. Good.

1873. Thomas, Cyrus. Glossary. Synopsis Acrididæ of North America. Rept. U. S. Dept. Interior Geol. Surv. Territories, Wash., V, pp. 253-258, 10-25, Repr. Cincinnati Quart. Jour. Sci., I. pp. 253-269.
External and internal anatomy and terminology of the Acrididæ, with a glossary of about 200 terms. The reprint has not been seen.

1874. Glover, Townsend. Definition of terms. MS. Notes from my Journal or Illustrations of Insects, Native and Foreign. Diptera, or Two-winged Flies. Washington, p. 118.
A few dipterous terms defined ; very rare.

1874. LeBaron, William. Glossary, or definitions of the terms most commonly used in describing Insects. Outlines of Entomology, I, in 4th Ann. Rept. on the Noxious and Beneficial Insects of the State of Illinois, Springfield, pp. 191-194.
Brief definitions of 190 descriptive terms.

1879. Riley, Charles Valentine. Glossary of terms used. Rept. Ent., U. S. Dept. Agric., in Ann. Rept. Commissioner Agric. for 1878, Washington, pp. 236-237. Author's edit., Washington, 1879, pp. 31-32.
Explains 59 terms used in sericulture.

1879. Thomas, Cyrus. Nomenclature. 8th Rept. State Ent. on the Noxious and Beneficial Insects of the State of Illinois, Springfield, pp. 19-32, figs. 3-8.
Explanation of about 60 terms used in reference to the Aphididæ, with figures.

1880. Coquillett, Daniel W. On Describing Larvæ. Can. Ent., London, Ontario, XII, p. 108.
Brief note, suggesting adoption of a set of terms given in describing caterpillars, cf. id., p. 140, Correspondence. An Idea of variation in usage of terms.

1881. Bedel, Louis. Vocabulaire. Faune des Coléoptères du Bassin de la Seine. Première partie. Annales Soc. Ent. France, Paris, Volume hors série, pp. xi-xxii.
Defines 286 terms, general and special, "rédigé spécialement pour l'étude des Coléoptères."

1883. Comstock, John Henry. Explanation of Terms. 2nd Rept. Dept. Ent., Cornell Univ. Exp. Sta., in 2nd Rept. Cornell Univ.*

* Not 2nd Ann. Rept. Cornell Agric. Exp. Sta. f. 1889.

Exp. Sta., Ithaca, pp. 49-53, pls. I-II. Author's Edit., Ithaca, 1883.
Explanations of coccidological terms. First appeared in slightly different form in *Rept. Ent., in Rept. U. S. Dept. Agric.* f. 1880, pp. 281-284.

1886. Williston. Samuel W. Definition of terms. Synopsis of North American Syrphidæ. Bull No. 31, U. S. National Museum, Washington, pp. 287-290, fig.
Forty six syrphid terms and the venation explained.

1887. Maskell, W. M. Explanation of terms used in the Following Pages. An Account of the Insects Noxious to Agriculture and Plants in New Zealand. The Scale-Insects (Coccidæ). Wellington, pp. 1-4, pls.
49 coccidological terms explained and illustrated.

1890. Root, A. I. Glossary. The ABC of Bee Culture: A Cyclopedia of Everything Pertaining to the Care of the Honey-bee. Medina, Ohio, pp. 362-366.
About 210 apiological terms listed and explained.

1893. Woodworth, C. W. Explanation of Terms. Rept. Work of Agric. Exp. Stat., Univ. California f. 1891-1892, Sacramento, pp. 311-312.
Briefly explains about 24 anatomical terms in a popular synoptic table of the families of insects.

1895. Meyrick, Edward. Glossary. A Handbook of British Lepidoptera. London, pp. 17-19.
About 110 general descriptive terms. (Through Dr. F. H. Chittenden).

1896. Green, E. Ernest. Provisional Glossary of Terms used in Part I. The Coccidæ of Ceylon, London, I, pp. vii-xi.
135 terms in their application to coccidology.

1901. Boynton, Margaret Fursman. Explanation of Terms. Bull No. 46, IX, N. York State Museum, Albany, pp. 343-346, pl. 11.
A few coccidological terms. Not a glossary.

1903. Guthrie, Joseph E. Terms used. The Collembola of Minnesota. Zool. series IV, Geol. and Nat. Hist. Surv. Minnesota, Minneapolis, p. 23.
Fifteen terms.

1903. Morley, Claude. Glossary. Ichneumonologia Britannica: The Ichneumons of Great Britain. Ichneumoninæ. Plymouth, pp. xi-xvi.
214 terms, especially in their application to Hymenoptera.

1903. Newstead, Robert. Glossary of Terms. Monograph Coccidæ British Isles, London, Ray Society, II, pp. 257-260.
89 coccidological terms, compiled largely from Green (1896).

SUMMARY.

The most important works on entomological terminology are doubtless those of Kirby and Spence (1826), and Burmeister (1832), as both are more or less critical summaries of what had been done from the beginning. They are more accessible and better known than any of the other works, and are of permanent value, because of their really scientific treatment of the subject. But they are now much out of date.

Müller (1860, 1872), although not comparable to these, comes next in importance. Very many terms are listed and defined, and the figures are commendable. Some of the definitions are, however, extremely loose. The work is a good useful glossary and an exceedingly valuable vocabulary.

Passing from these, we find nothing but true glossaries or brief explanatory vocabularies which are, generally speaking, of very little importance, as far as the real science of entomological terminology is concerned. In many of them the terms are more or less loosely defined, not for the purpose of fixing them as a part of scientific language, but in order that the laity will have a key to the text to which the glossaries are appended. Of these, an exception should be made of the glossary published by the Brooklyn Entomological Society (1880), which was prepared for working entomologists. It is apparently the only laboratory glossary existing, and, although also loose in defining terms, yet on account of the number of terms listed and because of its general usableness, it is valuable. The other *glossaries* of this class, which are listed, therefore possess value, not, however, always on account of their definitions. They are not only vocabularies, though incomplete ones, but serve as well to record usage, a factor, which at present, unfortunately, is very important in the formation of entomological language. That usage varies greatly in entomological writings is a fact that will readily be accepted. That it should vary as little as possible will as readily be conceded. A suitable term once accurately defined and accepted, should hold its meaning indefinitely, or until it becomes, from new discoveries or otherwise, untenable. In the literature of entomology, for at least four decades back, no important con-

tribution to the terminology or nomenclature of that science as a whole has appeared. That portion of entomology is at present much neglected.

Going outside of the field of entomology, we find the most important writings on this subject, strange though it may seem. These the writer is not prepared to list at present, as they include writings in all branches of natural science. A few have been briefly mentioned. Though not touching entomological nomenclature in particular, yet they embrace it, furnishing the very fundamental principles of nomenclatorial science to which we must look. For this reason, and on account of their recent publication and reliableness, the two large dictionaries mentioned in the general text are now the authorities on entomological terms.

Galeruca pomonae Scopoli, in North America.

FREDERICK KNAB, WASHINGTON, D. C.

In the collection of the Illinois State Laboratory of Natural History are specimens of a *Galeruca* taken at Urbana, Illinois, which the writer at once recognized as distinct from our native species, *Galeruca externa*. It was thought likely that these beetles were the same species as the *Galeruca tanaceti* recorded by Mr. Charles Dury from Cincinnati, Ohio, in ENTOMOLOGICAL NEWS, v. 14, p. 146. However, comparison with descriptions and European material showed that the present species, without a doubt, is the *Galeruca pomonæ* of Scopoli. The specimens agree very well with the careful description of the species by Weise in *Insecten Deutschlands*, v. 6, p. 652-655, as well as with European specimens in the writer's collection. A subsequent examination of Mr. Dury's material showed that the specimens taken by him at Cincinnati are not *Galeruca tanaceti* but likewise *G. pomonæ*. So as far as we know at present *Galeruca tanaceti* does not occur in North America. Mr. Dury informed me that *G. pomonæ* has also been taken by Prof. W. S. Blatchley in Indiana.

The specimens of *Galeruca pomonæ* before me are short and very convex with three prominent highly polished costæ upon

the elytra. The intervening surfaces, as also the thorax, are very coarsely, in part confluently punctured, leaving a network of shining reticulations. There are indications of intermediate costæ between the suture and the first costa and between the second and third costæ. The color of the specimens is ferruginous brown, paler at the sides, the elytral costæ slightly darker. *G. tanaceti* differs from *G. pomonæ* in the deep black color, the absence of well defined elytral costæ, the less convex form and in the very deep groove along the side margins of thorax and elytra. In *G. tanaceti* the marginal groove of the elytra is very deep at the humerus and continues far along the front margin, while in *G. pomonæ* it is much shallower and stops short in front of the humerus. *Galeruca externa* is confined to the Rocky Mountain region and, although costate like *G. pomonæ*, is amply distinct. Its form is very depressed, the elytral interspaces are alutaceous with much finer punctures, two shining callosities upon the thorax, and the color dull black, with broad, well-defined yellowish side margins of the thorax and elytra. The marginal grooves are very shallow, and upon the sides of the thorax are almost obsolete.

It would be interesting to learn something of the habits of *Galeruca pomonæ* in America. In Europe it is a common and well known species. Kaltenbach (*Pflanzenfeinde*, p. 315, 374) states that the larvæ of *G. pomonæ* feed upon *Centaurea jacea*, *Cirsium palustre* and *Scabiosa succisa*, and those of *G. tanaceti* (l. c., p. 344-345, 773) upon *Achillea millefolium*, *Centaurea jacea* and *Cerastium arvense*. Weise (l. c., p. 639), in a general account of the larvæ of *Galeruca*, states that they sometimes appear in early spring in destructive numbers. He adds to the food-plants given above *Taraxacum officinale* and *Artemisia campestris*, but it is not clear to what species these should be referred. Of the European plants mentioned *Achillea millefolium* (yarrow), *Taraxacum officinale* (dandelion) and *Cerastium arvense* are widely distributed in this country and *Centaurea jacea* is established in Vermont, northern New York and along the eastern seaboard. The larva of *Galeruca* is cylindrical, rather stout, and supplied with numerous large

seta-bearing tubercles. In *G. tanaceti* the median tubercles are arranged in wholly regular longitudinal rows, while in *G. pomonæ* and *G. interrupta* the tubercles of this series are not in regular rows. Of the four median tubercles of each segment the anterior pair is wide apart, the posterior pair close together.

A New Megathymus from Arizona (Lepidoptera, Rhopalocera, Hesperidae.)

By Henry Skinner.

M. polingi n. sp.—♂. Head above grey, below white; antennæ black, with a few white scales at the joints and white at the base of the club; body above orange fulvous, grey beneath.

Primaries.—Black and orange-fulvous, with a black border to the exterior margin evident at the apex; on the orange-fulvous inside of this border is a black spot of irregular shape; in the centre of the wing is another black spot irregularly round in shape; the base of the wing is orange-fulvous.

Secondaries.—Border black; there is an orange-fulvous band which starts from below the costa and extends nearly to the interior margin; the base is orange-fulvous.

Underside.—Primaries: these are much as above, except that the upper part of the orange-fulvous band is white. Secondaries: grey, with an irregular whitish band parallel to the costa and exterior margin; it begins as a spot and then narrows into a line and then gradually widens in an irregular way; in the centre of the wing are two whitish spots, the lower one much the larger of the two. Expanse 44 mm.

The female is a trifle larger, but the markings are the same. This species is allied to *neumoegeni* Edw. but is smaller and may be differentiated at once by the white band on secondaries below. Described from a ♂ and ♀ sent by Mr. O. C. Poling. The labels say So. Arizona, Oct. 15th to 30th. I suppose they were taken in the Baboquivari Mountains, Pima County.

Mr. Poling has also sent me a pair of hesperids which represent a new variety. The species is *Heteropia melon* Godman and Salvin, and these specimens from the Baboquivaria Mts., Pima County, Arizona, July 15th to 30th, differ in their having marginal border of the secondaries below (outer third of the wing) very much whiter. I propose the name *arizonensis*.

An Enemy of the Trap Door Spider.

By Anstruther Davidson, M. D., Los Angeles, Cal.

About a dozen years ago I was much interested in the habits and ways of spiders, but the difficulties experienced in determining the various species soon discouraged me, and I ceased to give them special attention. The habits of *Cteniza californica*, our common trap door spider, is still a perennial source of interest, and in my observations of my pet colony on the edge of a ravine in East Los Angeles, I observed not a few nests which showed a perforation in the door. These all on opening disclosed the empty cocoon of a wasp. I zealously set to work to find some fresh cocoons. It seemed that I would require to dig up the whole colony on the chance of finding a few, but investigation in that autumn showed that the trap door which had been so carefully guarded in the spring and early summer was now tightly sealed down, either by silk alone, or by silk and earth, as is their method of building. The spider itself had retired to the bottom of the cell in what might be considered a state of hibernation. As no spider with a sealed door could possibly be attacked by any wasp, it was only necessary to test all the traps and examine those found unsealed. Some of those contained the remains of spiders, a few were empty, and four contained fresh cocoons, two of which were successfully hatched out and determined by Prof. Coquiliett as *Parapompilus planatus* Fox.

I have never seen this wasp hovering near the trap door spider's retreat, so I cannot state definitely by what method the wasp attacks the spider. Two possible methods may be considered. The wasp may attack the spider when it leaves its nest in the twilight, sting, and paralyze it, carry it to the spider's nest, lift the trap door and drop it in. Or the wasp taking advantage of an unwary moment opens the door, drops in, attacks and overcomes the spider in its retreat. After the battle she deposits her egg on the spider and departs.

Of the two possible methods the latter seems to me the more probable, as it would not be easy if it were even possible for the wasp to hold up the lid, and at the same time drag such a

comparatively heavy body into the nest. Then too at that late hour when *Cteniza* is abroad almost all wasps are asleep.

If, as Dr. McCook in his work on spiders has suggested, this building of the trap door is but the outgrowth of the necessity for self preservation, then this is the enemy she has built against in California.

The behaviour of the spider makes it self evident that an innate fear of some deadly enemy exists. The presence of the door alone would under ordinary circumstances suffice to protect the insect, but if as I have suggested this Parapompilius deliberately lifts the door to attack the inmate in its cell, a sufficient reason is given for the eternal watchfulness displayed by the spider. She is always situated close to the door ready to hook a limb into the silk to hold it down on the least disturbance ; and when the heat of the advancing season leaves her lethargic, she deliberately seals her door for protection.

The method adopted by the wasp larva for the protection of its cocoon is very ingenious. The larva when ready to pupate ascends to near the top of the tube, and there spins a thin diaphragm clear across the lumen of the tube. From the point of junction of the diaphragm with the sides, a curtain is attached all round, the other end being attached to the top of the cocoon one quarter inch from its apex. The cocoon which measures one and a half inches long, is thus suspended freely in the centre of the tube. When the winter rains come the waterproof diaphragm protects the cocoon from the rain above, and its suspension saves it from what accumulates below. In due season the perfect insect gnaws a circle round the top of its cocoon, detaches it and escapes to gnaw its way through the trap door to the outer air.

FORTUNE'S FOUNDATION.—Do not wait until you can get a large sum to begin your savings. The most industrious worker in the insect kingdom—the bee—does not wait until some fortunate circumstance places a lot of pollen before her. She gathers the honey in the smallest particles, adding to her store with infinite patience and work until she fills the combs against rainy days and future needs.

A Trip to Mt. Diablo in Search of Lepidoptera.

With a Description of a New Species.

By Francis X. Williams and Fordyce Grinnell, Jr.

Mt. Diablo is an isolated cone thirty miles east of San Francisco, in Contra Costa County, and rising to a height of 3,849 feet above the sea-level. Its summit is rather densely clothed with chaparral which is made up mostly of *Ceonothus cuneatus* and *Adenostoma fasciculatum*. *Pinus sabiniana* and *P. coulteri* grow on its sides, but occur more frequently in Pine canon on the southwestern slope of the mountain. Of the genus *Quercus* there were noticed the following species: *agrifolia*, *dumosa*, *chrysolepis*, *wislizenii*, *lobata* and *californica*. The sides of the mountain had frequent, large, white patches of very fragrant flowers consisting mostly of *Cryptanthe muriculata*; and right below the summit on its southern slope were found in fair abundance, *Stenotus linearifolius* and *Erysimum asperum*, both of which were very attractive to various insects. Other plants noticed on the mountain were: *Juniperus californicus* just below the summit on the south side; *Ribes malvaceum* in flower, on top; *Arbutus menziesii* in the canon; *Sambucus glauca* and the usual trees and shrubs of the stream banks.

Our trip to Mt. Diablo took place from April 3rd to April 8th. Starting from the outskirts of Oakland at 8.10 A. M. with a good supply of grub but with too few blankets, we covered about twenty-four miles the first day, walking over the Berkeley Hills and through valleys surrounded by bare hills but well timbered along the creek with alders, willows and the buckeye.

Nothing of much interest was caught this day. A few *Alypia lunata* were seen but none taken. *Thecla dumetorum* and *Lycæna behrii* were taken in small numbers. One specimen of *Eudamus pylades* was secured as well as several *Thanaos juvenalis* which species was just beginning to emerge. The spring form of *Anthocharis sara*, *Pieris napi*, and *Cœnonympha californica* were common and once in a while a torn *Vanessa antiopa*, *californica* or *Danais archippus* was seen. *Papilio rutulus* and *zolicaon* were seen in several places,

and *P. philenor* in fine condition, were quite plentiful, especially about the apple blossoms. A few noctuids were taken. That night we slept (?) near the foot of the mountain in a field of high grass. Next morning we started for the summit; we lost our bearings several times before we saw a road far up the mountain. While cutting across grassy slopes towards this road we noted the abundance of *Axenus arvalis* on the white patches of *Cryptanthe*. *Melicleptria villosa* was also plentiful in spots and *Lycæna acmon* likewise. Right near the road a new species of *Melicleptria* was taken in a faded condition. About five hundred feet below the summit where the road was rocky we came across the beautiful little *Gyros muiri* sunning itself in bare places. About sixteen specimens were taken, several *in copula*. Higher up on the mountain, about three hundred feet above the *Gyros* locality, we came to a rocky slope on which grew *Stenotus linearifolius* and *Erysimum asperum* in large patches, and also the white, fragrant *Cryptanthe muriculata*. An occasional *Lepisesia clarkiæ* whizzed by (it being the afternoon) and *Litocala sexsignata* occurred in a faded condition. In the stony places *Syneda divergens* was abundant either resting on the ground or feeding at *Erysimum asperum*. *Syneda ochracea* was taken in small quantities. An occasional *Euclidia cuspidia*, *Drasteria erechtea* and *cærulea* were caught, and lower down *Leptarctia californica* flew rather sparsely. A *Heliothis* allied to *phlogophagus* was rather rare and hard to catch.

That night we camped on the cold summit from which a grand view was spread before us in every direction, Mt. Lassen to the far north, and in the east the snowy Sierras extended north and south as far as we could see. The next morning we started down the south side of the mountain intending to camp that night near the summit. On our way down the rather steep and stony slopes we came to an extensive growth of chaparral in going through which we were reminded of the efforts of a well known eastern doctor in getting over sagebrush in Utah. Many *Cœnonympha* and *Colias* were seen on this slope, and two fine specimens of *Annaphila lithosina* were taken. Among the things taken about halfway down were

Adela septentrionalis and another species of a bronzy hue. Towards suppertime we went almost to the summit again where more *Syneda* and the new *Melicleptria* (7 specimens) were taken. No *Sphinx* were taken at night, but *Plusia californica* was extremely abundant on the flowers of *Erysimum*. On the morn of April 6th we descended into Pine canon where more *Adela* and *Annaphila* were taken as well as *Lycæna acmon*, *piasus*, and *behrii* and a few *Thecla dumetorum*. One *Papilio daunus* was seen. In the evening a hunt for *Hepialus* was undertaken in the thick brush without a light. A minute species, one specimen of *H. hectoides* var. *lenzii* was taken in the twilight flying close to the ground. Hardly anything but a few Odonata, which have not, as yet, been worked up, were taken the next and last morning of our outing. While near the summit examining a few *Juniperus californicus* trees, it was observed that their branches were attacked by a small micro-larva, some of which were taken home where they have not yet disclosed imagos.

Taken on the whole, it must be said that Mt. Diablo is a rather poor collecting ground, Lepidoptera being either common species or scarce. We were in hopes of taking *Lycæna sonorensis* in the canons, but here we were entirely disappointed. *Lycæna sonorensis* was reported by Strecker in in his Synonymical Catalogue as being found in this particular locality, but we made a fair survey of the mountain at the proper season without seeing any signs of it.

Melicleptria fimbria (Behr ms.) n. sp. F. X. Williams.—*Primaries*—Golden brown, becoming darker towards the blackish t. a. and t. p. lines which enclose a wide, yellowish median band, bluntly edentate superiorly on M2 and less edentate but more sharply so inferiorly. Median band with a few small brown spots and a broken median brownish shade, plainest on costa and inner margin; median band widest on M2 at its middle and costa and narrowest on inner margin where it spreads out narrowly towards the base. Discal spot obscure; terminal lunules blackish; fringes tipped with lighter golden brown. Secondaries brassy black; median band creamy white not extending to inner margin, widest at middle where it is rounded superiorly and invaginated posteriorly by discal lunule; fringes white; head and thorax brown; abdomen brassy black with a few whitish hairs; tip of abdomen light coffee. Underside. Primaries—outer third iron gray, median band white and bifurcated on

costa by black discal spot; inner third black, fringes with lighter hairs tipped with golden brown.

Secondaries with white fringes, median band wider than on upper side.

Legs bristly; golden brown above, with tibiæ and tarsi whitish. Expands 25-29 mm.

Described from five specimens taken on Mt. Diablo, Contra Costa County, California, during the first part of April, 1905. Altitude 3,849 feet.

There are specimens in Dr. Behr's collection with the manuscript name *fimbria*, which are rather worn.

This *Melicleptria* is allied to *sueta*, but easily separated by the wide, median band, etc.

Types in the collection of the author.

I HAVE READ with much interest the recommendations of the Committee on Nomenclature of the Association of Economic Entomologists as published in the May number of your Journal, but though not an Economic Entomologist, I feel impelled to take exception to the use of one of these names, viz. "fall web-worm" as applied to *Hyphantria cunea* Drury. This name was given by Dr. Harris to his *Hyphantria textor*, and I see no reason for transferring it to any other species, especially as since the publication of the results of my experiments on these moths (Report Ent. Soc. Oct., 1901, p. 57-62), the specific distinctness of the two forms has apparently been generally recognized if one may judge from the catalogues recently issued and other works.

Another reason why the name is more appropriate to *textor* is that, so far as I know, it is single-brooded, and so pre-eminently a "Fall" worm, while of *cunea* there are two broods, the first maturing about midsummer.

Hyphantria cunea Drury, under the name *Phalæna punctatissima*, was given the English name of "small ermine moth" by Sir. J. E. Smith. Harris called it "many-spotted ermine moth," but as some forms of it are unspotted the name originally given by Smith is preferred.

I do not see why these names should not be unanimously recognized by the Association of Economic Entomologists.—HENRY H. LYMAN.

Desmia funeratis Hubn.—Supplementing note by Mr. Haimbach, *ante* p. 121. I have about thirty specimens of the *funeralis* form, with large white basal blotch in hind wing, of which two-thirds of the specimens are males and one-third females; the former expand 22 to 29 mm., the latter 22 to 30 mm. I have two exampies of the variety *subdivisialis* Ent., both females, expanding respectively 19 and 22 mm. I should be more inclined to separate the two forms specifically than lump them.—W. D. KEARFOTT, Montclair, N. J.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., SEPTEMBER, 1905.

In the June NEWS we spoke of the lack of knowledge of the literature of American entomology in some quarters, and we now call attention to what we call a publication evil which may be a valid cause for neglect of our literature. We object to obscure and sporadic publications without definite places of publication and which are dependent on one person. It is especially reprehensible to describe new species in these publications as they are ephemeral and difficult to obtain. Suppose a European student should see a reference to a new species described in "Invertebrata Pacifica," where and how would he obtain it? The first pages of this publication bear date of September 15, 1903, and pages 85–92 are dated May 15, 1905, so that rapidity of publication is no excuse. The first pages read "Contributions from and through Department of Biology, Pomona College," and the latter pages give no place of publication but say "Edited by C. F. Baker, Estacion Agronomica, Santiago de las Vegas, Cuba." We mention this publication particularly, as it is one of a class with which we have had experience, and find them mentioned in reference catalogues, but generally find them absent in the library when needed. The "Bulletin of the Colorado Biological Association" belonged to this class, and we believe it went into a condition of innocuous desuetude the year of its birth. Can't you imagine the pitiable sorrow of some European Hymenopterist who wishes to see the descriptions of the new species in it? See also "On the Dates of Jacob Hübner's Sammlung Europäischer Schmetterlinge. Prof. C. H. Fernald."

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

CORRECTION:—In the NEWS for June, 1905, page 185, second line from bottom, for "23" read "38."

NELL—"How old does Miss Antique say she is?" Belle—She doesn't say; but I've heard her speak of several distinct crops of 17 year locusts."

THE DE SELYS ENTOMOLOGICAL COLLECTIONS.—No. 3 of volume xlix of the Annales de la Société Entomologique de Belgique (Brussels, April 26, 1905), contains a report on the importance of the collections presented to the Brussels Museum by the heirs of Baron Edmond de Selys-Longchamps. This disposition of these collections has already been mentioned in the NEWS for October, 1904, page 284.

The present report, by M. G. Severin, curator for entomology, gives the following information:

The Odonata comprise						
General collection,	1854	species,	108	varieties,	11910	specimens.
European "	97	"	21	"	1287	"
Brazilian "	49	"	3	"	358	"
Undetermined					8853	"
Duplicates					9408	"
Larvæ and nymphs	55	"	1	"	182	"
Neuroptera, excluding Odonata						
General collection,	840	species,	8	varieties,	4149	specimens.
Belgian "	222	"	7	"	2356	"
Undetermined					7815	"
Orthoptera						
European collect'n,	216	"	19	"	1994	"
European and Belgian collection					619	"
Brisont de Barneville's European collection					1336	"
Undetermined					321	"
Varia						
Coleoptera, Hymenoptera, Diptera (the last from the collections of Charlier and Robert de Chenée) (number not given).						
Total					45742	specimens.

The collection of Odonata includes 1100-1200 types described by de Selys and about 150 types of other authors. The total number of species of Odonata now known is estimated at 2100 species. "These indications suffice to show how this collection has given birth to the principal works which form the basis of Odonatology; moreover, the types acquired by our Museum constitute a total of unique scientific riches since other collections which may become numerically richer in the future will never be able to equal this in value." In accordance with the will of

Baron de Selys, the Æschninæ, Libellulinæ and Agrioninæ are now being revised by MM. Martin, Ris and Fœrster respectively.

The non-Odonate Neuroptera include types of Latreille, Rambur, Burmeister, Pictet, Hagen, de Selys, McLachlan, Eaton, Wesmael, Curtis, Kolenati and Albarda.

Among the Orthoptera are types of Fischer, Serville, Fonscolombe and Brunner von Wattenwyl.

Baron Walthere de Selys-Longchamps, inheritor of his father's library, has placed a large number of letters and printed documents relating to these collections and to their subject matter at the disposition of the Museum for a period of time.

[A brief notice of the entomological collections of the Brussels Museum was published in the NEWS for April, 1896, pp. 97 99].

"WHAT business is papa in, mamma?" asked little Robbie.

"Why, he's in the hardware business, my boy."

"And does he sell cockroaches, mamma?"

"Why, Robbie! What a question. Of course he doesn't."

"Well, he's got a sign on the store window which reads: 'We sell everything to be found in the kitchen.'"

Entomological Literature.

CATALOGUE OF NORTH AMERICAN DIPTERA.—A new catalogue of North American Diptera, Smithsonian Miscellaneous Collections, Vol. xlvi, No. 1444, 1905, has appeared, the compiler being Professor J. M. Aldrich, of the University of Idaho. This is the third catalogue of this group of insects that has been produced, all of which have been published as Smithsonian Miscellaneous Collections. The first was written by Baron Osten Sacken in 1858, the second was a complete revision by the same author in 1878, and although but twenty-five years have elapsed since the appearance of Osten Sacken's last edition, the aspect of Dipterology has so completely changed that a new catalogue has become a necessity.

To make available the valuable matter of the former catalogue, to add the numerous new genera and species which have appeared since its time, to enlarge the bibliography, especially in economic and biologic lines, and include all publications of the last quarter century, and to note the increased knowledge of the distribution of the various species: this is the task Mr. Aldrich set himself seven years ago. The painstaking and admirable manner in which he has accomplished it deserves for him the best will of his fellow students of Diptera.

As Mr. Aldrich remarks, so much has been done on American Dipterology within the quarter of a century that a comparison of his catalogue

with that of Osten Sacken will suggest more of contrast than of resemblance. The catalogue of 1858 referred to descriptions of 1800 species, scattered through one hundred papers. A large number of these earlier species are unrecognizable, and hence the 2500 valid species recognized in the revision of 1878 represent a vast increase in our knowledge for the two decades. Mr. Aldrich's catalogue refers to 8300 species. In other words, knowledge of American Dipterology has doubled during the past quarter century, just as it doubled during the quarter century previous. The increased number of present students of the subject bids fair that future quarter centuries will advance our knowledge in strides of similar geometric length.

Eight thousand three hundred species. Almost as many as the described Lepidoptera from the same faunal limits. Thus the Diptera now stand a close third in importance among the Orders of insects, and apparently will soon be the second. And this is the group which is so often designated, "THE neglected Order!"

The Catalogue of 1858 noted one hundred papers. Mr. Aldrich's catalogue lists over one thousand papers, written by two hundred authors, of whom nearly one-half are contributing writers to-day.

In order to show the advance that has been made in a few of the familes the following contrasting figures may be given:

	Osten Sacken		Aldrich	
	Genera	Species	Genera	Species
Culicidæ	5	42	30	125
Stratiomyidæ	24	172	41	283
Empididæ	19	200	40	423
Phoridæ	3	12	16	64

Dr. Williston is having prepared a new edition of his manual of the genera of American Diptera. With this manual and the catalogue in hand many students will undertake the study of flies. A little collecting will reveal some new species which the student feels should be rushed into print. Hurried and scattered descriptions, however, are a drawback in every branch of Entomology. I do not wish to discourage anyone from engaging in the study of Diptera. To me they are as fascinating and as wonderful as any group of insects, but I do wish that every student would study the preface of Osten Sacken's catalogue and especially the following paragraph: "*Specialization* is therefore the motto of dipterology. Amateurs may collect and name Diptera, but do not let them publish anything until they have chosen some single family and nearly exhausted it by study and collecting. If they try such a course they will find that the exhaustive study of a single family is far more remunerative,

both in pleasure and in usefulness, than the random description of numerous new species."

Mr. Aldrich's catalogue covers 680 pages. Osten Sacken's 324 pages were of much smaller size. The new catalogue is printed on good paper, the New Era presswork guaranteeing its pefect typography. I understand it is to sell for $1.50. Its references are brought down to January 1, 1904, but the appendix lists the papers and new species that have appeared during the year 1904, so that the catalogue is brought to date. The writing of the catalogue has covered seven years' time, the presswork has required nearly a year. Every dipterologist feels a debt of gratitude to Mr. Aldrich, and we all wish to congratulate him on the successful completion of his great task. I am sure I shared with him some of the elation of its completion when I received his postal announcing "It's out."—A. L. MELANDER.

THE DEVELOPMENT OF CERTAIN HYMENOPTEROUS PARASITES.

Among the most interesting of entomological problems are those connected with the biology of parasitic insects. The method of respiration, of feeding, and the molting of the skin are illustrations of unsatisfactorily solved problems. Another puzzling phenomenon has been the number of parasites which may develop within a single host. Pergande reared twenty-five hundred specimens of the Chalcid *Litomastix truncatella* from a larva of *Plusia brassicæ*. Giard, '98 (Bull. Soc. Ent. Fr., p. 127), reports almost three thousand from a single *Plusia gamma*. The problem becomes yet more difficult when we consider that, as Giard points out, the adult female parasite does not contain more than a hundred mature eggs. It has been supposed that in cases of excessive infestation the host had been attacked by more than one female. If the required twenty-five or thirty parasites may oviposit within a single host it is certainly not to be expected that any of the larvæ should escape, as is always the case. Some recent work on a related form, by the French entomologist, P. Marchal, not only throws light upon this question but reveals a phenomenon of surpassing interest to the embryologist. Briefly announced in 1898* and published in detail within the past year,† his discovery seems to have escaped almost entirely the attention of American workers. Aside from a bare mention in Howard's "Insect Book" I find no reference to his work, and it therefore seems not inappropriate to bring it to the notice of readers of the NEWS.

In 1892 Bugnion ‡ published a valuable research upon the postembryonic development, anatomy, and life-history of *Ageniaspis fuscicollis* (*Encyrtus fuscicollis* Dalm.) which is parasitic on various larvæ, among others those of *Hyponomeuta cognatella*. In the latter part of May are to be found within these larvæ the embryos of the parasite, enclosed

* Comptes Rendus Ac. Sci., t 126, pp. 662-664.
† Arch. d. zool. expér., et générale, 2 ser., t 2, pp. 257-335, pl. 9-13.
‡ Rec. zool. suisse., t. 5, pp. 471-534, pl. 22-25.

fifty to a hundred or more within a transparent, flexous tube floating in the lymph. This tube, which is usually branched, is formed by a structureless membrane lined by a layer of epithelioid cells. The larvæ hatch, live for a time free in the body cavity of the host, then pupate within little cells and finally emerge as adults early in July. Bugnion was unable to observe oviposition but thought that the eggs were deposited *en masse*. He at first supposed that the embryo-tube was formed from a secretion of the mother, but on observing its epithelioid nature he decided that it represented the fused amnia, or embryonic envelopes. He was unable to account for the disappearance of the choria, or shells, of the fifty or more eggs, since he found no trace of them. Though the adults paired soon after emergence, he considered that they hibernated and oviposited in the young caterpillars of the following spring.

The gaps in the work of Bugnion were filled, and the correct interpretation of some of his observations was made possible by the researches of Marchal. This investigator found that the adult parasites did not hibernate but that very soon after emergence they deposited a single egg within that of the host. This process required from ½ to 2 minutes, and the female might remain for an hour or more on a single mass, passing from one egg to another. On sectioning and staining the egg-mass of the moth, Marchal was able to find a single egg of the parasite within that of the host. This egg, instead of developing in the usual manner, becomes broken up into a great number of small morulæ, each of which develops independently within the common envelope. This envelope he found to be of adventitious origin, formed from cells of the host. Many stages in the dissociation of the egg were followed, and are described in such detail as to leave no room for questioning the accuracy of the observations. The phenomenon was observed not only in the Chalcid *Ageniaspis* but also in the Proctotrupid *Polygnotus minutus* parasitic upon larvæ of the Hessian-fly. As Giard suggests there is little doubt that polyembryony will be found to occur also in such cases as those cited by him and Pergande.

In this polyembryony we have a phenomenon entirely unsuspected for the Arthropods. Indeed, it is not exactly paralelled in any group of animals though similar instances have been reported for some of the *Bryozoa*. Cases of parthenogenesis are not rare among mature insects. Rarely we even meet with asexual reproduction by immature forms (pædogenesis by pupæ of a Chironomid, and by larvæ of a Cecidomyid) but in the cases reported by Marchal we have parthenogenetic multiplication in the early egg-stage—the extreme of this type of reproduction.

The broad biological interest of these discoveries is just being realized. Their bearing on theories of sex determination, on such questions as the origin of twins, and on problems of artificial polyembryony are among those which are being discussed. Marchal's work affords a new stimulus to the study of insect parasites, and we may expect a rapid increase in our knowledge of the development of these interesting forms.—WILLIAM A. RILEY.

Doings of Societies.

At the meeting of the Feldman Collecting Social held April 19, 1905, at the residence of Mr. H. W. Wenzel, 1523 South 13th Street, Philadelphia, eleven members were present.

Mr. Wenzel exhibited his rearranged material of *Acanthoderini;* the speaker said that all the known species, with two or three exceptions, were represented. The speaker also exhibited the workings of *Dendroctonus*, showing large pitch tubes; also the workings of *Crypturgus* and *Xyleborus pubescens;* with the latter species *Xyleborus fuscatus* was found.

Prof. Smith spoke of trip with Mr. Wenzel to Lahaway, N. J., on March 29th, and reported the capture of the same species since above date.

Mr. Seiss reported the capture of *Eros aurora* in great numbers on April 2nd at Island Heights, N. J.; Mr. Wenzel remarked that he took one specimen of the same on April 9th, at Atco, N. J.

Mr. Laurent spoke about pinning and mounting micro-lepidoptera, and in conclusion said that he had found silver pins and cork the best method employed, which was discussed by the members. Prof. Smith spoke of drying specimens artificially—specimens mounted in the morning, may be taken off boards in afternoon, by drying in a bakeoven.

Mr. Laurent spoke of and recommended the drying of lepidopterous larvæ flat, pressed, without inflating. Mr. Huntingdon spoke of a new photographic paper on which can be printed photographs of specimens of Natural History in their original colors.

Mr. Wenzel spoke of *Balaninus* hibernating in acorns.

Mr. Laurent reported finding eggs, young larvæ, full grown larvæ and chrysalids of *Pamphila hobomok* which had hibernated in the past winter. FRANK HAIMBACH, *Secretary*.

The second meeting of the Association of Official Entomologists of the Cotton Belt was held at Atlanta, Georgia, May 6, 1905, in the office of the State Entomologist, at the Capitol. Those present were: Wilmon Newell, State Entomologist, Louisiana; G. W. Herrick, State Entomologist, Mississippi;

R. S. Mackintosh, State Horticulturist and Quarantine Agent, Alabama; R. I. Smith, State Entomologist, A. C. Lewis and Harper Dean, Assistant State Entomologists, Georgia; C. E. Chambliss, State Entomologist, South Carolina; G. M. Bentley, Assistant State Entomologist, North Carolina, H. A. Morgan, Director, Agricultural Experiment Station, Tennessee; J. L. Phillips, State Entomologist, Virginia; W. D. Hunter and A. W. Morrill, of the Bureau of Entomology, U. S. Department of Agriculture, stationed at Dallas, Texas.

Mr. W. D. Hunter, in charge of the government cotton boll weevil investigations, made the opening remarks, speaking of the development of the quarantine rules, the changes made in the various State regulations since the previous meeting at Jackson, Miss., and of the changes which were advisable at the present time, in order that no unnecessary restrictions to interstate commerce be continued.

Prof. H. A. Morgan gave in some detail his experience in attempting to check the spread of the weevil into the State of Louisiana during the seasons of 1903 and 1904. Believing the principal means of dissemination was through shipments of cotton seed and seed cotton, the Louisiana authorities started out to test the possibility of checking the boll weevil's spread. Careful observations in the field revealed a clue to the possibility that the weevils migrated by flight at certain seasons of the year. Co-operating with Mr. Hunter and his assistants, of the Bureau of Entomology, the migration in 1904 was carefully studied, and all the evidence obtained pointed to this as the leading method of the weevil's spread. The distance covered by the migrating weevils varied from 20 miles in northern Louisiana to about 70 miles in southern Louisiana. At Jennings, Louisiana, an isolation from all other cotton fields of 14 miles proved to be no protection to cotton growing there.

Messrs. Morgan and Hunter spoke of the evidence obtained last season to the effect that the weevils fly high during their migration. Extensive beatings outside of cotton fields during the migrating season did not result in the capture of a single specimen and, as additional evidence, the weevils when spreading into uninfested territory were found farther into a field where it was bounded by timber on the south or west side than where there was no such timber present.

Representatives from the various States reported on the status of the boll weevil quarantine laws. Those of Mississippi, Alabama and North Carolina were in accord with the resolutions adopted at the meeting of the Association at Jackson, Mississippi, August 2, 1904. The quarantines maintained

by Georgia and South Carolina were incorporated in full in State laws, while the Louisiana quarantine had recently been amended so that there was no prohibition against the shipment of any commodity, except cotton and its products.

State Entomologist Newell, of Louisiana, spoke of the plans of the State Crop Pest Commission for the season of 1905. These included the establishment of stations for observation at intervals along selected lines at different latitudes for the purpose of studying the migration of the weevils toward the east.

Resolutions were adopted recommending that the laws and regulations concerning the cotton boll weevil in the various States be changed to conform with the plan principally based on the knowledge of the Mexican cotton boll weevil acquired since the last meeting of the Association. These resolutions recommended that quarantines be maintained only against cotton lint, cotton seed, seed cotton, hulls, seed cotton and cotton seed sacks, and corn in the shuck, originating in the boll weevil-infested territory.

Plans were discussed for a meeting of the Association at New Orleans, La., at the time of the next meeting of the A. A. A. S.

A. W. MORRILL, *Secretary.*

At the meeting of the Feldman Collecting Social held on May 17, 1905, at the residence of Mr. H. W. Wenzel, 1523 S. 13th Street, Philadelphia, there were ten members present.

Prof. Smith spoke of the absolute failure of experiment with *Tenodera sinensis*, of which egg masses were placed in twelve or fifteen points throughout the State of New Jersey for three successive years. Only in the first year of the experiment were any of the insects found. Prof. Smith further stated that the maple scale, *Pulvinaria innumerabilis* has been getting abundant in cities in the eastern part of State, where it is very injurious to soft maple. The growth of this scale has been watched with interest; the twigs upon which eggs were found in early fall are so covered with the scale now that nothing but the scale can be seen, in spite of the fact that about ninety per cent. die during winter. The scale begins to grow in spring, and after two or three weeks' growth parasitized specimens were noticed, probably seventy-five per cent. The speaker remarked that in all the stages of growth a certain percentage of the scales die, and that parasites now issuing must live until fall without having larvæ of scale to oviposit in, which still leaves the subject open for further study.

Mr. Seiss stated that *Eros aurora*, which he reported in the previous meeting as occuring on April 2nd, at Island Heights, N. J., has been found at the same place up to May 6th, on which day six specimens were taken. On April 22nd and 24th they were very abundant, hundreds of specimens being found by lifting boards around a well.

Dr. Skinner spoke of trip in company with Mr. Daecke, Mr. Wenzel and Mr. Wenzel, Jr., to Iona, N. J., on April 30th, when he took a specimen of *Pyrgus centaureæ*, which has heretofore not been found south of Orange Mountains; there was also a specimen taken of *Basiaeschna janata*, which is rare. Mr. Wenzel said that since the last meeting, in company with his son, a number of interesting species of Scolytidæ had been taken. At Iona, N. J., *Xyloterus scabricollis* was taken from galleries in white pine; very little of the habits of this species is known; the galleries are made in the sapwood, and are T-shaped, the larvæ are raised in separate wood cells or cradles at the end of each lateral gallery, the ambrosia stain extending far above and below the broad galleries. In the same tree *Gnathotrichus materiarius* was also found. At Five Mile Beach *Monarthrum mali* was taken from galleries in oak, *Xyleborus xylographus* was taken in the exposed roots of maple, the leaf shaped brood galleries being filled with the insects in all stages. The speaker exhibited the work of this species, which he said is different from all previously found. The speaker also made some remarks on *Hylastes porculus*, recorded as rare, in bark at base of pine. The speaker had found it in numbers in the roots from two to three feet from tree, and six to ten inches under ground.

Dr. Skinner reported that he had bred in some numbers the beautiful little moth *Coptodisca splendoriferella* from cocoons found at Media, Pa.

Mr. Haimbach reported the capture of seventeen species of *Tortricids* near Manayunk, Pa., on May 12th to 14th inclusive. Mr. Daecke exhibited specimens taken at Bamber, N. J., on May 13th and 14th, of particular mention being *Helluomorpha nigripennis* and *Cicindela* vars. *modesta* and *rugifrons*.

FRANK HAIMBACH, *Secretary*.

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OCTOBER, 1905.

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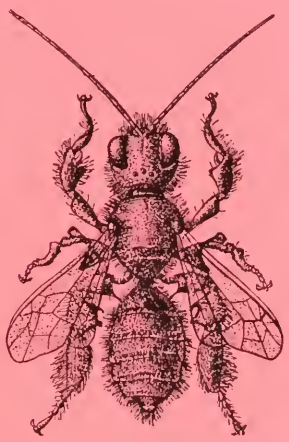

Cryptohalictoides spiniferus Viereck.

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ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. OCTOBER, 1905. No. 8.

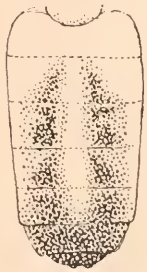
CONTENTS:

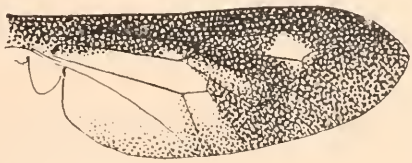
Two New Species of Diptera from New Jersey.

BY ERICH DAECKE.

Chrysops bistellatus n. sp. ♀

Length 8–9½ mm., body slender.—Face, facial collosities and palpi yellow. Cheeks brownish. Front covered with yellow pollen which also surrounds the annulate and facial orbits. Frontal callus black. The brownish ocellar tubercle is connected with the frontal callus by a narrow, shiny black line. First segment of antennæ yellow, second and base of third brownish, the annulate portion black. The two inner dorsal stripes of thorax are greenish gray, the lateral yellowish and they alternate in the usual manner with three brown stripes, of which the





Abdomen and wing of C. bistellatus.

mid-dorsal one is relatively narrow. The pleura are light yellow with the usual dark brown stripes. Scutellum yellowish brown. Abdomen yellow, with one broad, light brown stripe on each side. These stripes begin narrowly at base of second segment attaining their full width apically and thus form a rectangular triangle; the right angle being

apically dorsad. At the fifth, sometimes the sixth, segment these stripes coalesce and occupy the full area of the abdominal apex. The brown stripes are of uncertain contour and often intensified in color toward the center of each segment, thus forming a line of indefinitely shaped spots. On some specimens these spots occupy the full width of the lateral stripes, in which case they form a dark brown stripe right and left. The last two or three segments are always more infuscated than the others. Venter yellow, darkened at apex and a light brown line on either side abbreviated anteriorly. Legs reddish yellow, base of hind femora brown, the distal two thirds of front and hind tibiæ brownish or black; the distal half of middle tibiæ brownish. Tarsi black, middle and hind tarsi reddish at base. Wings: the apical spot occupies the entire apex and coalesces with the crossband except on the first submarginal cell where a quadrate hyaline spot infringes in a diagonal position equally on the crossband as well as the apical spot. The upper corner of this hyaline spot touches where the second longitudinal vein slightly curves. The lower corner infringes slightly upon the first posterior cell and in rare cases continues in a semi-hyaline fashion as a narrow shade into the second posterior cell. The distal corner of the hyaline spot slightly exceeds the point where the third vein branches. The brown costal border embraces the first basal cell except a small distal spot. The second basal cell is slightly infuscated at the upper proximal portion. The third and fourth posterior cells are brown, the fifth is clouded at its distal half, a shade which fades away into the outer border of the anal and axillary cells. The posterior branch of the fifth longitudinal vein is surrounded by a brown shade widening toward the posterior margin. The discal cell lightens towards middle and base into a semi-hyaline shade which often affects the base of the fourth posterior cell. Anal cell widely open.

In this species the hyaline triangle has practically disappeared, a character by which it can readily be distinguished from all other North American species.

The description was made from sixteen females taken at Brown's Mills Junction, N. J.

Chrysops amazon n sp. ♀

Length 9-10½ mm.—Front and face gray. The prominent frontal and facial callosities, also cheeks, shining black. Palpi black. Antennæ slender. The first and base of third antennal joints reddish, second joint brown and annulate portion of third black. Thorax, shining black; two broad grayish dorsal stripes only perceptible anteriorly. A heavy fulvous pile on pleura. The thorax and the shining black abdomen

C. amazon.

sparsely beset with short white hair. Legs black. The four posterior tarsi faintly reddish at base. Wings: the crossband fills out the fourth and fifth posterior cells, thus reaching the posterior margin. (The fifth posterior cell is a shade lighter apically on one specimen). Both basal cells brown with a hyaline dash apically. Anal and axilliary cells, anal angle and alula slightly shaded. A similar shade covers the apex. A halo follows the convex distal border of the crossband quite to the costa, thus separating the crossband from the apical spot which latter vignettes slightly Into the second submargined cell. Anal cell closed.

This species resembles very closely *Chrysops pertinax* Williston, but will be distinguished readily by the heavy fulvous pile on pleura, like that of *celer*, by the crossband which reaches the posterior margin and the difference in the color of antennæ; besides this species has no sign of middorsal triangles on abdomen.

Described from four specimens taken at Brown's Mills Junction, N. J.

A New Genus and Species of Phalangida.

By Nathan Banks.

Lately I have received from Prof. J. H. Comstock a phalangid sent him by Prof. Cooley of Montana. Prof. Cooley writes that it was taken in a cave near Limespur, Montana, at a depth of 190 feet, and a horizontal distance into the earth of about 1000 feet. It will constitute a new genus and species, its nearest allies being the two species of *Sclerobunus* found under logs and among fallen leaves in the northwestern States.

CYPTOBUNUS n. gen.

A Mecostethous Phalangid with a single, simple claw to tarsi three and four. Hind coxæ but little larger than the others, united to venter only at base; body broad; legs very slender, leg two plainly longer than four, but tarsus four longer than two; the tarsi only indistinctly divided into false joints, three in tarsus two, four in tarsus four, the basal one longer than others. Eye-tubercle rather large, not very high, rounded, with two large black eye-spots above. Palpi with tibiæ and tarsi depressed, and armed laterally with long, slen-

der spines, each spine consisting of a basal part, truncate at tip and a long terminal bristle arising beneath a short spur or apophysis.

Type *C. cavicolus.*

Cyptobunus cavicolus n. sp.

Pale whitish hyaline, eye-spots black. Body but little longer than broad behind, sides slightly concave, anterior margin not one-half as long as posterior margin, surface uniformly, finely granulate; basal joint of mandibles rather long, porrect; the second joint has near base, as seen from above, a short spine on each side, fingers apparently simple. Palpi longer than body, very large and broad; the tibia and tarsus depressed, a rather slender tarsal claw; tarsus with four long spines on each side; tibia has

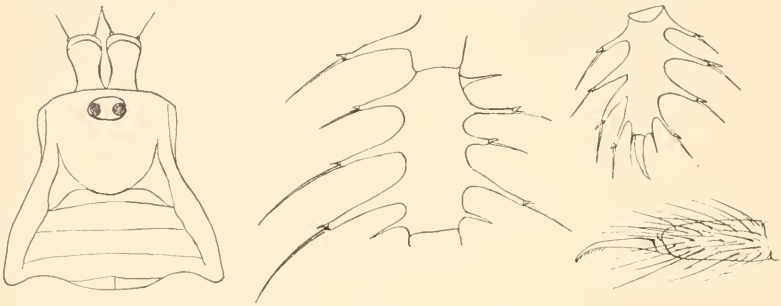


Fig. 1.—Body and mandibles *Cyptobunus.* Fig. 2.—*Cyptobunus.* Tibia and tarsus of palpus and claw of leg.

three long spines on inner side, and one short one, on the outer side three short and two long ones alternating; the patella has on inner side a long spine; femur above with two on outer side toward tip, two on lower inner side toward tip, several short ones above, and below in a row are three large, long spines, a small one, another large one, and then two small ones near tip. Legs slender, granulate, with many fine hairs, most numerous toward tip; femur one about as long as body is broad, with three long spines near base on lower side, one such on the trochanter, and two on coxa one; femur two plainly longer than body, tibia two about three and one-half times as long as the patella, and metatarsus two as long as the tibia; in very strong lights the tarsi show traces of further division, but it is not definite. Length 1.6 mm.

One specimen from a cave near Limespur, Montana. The general appearance of this specimen at once places it in the suborder *Mecostethi*, but it differs from all other species known in having a simple single claw to tarsi three and four. An

allied genus, *Sclerobunus*, has the single claw, but there is a spur or branch-claw on each side toward base. Such a branched claw has been found in several other Phalangids in various parts of the world. In the old classifications the *Phalangida* were divided into two groups, differing from each other by several important characters; one of these was that in the *Mecostethi* (Laniatores) there were two claws to tarsi three and four, while the *Plagiostethi* (Palpatores) had only a single claw. Now the discovery of these forms, which by nearly all structural characters belong to the *Mecostethi*, but have a single tarsal claw throughout, provokes discussion as to their systematic position.

Loman has proposed to elevate these forms into a new suborder, the *Insidiatores*; and calls attention to some new points of difference, especially the peculiar kind of spines on the palpi. Pocock refuses to accept the *Insidiatores* as equal to the other two suborders, but keeps it as a superfamily in the *Mecostethi*. Most of the species of the *Insidiatores* come from Australia and New Zealand, a few from Madagascar and South Africa, one from Chile, and now three from the northwestern United States.

The fact that *Cyptobunus*, with its simple claws, is but a cavernicolous adaptation of *Sclerobunus*, with its branched claws, induces me to think that *Sclerobunus* is not far removed from typical *Mecostethi*. I would therefore place still less value upon the tarsal claws and consider them as only of generic value, and that the three forms of *Insidiatores* found in the northwestern States are more nearly related to the other *Mecostethi* of the neighboring regions than they are to the Australian phalangids having a similar claw-structure. Omitting the tarsal claws, *Sclerobunus* and *Cyptobunus* belong to the family *Phalangodidæ*, and possibly might form a tribe therein.

Thorell and Loman have divided the *Phalangodidæ* of Simon into three or more families, but in treating the species of the United States I do not think it advisable for our forms, and doubt if these families will hold good when the phalangid fauna of the world is more fully known to naturalists.

On the Pupation of the Noctuid Moth Harrisimemna trisignata Walk.

By Franklin Sherman, Jr.

Of this moth Dr. Holland in his Moth Book says: "Ranges from Canada to Texas and from the Atlantic to the Great Plains. The larva feeds on the winterberry and lilac."

In the literature which I have thus far been able to examine I find no reference to the pupation of this species.

On July 14, 1904, Mr. R. W. Collett, of Andrews, N. C., himself a keen observer of insect life, sent me a piece of persimmon (*Diospyros virginiana*) twig with the suggestion that it might be interesting to put it in a breeding cage to see what would come out of a certain hole which he had seen a caterpillar make in the wood but which was now filled up. He said the caterpillar was "black-banded and mottled, hairy and hump-backed, about one inch long," and added jocularly, "no doubt you will recognize it by this minute and accurate description."

Curiosity prompted me to cut the stick open sufficiently to expose the larva which was now about to pupate, The burrow was about 1½ inches long and not much wider than the diameter of the larva, certainly not large enough to allow the larva to turn around in the burrow. The larva was now reposing with the head toward the opening of the burrow which it had carefully sealed over with a tight covering of silk. At first I was of the opinion that the larva fed on the wood and had reached maturity in the burrow, but Mr. Collett at once put a quietus to this theory,—he had seen the larva at work on the burrow when only half-way in, the larva being then grown. He says: "I saw him in several stages of the work, but did not see him disappear into his hole or the after process of sealing it up. * * * I might add that all this time he was in my room."

When examined on Aug. 11, 1904, the insect had pupated, with its head toward the opening of the burrow, and on Aug. 12, 1905 (just a year later) the adult moth emerged. There thus seems to be but one brood, even though this individual might have emerged earlier under natural conditions.

The point that strikes me as curious is the making of the pupal burrow in solid wood. The twig was about ½ inch in diameter and perfectly sound. The burrow extends directly into the wood and turns downward at the center. The larva evidently ate its way into the twig until the burrow was finished, then *backed out*, turned around and *backed in again*, then, sealing up the door, pupated.

I do not know whether this observation is new to the world, but it was new to me. I should like to know (1) if this habit has been noted for this species before, (2) what the normal pupating habit of the species is, and (3) whether such a habit as here described is known in any other lepidopterous insects.

The moth, twig and pupa-skin are now in the collection of the North Carolina Department of Agriculture, Raleigh, N. C.

Oviposition of Tetragoneuria (Odonata).

By E. B. Williamson.

In 1889 the Toledo, St. Louis and Kansas City R. R. (now the Toledo, St. Louis and Western R. R.) opened a gravel pit on the farm of Peter Frantz, near Bluffton, Indiana. The excavation, covering an area of about six acres, resulted in a pond without outlet or inlet. For several years I have watched this bare pit acquire a fauna and flora in some groups surprising in their richness. It is not my purpose here to discuss this subject in any detail, but it may be remarked that this pond furnished my type of *Enallagma piscinarium*, since reported only from two or three stations in the extreme eastern United States, and that at present the species of dragonflies taken at the pond number forty, a larger number by three than can probably be taken in Great Britain at the present time.

On May 28, 1905, *Tetragoneuria cynosura* was found in limited numbers at the pond. *Tramea lacerata* was a more conspicuous species, many couples of which were flying and ovipositing, the male releasing the female just before she dipped her abdomen, catching her again deftly with his feet and then seizing her head with his long flexible abdominal

appendages. As couple after couple flew by, I observed in every case that the female grasped the abdomen of the male with her feet. The Tetragoneurias skirted the shores, each one confining itself generally to a limited stretch. About noon one was observed which seemed to have a pellet of some sort attached beneath near the end of the abdomen. It was captured, and I had no suspicion it was a female, so exactly like the males' had its flight been, till I took it from the net. I looked at once for the pellet which was sticking to the net. With Professor Needham's New York observations on the genus at once in mind, I hastened to place the pellet in water. Slowly it uncoiled into a strand of eggs about three inches long. The eggs were compact, and but little gelatinous matter was apparent. This increased rapidly in amount, however, till the diameter of the strand was about a quarter of an inch. The pellet of eggs when taken from the net was elliptical in shape, measuring about five-sixteenths of an inch in the long axis and scarcely one-fourth of an inch in the short axis. The strand when first placed in water had a diameter of less than one-eighth of an inch.

Now to see the act of ovipositing. After an hour or two of watching, an individual was seen flying with a similar yellow pellet. Back and forth she flew, sometimes fifty yards from me, in spite of my efforts to keep her in close view. One purpose of the large, widely-forked vulvar lamina, which reaches beyond the end of the ninth abdominal segment, was now plain. It is the lower flexible and movable side of a vise in which the pellet of eggs is held and carried. The female flew rapidly, evidently not looking for a point for ovipositing. The pellet, which remained apparently the size when first seen, was "ripening" so its uncoiling in the water would be more rapid than had been the case with the pellet I had taken from the first female. The flight of the female under observation became more deliberate and she approached nearer the surface. Suddenly the tip of the abdomen swept the water as rapidly as though the species were a *Libellula* or *Tramea*. Delay would be fatal here, for the pond is filled with hungry species of the bass family, which all during the day were breaking the water

in their efforts to catch Trameas,—always fruitless efforts, so far as I observed. I waded at once to the spot. The strand of eggs, possibly five inches in length, with a specific gravity slightly greater than water, was hung between two horizontal slightly submerged sedge leaves.

Notes on the Synonymy and Preparatory Stages of Illice faustinula Bdv.

By Francis X. Williams.

Mature larva.—Head bilobed, pale yellowish-green, irregularly blotched with black, leaving the clypeus and a space on either side of it and on the lobes of the vertex of the ground color, genæ obscurely darkened; upper half of submentum smoky-brown, lower half greenish; mentum smoky-brown; antennæ pale gray; ocelli 6. Head with a few pale-colored rough hairs. Width 1.6 mm. Body nearly cylindrical, thickened anteriorly, as in Papilio, but to a lesser degree, somewhat appressed ventrally, segments distinct. Markings on body of a very complicated nature. Ground color blackish, median line broad and broken, creamy pink, bordered by a gray band blotched with black, widening on the first four and last two segments, widest on third segment and tapering towards the head. This gray band is more or less crescent-shaped on each segment, making the pattern somewhat resemble a chain of ganglia. Subdorsal to this gray band is a black one, much broken in by gray; laterad is a gray band, sublateral to which is another black one exceedingly irregular. Legs and venter pale gray, a broad purplish ventral line with spots of the same color on base of legs, stigmata gray. Body adorned by rows of lemon yellow tubercles, some fused and bearing long, rough hairs, those above lateral line blackish, those below pale gray with black bands. The cut illustrates the distribution of tubercles and hairs. Length 13 mm., width at third segment 2.5 mm.

Fig. 1.—Segments 5 and 6.
Fig. 2.—Segments 1 and 2.
(*Illice faustinula*).

Described from living larvæ.

A caterpillar of rather variable shades, some being lighter and others darker in color than those of the above description. The markings on the dorsum give the larvæ a characteristic appearance.

The larvæ of *Illice faustinula* were found by me in February, 1904, near Stanford University, on the under side of fence-rails upon which grew *Ramalina menziesii* Tuck., and other lichens which the insects mimic in color. The larvæ were found also on various trees bearing patches of their food-plant. They rest during the day in shady spots on the fences or trees and feed by night. When at rest, the anal prolegs of the larvæ point directly backwards. Towards the middle of March, *faustinula* spins its weak cocoon of fine silk intermingled with its hairs and forms a short, stout, brownish pupa much like that of an arctian, paler ventrally and with a pale longitudinal band on the dorsum of the thorax. Length 8 mm., width 3.2 mm.

In San Francisco the larvæ are not fully grown until June; they may be found throughout the winter, there being but one brood annually; the younger larvæ differ but little from the mature ones. These larvæ are great spinners, spinning all over their food-plants in captivity and can suspend themselves by a thread in all stages. With all this spinning propensity, they make a very weak cocoon in some chink or crevasse; they are rather sluggish in their motions.

Last year I reared but few imagines, which all proved to be *Illice neva*; this year, however, Mr. Grinnell raised a larger number of imagines, some of which proved to be *neva* and some *faustinula*. Both of these forms were obtained from caterpillars not differing in any way, and in some cases most probably from larvæ hatched from one batch of eggs, as many caterpillars were taken from the same fence-rail. Of the imagines reared, most were *faustinula*, but ♂♂ and ♀♀ of both forms were obtained from the numerous larvæ. An examination of the male genitalia by Mr. Grinnell showed that they were the same in both forms.

From a large series of both forms it was found that *faustinula* and *neva* intervaried to a considerable extent, so that both forms could be fairly well connected with one another by intermediate variations.

Illice neva and *faustinula* were also raised by Dr. Behr from larvæ from Napa County, California, but we have no particulars from him regarding the larvæ.

The evidence cited above is certainly sufficient to synonymize *nexa* with *faustinula;* the var. *fusca* of Stretch is nothing but a dark example and has no right to be called a variety. The synonymy therefore should stand thus:

Illice faustinula Boisduval.
Syn. *nexa* Boisduval, *fusca* Stretch, *grisea* Packard, *deserta* Felder.

A few eggs were obtained from a fertile *faustinula;* they are silvery white, reticulated and somewhat flattened at the base. A small number of larvæ in the first stage were secured from these eggs by Mr. Grinnell, who gives the following description of them.

Illice faustinula Bd. First stage: Width of head 20 microns, of eleventh segment 19 microns, of sixth segment 16 microns. Body whitish, transparent; a little light brown pigment towards the cephalic and caudal extremities. Head, shining brown with a few short hairs. Body covered with long blackish hairs ranging from 3–36 microns. Body more or less cylindrical, but somewhat flattened dorsally. Legs same color as adjacent parts of body. Head strongly bilobed.

Concerning the Locust Genus Mestobregma, Scudder

By Lawrence Bruner, University of Nebraska.

The generic name *Mestobregma* (Bull. U. S. Geol. Surv. Terr., II, p. 264, June 6, 1876) was erected by Samuel H. Scudder for the reception of an insect which he erroneously took to be *Oedipoda plattei* of Thomas (Scudder in litt. to Bruner), but which in reality was the one described later by Henri de Saussure as *Psinidia* (*Trachyrhachis*) *pardalina* (Prodr. Oedip. p. 162, 1884). Since the species chosen by Scudder for the type of his new genus *Mestobregma* was undescribed at the time, and wrongfully supposed to be another and very distinct insect, the name will have to be replaced by another. During the same year Scudder suggested the name *Trachyrhachys* (since corrected to *Trachyrhachis*) for the reception of two new species of locusts which he described from the

plains of northern New Mexico. (See Ann. Rept. Chief Eng. U. S. Geol. Surv. W. 100th Merid., 1876, Append. J. J., pp. 511–513.) One of these, *coronata*, he cited as the type of the genus. Since *coronata* is now considered to be congeneric with the *Oedipoda plattei* Thomas, we should use *Trachyrhachis* in place of *Mestobregma* and take for the type of the genus *coronata* Scudd. instead of *plattei* Thom.

Professor Jerome McNeill has suggested the generic name *Metator* for Saussure's *pardalina*. (See Proc. U. S. Nat. Mus. XXIII, p. 394, Pl. XXI, fig. 3, 1901.)

Five New Species of Micronecta Kirkaldy (Aquatic Hemiptera).

By G. W. Kirkaldy.

Until 1897 these tiny waterbugs (belonging to the family Corixidæ and characterized by the conspicuous scutellum, by the head being similar in both sexes, strigil present in the males, length never more than 4½ mm., etc.) were invariably termed *Sigara* Fabricius, 1775, but in that year (Entomologist XXX, p. 260) I pointed out that *Sigara* was strictly equivalent to *Corixa* Geoffroy, 1762 (incorrectly written *Corisa* by many authors), and therefore proposed the name of *Micronecta* ("tiny swimmer"). Two years later, Bergroth (Ent. Monthly Mag. XXXV, p. 282) erected a new genus, *Tenagobia*, for the then known American forms, separating these on account of the structure of the pronotum, the posterior margin of which is emarginate in *Tenagobia*, more or less rounded convexly in *Micronecta*. Early in the next year* (Revue d'Entom. France, XVIII, pp. 101-4) Horvath revised the palæarctic species, raising the total from eight to twenty-three, and one has since been added. The learned Hungarian doctor's characters are based upon the subcostal furrow, the comparative length of the pronotum, etc., but I think the form of the mesoxyphus and antennæ should not be neglected. I have not attempted, as yet, the examination of the strigil,

* Dated Dec., 1899, but this journal is notoriously antedated.

genitalia, etc., which will undoubtedly furnish good characters.

While recently examining some aquatic forms sent me by my friend, Mr. E. P. Van Duzee, I discovered a new species of *Micronecta* from the Philippines; I add also two new species from Ceylon and two from Australia, discovered amongst purchased material.

The males of *Micronecta* terminate * the pala (anterior tarsus) by a strong curved claw; this claw is articulated with the tarsus and fits into a cavity therein, when folded back (like a clasp-knife). There are fifteen species of extra-palæarctic distribution, of which twelve or thirteen are known to me actually:

A. *Oriental.*	
1. *vanduzeei* sp. n.	Philippines.
2. *albifrons* Motschulsky, 1863 (*Corixa*)	Ceylon.
3. *grisea* Fieber, 1844 (*Sigara*)	India.
4. *thelxinæ* sp. n.	Ceylon.
5. *notala* Kirkaldy, 1897 (*Sigara*) (= ‖ *lineata* Fieber, 1844.)	India.
6. *memonides* sp. n.	Ceylon.
7. *ovivora* Westwood, 1871 (*Corixa*)	India and Ceylon.
8. *punctata* Fieber, 1844 (*Sigara*)	India.
9. *siva* Kirkaldy, 1897 (*Sigara*) (= ‖ *striata* Fieber, 1844.)	India.
B. *Ethiopian* and *Mascarene.*	
10. *felix* Butler, 1876 (*Sigara*)	I. Rodriguez.
11. *sulcata* Signoret, 1861 (*Sigara*)	Madagascar.
12. *scutellaris* Stal, 1858 (*Sigara*)	S. Africa.
13 *pilosella* Horvath †	Madagascar and Réunion.
C. *Australian.*	
14. *annæ* sp. n.	Australia.
15. *erato* sp. n.	Australia.

This brings the total of species up to 39, of which perhaps 36 are valid.

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* First pointed out by Handlirsch (1901). Fieber seems to have been unaware of this fact, and his diagnosis in 1844 is altogether erroneous.

† I have not seen the description, though I believe it is published. It is probable that *M. albifrons*, *ovivora* and *siva* may be the same species. *M. felix* is also probably synonymous with one of the other Ethiopian forms. The others, however, all seem to be valid.

M. vanduzeei sp. n.—Head and underside stramineous ; pronotum and scutellum fuscous. Tegmina pale yellowish brown, with, usually, three thin, longitudinal lines of darker color (the markings, however, are not always very clear) ; legs pale yellow. Vertex longer than pronotum, the latter being short, elongate elliptical, lateral margins much shorter than half the width of the posterior margin of an eye. Head with the eyes a little wider than pronotum. Pronotum, scutellum, and tegmina smooth, polished, impunctate; subcostal furrow reaching at least as far as the apex of the clavus. *Mesoxyphus roundedly obtuse-angled.* Intermediate femur equal in length to tibia, tarsus and claw together ; tibia a trifle shorter than the claw, which is one-half longer than the tarsus. Length, 3 mm.

Philippines, Negros Isd. (C. S. Banks in collns. Van Duzee and Kirkaldy.

M. thelxinœ sp. n.—Head and underside pallid. Pronotum and scutellum dark brownish grey, tegmina pale flavogriseous, the pronotum very narrowly pallidly margined, tegmina ornamented with pale brownish somewhat as in *M. siva*, but more faintly. Head a little longer than the pronotum, the latter being elongate elliptical, lateral margins very short (meeting actually laterally in an acute angle). Mesoxyphus rounded posteriorly. Intermediate femur about one-seventh longer than the tibia, tarsus and claw together ; tibia one-half longer than tarsus, which is slightly more than half the length of a claw. Length, 2 mm.

Ceylon (my collection).

This is somewhat allied to *M. ovivora*, but is smaller and the proportion of the legs different.

M. memonides sp. n.—Head pallid. Pronotum and tegmina dark smoky brown with purplish reflections, lateral margins more or less pallid. Underside black, except trochanters, femora, tibiæ, tarsi and claws, and posterior margin of abdomen, all of which are pallid. Tegmina smooth and polished. Head a little longer than pronotum, rounded in front. Pronotum elongate elliptical, lateral margins about as long as half the width of the posterior margin of an eye. Mesoxyphus rounded. Intermediate tarsus nearly twice as long as the tibia, which is sub-equal to a claw. Subcostal furrow much as in *M. vanduzeei.* Length a little less than 2 mm.

Ceylon (my collection).

A very distinct little species.

M. annæ sp. n.—Head pallid. Pronotum dark fuscous brown, with darker transverse median line. Tegmina fuscuous brown (the margins of the areas narrowly darker), somewhat superficially punctured. Head a little longer than pronotum, rounded in front. Pronotum elongate elliptical, lateral margins very short, much less than half the width of the

posterior margin of an eye. Mesoxyphus *acutely triangular*. Terminal segment of antenna elongate, somewhat thickened. Intermediate femur equal in length to tibia, tarsus and claw together; tarsus one-half longer than a claw, which is equal in length to the tibia. Subcostal furrow much as in *M. vanduzeei*. Length 3¼ mm.

Australia, Victoria (my collection).

M. erato sp. n.—Head and underside pale stramineous. Pronotum pale sordid yellow, with a broad blackish brown median transverse stripe which does not reach the lateral margins. Tegmina sordid stramineous; clavus with two narrow dark brown lines running parallel to interior and corial margins, uniting at the apex of clavus. Corium with two elongate suboval areas narrowly dark-brown-bordered, and the exterior lateral margins also brownish black. Pronotum, scutellum and tegmina somewhat superficially punctured. Head rounded in front, longer than the pronotum; lateral margins of pronotum obsolescent; membrane apically angulate. Length about 3 mm.

Australia, Victoria (my collection).

[NOTE.—My friend, Mr. G. W. Kirkaldy, has sent this paper to the publisher through my hands, thinking I might be able to add a more definite locality to his new species *Micronecta vanduzeei*, and I have ventured to draw attention here to two additional species of *Micronecta* just published by Dr. Horvath in a paper entitled "Hydrocorisæ tres novæ" in volume two of the Annales Musei Nationalis Hungarici, pages 594-595, 1904. This paper could hardly have reached Professor Kirkaldy in Honolulu at the time he mailed his paper to me. The species are:

P. 594.—*Micronecta haliploides* Horvath from Ceylon. Near *M. punctata*, but with a shorter pronotum.

P. 595.—*Micronecta carbonaria* Horvath from New Guinea. Differs from all previously known specimens in being black.

The other aquatic bug described in this paper is *Plea japonica* Horvath from Japan.—E. P. VAN DUZEE, July 17th, 1905.]

MR. O. W. BARRETT recently resigned his position as enomologist and botanist of the Porto Rico Experiment Station at Mayaguez, Porto Rico, to accept the position of Plant Introducer in the office of Seed and Plant Introduction and Distribution, Foreign Explorations, United States Department of Agriculture, Bureau of Plant Industry, Washington, D. C. This title has been created for this position. Besides attending to the distribution of tropical and subtropical plants stock, he will have charge of the inspection and quarantine of both incoming and outgoing plant shipments of this section of the Bureau of Plant Industry.

Entomological Literature—The Bete Noire of the Entomologist.

By C. F. Baker, Santiago de las Vegas, Cuba.

It was with great interest and pleasure that I read the criticisms of the Editor of Entomological News on my humble efforts in the matter of entomological publication, not that they show any knowledge of the facts in the case, or any particular evidence of a desire to be just, but that they present to the scientific world a text of such burning importance and immediate interest to every working student, that he cannot now, in justice to us all, fail to carry his aggressive discussion to its logical conclusion—a thorough and fair investigation. Certainly, at this juncture in the history of entomological work in America, the pages of any journal devoted to the subject could not be filled with more important matter, and I am in great hopes that the initiative taken by Dr. Skinner may call forth the frankest possible discussions from all sides.

My individual interest in the case criticized by Dr. Skinner can be disposed of in a few words to make way for the only discussion of general interest—one covering the whole subject fairly and squarely. Before undertaking the publication of the series of reports entitled "Invertebrata Pacifica," I issued a prospectus explaining its methods and objects and sent this out broadcast so that all the world might know—a copy was addressed to Dr. Skinner. The collections I had brought together on the Pacific Slope of North and Central America were—in certain groups—as important and extensive as any collections ever made in those regions—in some more so—and material in almost all groups represented there was carefully gathered. There was the promise of a great amount of valuable matter forthcoming in the way of faunal and monographic studies by various well known students, all based on this material. I desired very much to have all this published together. Even separately I know of no place where one small part of it could be published. So I published it privately. My right in this matter was exactly that of many other individuals the world over, through whose private enter-

prise great field operations have been successfully prosecuted and reports on the same published. Parallel cases are those of Mr. Harriman and his Alaska expedition, and the Godman-Salvin Biologia Centrali-Americana. I am not a millionaire but I have managed to publish the Invertebrata Pacifica in clear and usable form. This series of reports is published on exactly the same plan as the Proceedings of the Biological Society of Washington—an irregular number of pages at odd times as the papers are ready. This feature may commend these two publications over all others of this nature in the United States—each separate number is given up wholly to one group and may be purchased separately. I shall refer to this again.

Dr. Skinner's remarks on the point of bibliography I fail entirely to appreciate. The numbers of Invertebrata Pacifica as issued are sent to the Congressional Library and to all promptly published bibliographical lists, besides to the various subscribers. Does ENTOMOLOGICAL NEWS do any more? Each part is carefully dated, and each part bears the name of the editor and publisher—usually in two places. Citations can be easily and rapidly made, and this is certainly not true of numerous other publications. If in the natural course of events, the editor finds it to his interests to change his address occasionally, it is to be regretted that this fact so disturbs the worthy Doctor. Certainly, all such changes have been thoroughly advertised. Dr. Skinner's impatience over the fact that there should be titles in the bibliographies not to be found in the Philadelphia library, evidences a condition of affairs often experienced also by isolated and independent workers who are poor in pocket—a condition unfortunately true of my own library and of most others that I know. The point of the remark I fail to see. If Dr. Skinner will remit the necessary amount, I shall be pleased to send him all the parts of these reports published, or any part he may be especially interested in, which is better than he could do for me in the case of ENTOMOLOGICAL NEWS or Transactions of the American Entomological Society. And by the way, why cannot Dr. Skinner furnish copies of the Proceedings of the Entomological Society

of Philadelphia, which so many libraries and entomologists are clamoring for? Has there been a publication more "ephemeral," more "difficult to obtain," or a greater stumbling block to rising entomologists. In like manner the "pitiable sorrows" of the European Hymenopterists in connection with Invertebrata Pacifica can be quickly assuaged through the medium of a little remittance.

That publications which depend upon one person are necessarily obscure, sporadic and ephemeral is not at all in consonance with the history of American Entomology. What about Entomologica Americana, Papilio, Bulletion of the Buffalo Society of Natural Sciences, and a dozen others which might easily be mentioned, and if there are any more difficult to obtain than some of these things published by societies and academies in times past, or even some being published now, or that have proven more "obscure," "sporadic" or "ephemeral," I should be interested to know of them. On the other hand, a considerable number of the most interesting and valuable journals and reports now being published in America and in Europe are purely private enterprises, and to my mind much more generally satisfactory and useful to the individual worker since they generally serve a single interest instead of the always diversified and usually warring interests of a society. And what periodical, even though published under the auspices of some society, cannot point back to the enthusiasm, energy and sacrifice of some single individual as its usual mainstay. In a last analysis—if the truth be known—success in most scientific societies and publications is due to the untiring, independent efforts of some single whole-souled votary of Science, who does the work while the society gets the credit.

My final remark in connection with the series of reports entitled "Invertebrata Pacifica" will be to refer all those interested to the contents of these reports, which I do not think that any student in America can be without, since they contain as large an amount of important descriptive and monographic work as any similar series of reports ever issued in this country, and they will be continued at irregular intervals until all the material of these western collections has been reported upon—

nothing more was ever promised, nor was the publication ever intended as a regularly issued journal. In order to save Dr. Skinner further apprehension as to this publication's eventually meeting the same untoward fate as Hübner's work, I present the following important data. Other numbers with new work on the Homoptera and Hymenoptera are now in the printer's hands. I only wish that we might extract similar data from a dozen other scientific publications—published by societies.

INVERTEBRATA PACIFICA.

Vol. I, pp. 1-12, September 15, 1903, Homoptera (On the Gnathodus species of the Abdominalis group, C. F. Baker; a new genus of the Typhlocybini, C. F. Baker; the genus Erythria in America, C. F. Baker; New Typhlocybini, C. F. Baker; notes on Macropsis, C. F. Baker).

Vol. I, pp. 13-16, November 30, 1903, Orthoptera (First Decade of Orthoptera issued in the Invertebrata Pacifica series, C. F. Baker; additional Notes on Pacific Coast Orthoptera, C. F. Baker; new Orthoptera from Nevada, A. P. Morse).

Vol. I, pp. 17-40, February 10, 1904, Diptera (Reports on Californian and Nevadan Diptera, I, C. F. Baker, with descriptions of new species and genera by D. W. Coquillet; two New Siphonaptera, C. F. Baker).

Vol. I, pp. 41-70, August 20, 1904, Hymenoptera (Descriptions of some New Hymenoptera from California and Nevada, J. J. Kieffer; New Hymenoptera mostly from Nicaragua, P. Cameron).

Vol. I, pp. 71-84, January 30, 1905, Orthoptera (Second Report on Pacific Slope Orthoptera, C. F. Baker, with descriptions of New Species by J. A. G. Rehn, and by C. F. Baker).

Vol. I, pp. 85-92, May 15, 1905, Neuropteroid Insects (Notes on Neuropteroid Insects of the Pacific Coast of North America, C. F. Baker, with descriptions of new species by Nathan Banks).

Vol. I, pp. 93-110, August 20, 1905, Hymenoptera (New Western Mutillidæ, I, C. F. Baker; on some Hymenoptera collected by Prof. C. F. Baker in Nicaragua, P. Cameron; descriptions of new species of Tiphiidæ from Nevada and Southern California collected by Prof. C. F. Baker, P. Cameron).

The problem of literature is the most serious one facing the American student. A very small proportion of our students are so situated as to be able to refer to the greater libraries. Even among professional entomologists we find that very few of the outside colleges, experiment stations and similar institutions will buy the very special technical works that may be needed in their investigations. The majority are compelled to privately purchase what they need, and more—even compelled to do all technical work on their own outside time, as has been the case with the writer. This regrettable condition of affairs is due to several causes—most unscientific and ill-advised in their nature and easily remediable. There are not near enough publications in the United States to-day to accommodate the amount of good work which is deserving of record. But among the societies and other scientific publishers, there is a most deplorable lack of unity and organization, and the present condition of affairs is to be expected as a natural result. I can readily cite excellent examples in illustration. I am studying certain groups of the Homoptera. Through various means, some quite accidental, I have from time to time become aware of papers on this subject published in the Proceedings of the Iowa Academy of Sciences, the Bulletin of the Illinois State Laboratory of Natural History, the Proceedings of the Davenport Academy of Sciences, the Journal of the Cincinnati Society of Natural History, the Transactions of the Maryland Academy of Sciences, the O. S. U. Naturalist, and sundry other reports and proceedings. Will Dr. Skinner tell me off hand where these are published and from whom and how they may be obtained? Some of them certainly do not bear these data in print. I am in a position to thoroughly sympathize with the "pitiable sorrows" of even the average American student who tries to run them down and get what he wishes from them—to say nothing of Europeans. In a number of these cases I could not buy the separate papers but was compelled to purchase from my slender means whole bulky volumes containing a little of everything from Astronomy and Anthropology to leaf-hoppers! But the Hymenopterist is even in a worse case, for in addition he has to buy the Bulletin of the

Southern California Academy of Sciences, part of the Proceedings of the California Academy of Sciences, parts of the Transactions of the St. Louis Academy of Sciences, the Kansas University Quarterly, the American Naturalist, the Biological Bulletin, Bulletin of the Scientific Laboratory of Denison University, Proceedings of the Academy of Natural Sciences of Philadelphia, and so on, and on, and on—and not only all this but more, for now, through the remarkably metastatic activity of one of our entomologists, he must also subscribe to various English journals, which he can probably ill-afford, in order to get together what is being written concerning the bees of his neighborhood. Surely we are building a Tower of Babel for American Entomology!

If societies cannot be convinced that the publishing of ponderous tomes containing a pot pourri of everything in science, is not only of no assistance to the greater number of scientific workers but a colossal stumbling block—then surely they might at least be led to adopt the very simple, practical and beneficent device now practiced in the case of Proceedings of the Biological Society of Washington and the Invertebrata Pacifica—the gathering of all closely allied papers in single numbers of a volume, to be issued separately.

Scientific publications, like the scientists, will be compelled to respond to the pressure of development, and specialize. The projection of antiquated methods of publication into the complexly organized and concentrated scientific work of to-day is an anomaly. The day of the ordinary entomological journal, which may attempt to cover every phase from that of entomological newspaper, with comic supplement, to a dignified technical journal, and every group of the several million species of insects, is drawing to a close—the more ephemeral it prove to be, the better. May the day soon come when we and our public institutions together shall decide to support an American "Zeitschrift für Hymenopterologie," and others of the sort, that may each cover one line and cover it thoroughly even to the copying of isolated contributions.

There are many other aspects of this question crying loudly for consideration. I shall contribute to this abbreviated dis-

cussion again later. Nothing can be accomplished except by the concerted action of the mass of American workers. I hope that some move in this direction may be made at the various meetings to be held this coming winter, and that resolutions calling for mercy and more practical treatment be presented to all academies, societies and journals, including those of Philadelphia to which Dr. Skinner owes allegiance.

If my remarks shall serve to agitate this question and bring it up for general discussion, I shall feel amply repaid for having been dragged forth and held up as a solemn warning to other laborers in the field. Simple approbation and commendation—even bare justice—for results accomplished under great difficulties and in defiance of all sorts of obstacles are perhaps more to be appreciated in this illy supported and little understood line of work than in any other, but if the opposite is to be meted out to me, I only hope that it prove a means toward the general good,—the raising of standards and the bettering of conditions surrounding the majority of American workers.

New Bees from Colorado.

By T. D. A. Cockerell.

Bombomelecta johnsoni n. sp.—♂. Length about 16½ mm., the abdomen rather long and tapering; black, the thorax densely covered with hair, the abdomen spotted. Head broad, eyes prominent; third joint of maxillary palpi longer than the second or fourth; antennæ black, not especially long, the flagellum uniformly thickened, its first joint much longer than the second, which is about as long as broad; hair of cheeks black, of occiput ochreous, of face black at sides and ochreous (with some black) in middle; scape fringed with long ochreous hair, but bare in front, its apex with a few black hairs; thorax at sides and beneath with black hair, above with abundant long ochreous hair, becoming strongly fulvous in front, and extending downwards a short distance below the tubercles; scutellar spines, small and inconspicuous; dorsum of thorax rugosely extremely densely punctured; tegulæ black, punctate; wings only faintly dusky, nervures black; legs black, with black hair, but anterior femora with a tuft of long pale yellowish hair at apex behind, and middle tibæ, with a very large light ochreous patch on the outer side; abdomen black, closely punctured, the first segment with ochreous hair, except at apex; second segment with a small obscure ochreous patch subapically on each side; third to fifth each with a widely separated pair of large ochreous spots; the second also has some ochreous hair at the extreme sides.

Hab.—Fort Collins, Colo., May 26, 1905 (*S. A. Johnson*). A very fine species, allied by the thickened flagellum to *B. azygos* Viereck, but easily known by the spotted abdomen.

Mr. Johnson states that *B. johnsoni* was taken over flowers of *Astragalus*, at the "hogback," west of Fort Collins. He suggests that it may be parasitic on *Anthophora montana*, which he took at the same place, or on *A. simillima* (syn. *euops*), of which he took several a little further on.

Synhalonia astragalina n. sp.—♂ Length about 13½ mm.; black, the hair of occiput, cheeks, thorax and first abdominal segment fulvous, very bright and red on thorax above; abdomen with grey bands exactly as in *S. honesta* (Cr.), broad on second segment, narrower and more conspicuous on third to sixth, the intervals between the bands very black. Antennæ entirely black, long, flagellum strongly crenulate; clypeus light yellow, the yellow with a large rectangular notch on each side; labrum light yellow, with yellowish white hair, tongue and blade of maxilla very long; mandibles without any yellow spot; mesothorax strongly and densely punctured, shining and more sparsely punctured in the middle; tegulæ pale testaceous; legs black, with pale yellowish hair, the small joints of the tarsi rufous; spurs light ferruginous, quite normal. The insect looks very much like *S. honesta*, but is easily separated by its larger size, more brightly colored thoracic pubescence, entirely light anterior edge of clypeus, pale labrum, narrower face, broader apical plate of abdomen, etc. The size of *S. astragalina* is like that of *S. gittettei snoviana*, but the thoracic pubescence is of an entirely different color; the apical plate of abdomen in *astragalina* is broadly truncate; in *snoviana* it is narrower and rounded.

Hab.—Boulder, Colo., June 4, 1905 (*W. P. Cockerell*). At flowers of a small species of *Astragalus*.

Bombus rufosuffusus n. sp.—♀ Length about 25 mm.; light hair of head and thorax pale ochreous, shining whitish in some lights; hair of face (supraclypeal region and about antennæ), occiput and space just behind ocelli light, but there are a few dark hairs between the antennæ, and the hair of the extreme sides of face is black; cheeks with the hair entirely black; disc of clypeus with very sparse, small punctures; malar space about as broad as long, about one-fourth length of eye; third antennal joint shorter than fourth and fifth combined, but much longer than fifth, which is conspicuously longer than fourth; thorax with light hair in front, on scutellum, and on pleura, except its lower part; black hair on lower part of pleura, on metathorax, and a large tuft on each side of middle of thorax; middle of thorax bare, densely punctured, except a central smooth space; the bare region with the lateral black tufts give the

appearance of a very broad black band between the wings; tegulæ black; wings light fuliginous (about as dark as in *B. borealis;* not nearly so dark as in *B. sonorus*); legs with black pubescence, that on inner side of basal joint of hind tarsi very dark reddish; abdomen with the hair on the first four segments dorsally light ochreous, suffused with red at sides of second and third, the red being of exactly the same tint as that which covers the abdomen of *B. lateralis* Sm.; hair of last two segments entirely black; of venter sparse and black, with whitish hairs about the middle.

Hab.—Boulder, Colorado, June 10, 1905 (*W. P. Cockerell*). Allied to *B. fervidus*, but easily distinguished by the light hair of face, the smaller and less numerous punctures of clypeus, etc.; from *B. monardæ* it is known by its larger size, wholly black hair of hind femora, black hair of metathorax, etc.; from *B. borealis* by the light hair on pleura. By the red at sides of abdominal segments it approaches *B. vancouverensis.*

Anthophora curta Provancher.

Two males taken by Mr. S. A. Johnson at Alamosa, Colorado, August 6, 1903, at flowers of *Cleome* (*i. e.*, *Peritoma*) differ so much that they may represent different species. One is more robust, and has black hairs on the vertex and mesothorax, as in the female; the other is more slender, the abdomen especially being less robust, and the head and thorax are without black hairs. Supposing that the one with black hairs is to be considered typical, the one without them may for the present be termed var. *peritomæ.* This var. *peritomæ* is easily known from male *flexipes* and *albata* by the normal middle tarsi, and from *maculifrons* by the white pubescence, darker tarsi, wholly black antennæ, etc.

Var. *peritomæ* appears to be common in New Mexico. Males before me are from Santa Fé, August 5, at flowers of *Peritoma serrulatum;* Mesilla, September 4, at flowers of *Isocoma wrightii;* Las Cruces, August 24, at flowers of *Solidago canadensis;* Las Cruces, August 26. The size is quite variable.

Since the *peritomæ* form appears to be more common than the presumed typical male, it is an open question whether it should not be considered the proper male of *curta;* and the other, notwithstanding its closer resemblance to the female, the variety. This question will only be settled when we have a good series of specimens from the original locality of *curta.*

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., OCTOBER, 1905.

Much of the classification of the Lepidoptera is based on secondary sexual characters in the male and before classificatory tables can be used the sex of the specimen must be absolutely determined. Should our classification consider one sex only? How shall we determine the females where they differ from the male in appearance? These same secondary sexual characters are used in one part of a subfamily for the separation of genera and not in another, and this makes such usage very unscientific. Such generic division also does violence to the natural laws of relationship and species in different genera are more nearly related than some of the species in a given genus. It is probable that any system of classification that considers one sex only and is based on single anatomical characters must be faulty and will not hold, and that eventually the sum of characters must be the final resort. There is also a tendency to make genera in advance of present necessities and this is a disadvantage to any system of classification. The facies or general appearance may not be a safe guide and may be unscientific, but it will give better results than segregating species into a heterogeneous mass. The student who believes in a multiplicity of genera asks why we don't go back to uninomials if we don't like his ways, but he does not see that we are rapidly approaching the condition of a genus for each species.

Entomological Literature.

AMERICAN INSECTS. By Vernon L. Kellogg, Professor of Entomology and Lecturer on Bionomics in Leland Stanford Jr. University. With many original illustrations by Mary Wellman. Henry Holt & Company, New York, 1905.

This is a work of 674 pages, 13 plates in color, and 812 text figures. There are chapters on the structure and special physiology; development and metamorphoses; classification; insects and flowers; color and pattern and the uses; insects and disease; collecting and rearing. Following Comstock, nineteen orders of insects are recognized, and keys given for their determination. The work is written in a popular style, and the author hopes to foster an interest in insect biology. The paper is good and the typography all that can be desired. The colored plates are as a rule excellent. Some of the figures on plate six are somewhat crowded, and the text figures vary greatly in artistic excellence, as they are from many sources. The half-tone cuts are usually preferable. Figs. 604 and 605 are quite crude. There are some unfortunate and glaring errors in the determination of species, and we note the following: Pl. XI, fig. 3, is the Western *Synchlœ reakirtii*, and not the common *genulia* as stated Pl. XIII, fig. 3, is not a *Stizus*, but belongs to the family Scoliidæ; fig. 7 is not *Xylocopa virginica*, but probably *arizonense*. The fig. 684, p. 485, is we know not what. *Petecinus polyturator* ♂ was correctly figured in Packard's Guide in 1869 We are glad to see the interesting chapter on insects and disease, as it places the subject on a higher plane with the general public, and is a matter of immense importance to humanity. Taking the work in its entirety, it is a valuable contribution to the subject, and can't fail to be useful to the student beginner, as well as to entomologists in general. The price of the work was not stated by the publishers.

ILLUSTRATIONS OF DIURNAL LEPIDOPTERA, WITH DESCRIPTIONS. By Andrew Gray Weeks, Jr. Boston. Printed by the University Press, Cambridge, U. S. A. 1905.

This is a sumptuous work of one hundred and seventeen pages and forty-five plates in color containing numerous figures. There are also interesting half-tone illustrations of scenes in Bolivia. Some years ago Mr. Weeks sent a collector to Bolivia, and the pages of this work are devoted to describing the places visited, and making known about sixty-eight new species of butterflies and illustrating them in color. We have nothing but praise for this work, as the colored figures are as good as any extant, and the author deserves great credit for giving the entomological world such a production.—H. S.

J. A. G. REHN and Morgan Hebard have brought back an interesting and valuable series of Orthoptera from Florida.

MR. FORDYCE GRINNELL, JR., was collecting Lepidoptera in Kern County, California.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

Dr. E. C. Van Dyke, of the San Francisco Academy, was after Coleoptera on Mount Rainier.

Henry L. Viereck spent the summer in Connecticut and is now in Philadelphia, hard at work on Medicine.

Mr. Chas. Schaeffer, of the Brooklyn Institute, spent the summer collecting in Miller Canyon, Huachuca Mountains, Cochise County, Arizona. Messrs. H. G. Barber and G. Beyer were collecting in the same locality.

Dr. D. M. Castle and H. A. Wenzel were collecting Coleoptera on Tybee Island, Georgia. They found some very interesting species, mostly Coleoptera of a more Southern range.

Dr. Henry Skinner spent five weeks with Mr. C. R. Biederman, collecting all orders of insects in Carr Canyon, Huachuca Mountains, Arizona.* In addition to insects, sixteen species of reptiles were secured. The red bug in Southern Arizona may be the same species that is found in the East, but none were dug out to determine this.

Cocoons of Polyphemus.—For more than twenty years Miss Eliot and I have been very familiar with *Telea polyphemus* in all its stages, have reared it many times, have found the cocoons out of doors, as well as moths and larvæ. Three years ago a cocoon was sent me from Georgia having every appearance of *polyphemus* except that it had a "stem" like that of *promethea* cocoons. The moth had been devoured by some creature, except the wings, thorax, head, antenæ, and eggs, the last being loose in the cocoon, and all resembling *polyphemus*.

In our experience in Eastern New York, Massachusetts, New Hampshire and Vermont *polyphemus* cocoons were always ovoid, opaque white cocoons without stem or loose silk, almost always found on the ground, and, when on branches of trees or shrubs, held by threads spun against—never around—the twig, and never covering the leaf stem.

I began inquiring of my correspondents, and found that one, in New York, found more suspended than free cocoons; while one in Indiana had always found suspended cocoons except in one instance.

After the first reply I tried giving *polyphemus* larvæ small branches when spinning-time came, but not one of my Vermont or Massachusetts larvæ would spin a stem to its cocoon. Every one drew leaves together in the bottom of the cage and spun on the ground there.

I greatly wish to know if this difference is a recognized local difference or merely an accidental one, and I shall be very grateful for all reports of experience from every one who will be kind enough to write to me.—Caroline Gray Soule, 187 Walnut Street, Brookline, Mass.

* We will be glad to hear of other collecting expeditions.

Madison, Wis., July 20, 1905.

DEAR EDITOR:—In the May number of the ENTOMOLOGICAL NEWS there appeared an article by H. L. Viereck, in which he called attention to inadequate descriptions of new species, and the consequent trouble and vexation to the "man handicapped by the lack of material." As I may consider myself to belong to that great category (and it must be remembered the great mass of collectors are similarly situated), I would like to say something in regard to this matter, knowing that I voice the sentiments of many.

It seems to me that Mr. V. does not strike at the root of the evil. The numerous revisions, dichotomic keys, and other contributions along the line of taxonomy are to the great mass of entomologists practically worthless, or, what is worse, confusing. I do not intend to cast any reflection upon the work which our systematists are doing for it must be admitted their work is painstaking and thorough, and I can appreciate the amount of energy spent on a description which takes up a page or a page and a half in print. Thorough work is always worthy of admiration and respect and *a description to be scientific* should be so detailed as to leave no doubt whatever which species is meant. But this mass of detail is confusing when the material is not at hand. Time and again I have honestly tried to conceive a mental picture of the species as described, but the mind simply refuses to grasp and hold the amount of detailed information. And when we try to get an idea of different species of a group we fail utterly.

Truly, an attempt made by the average collector to determine his own specimens from keys, tables and descriptions is a hopeless and discouraging task.

I do not believe that the cause of all this lies in inadequate descriptions. There seems to be a reluctancy to publish explanatory figures. It is not necessary in all cases to figure the entire insect, but merely the distinguishing characteristics by which it differs from its nearest ally. Comparative length and thickness of antennæ, differences in punctuation, grouping of hairs, etc., can be more easily figured than described.

Whether the fault lies with the author or with the publisher is hard to say. A trained biologist is generally, or should be, a good draftsman, and I think it would appeal to him strongly to draw those characteristics which defy description. The trouble seems to be that figures increase the cost of publication of an article to a considerable extent. Financial considerations, however, should not stand in the way of the progress of science, and it is better to publish fewer articles which are useful to the great mass of entomologists than to publish many which, however ingenious and painstaking, represent practically a waste of nervous energy. The cost of publication may be increased four-fold, but the value of the article to the "man handicapped by lack of material" (the great majority) is enhanced out of proportion to the increased cost of publication,—C. B. HARDENBERG.

Dr. F. H. Snow, of the University of Kansas, who headed an entomological collecting expedition to southern Texas early in June, has returned home. The trip was a success in every way, many additions were made to the University museums, and much exchange material was secured. After a rest of a couple of weeks Dr. Snow will leave again for Arizona to continue his collection of material for the University of Kansas.

Dr. Snow brought home with him 10,000 specimens of good material, pinned and labeled. The camp was established near Brownsville, Texas, where a semi-tropical climate prevails, and the insects were of a nature usually found in that sort of location. Three hundred to four hundred of the collection are species that have never been described, and probably 500 species have never before been found in Texas, furnishing interesting data on the geographical distribution of insects.

In my article concerning errors in Dr. Holland's Moth Book published in the June number of the News last season, I stated that figure 26 of plate XXII represented the ♂ of the dark form of the *Fellia volubilis*. I have just learned that I was in error and hasten to correct it. The figure represents *venerabilis* as stated in reference to plate. The rest of my article I believe to be correct. *F. venerabilis* and the dark form of *volubilis* look so much alike that I was deceived in the figure. *Venerabilis* can always be distinguished from *volubilis* by its heavily pectinated antennæ, also by the whiter patagia and blacker collar. Both sexes are exactly alike except for the antennæ, so far as my experiences goes.

I hope you will print this correction as soon as convenient as the error has already muddled one collector at least, and I hope that all who saw my article will see the correction also. I very much regret having made the mistake, as there are already enough of them in existence without any of mine being perpetuated.—E. J. Smith, Natick, Mass.

Every one who remembers the pathetic poem beginning, "A little green peach in an orchard grew, Listen to my tale of woe," will recall the reckless daring of its hero, Johnny Jones, who boldly invaded the orchard and, in the interest of science, staked his peace of mind to test the questionable delights of the fruit. This was Mr. Jones' first essay in nature study.

Turning his attention to a field of effort more suited to his talents, the author has given as illustration of his new work on zoology, exact reproductions of birds, bugs, and beetles—several lines of verse to each, his mother assisting him in spelling. The lines on mosquitos are especially feeling:

Mosquitoes drive you almost mad,
They come around at night,
And when you're not asleep they buzz,
And when you are—they bite.—*Sunset Magazine.*

I HAVE just received from Mr. W. E. Wolfe, of Wray, Colorado, a beautiful specimen of *Argynnis idalia* taken by him at that point. This beautiful fritillary has a wider range than has heretofore been published. The most western point from which it has heretofore been reported is Dodge County, Nebraska, and my collection contains several fine specimens communicated to me in former years by Mr. Dodge. It appears now that it ranges even further westward into Colorado. Mr. Dyar in his valuable list gives the habitat of the species as "the Atlantic States." In "The Butterfly Book" I have stated that it ranges as far west as Arkansas and Nebraska. The map of its distribution, shown in Plate XXI of Scudder's "Butterflies of New England," will have to be very materially changed. If occurring in Colorado, the species is very likely also to be found in Wyoming, Montana, and Dakota.—W. J. HOLLAND, Carnegie Museum.

THE AMERICAN MOSQUITO EXTERMINATION SOCIETY—On December 16, 1903, this Society was provisionally organized under the title of the National Mosquito Extermination Society, but owing to the large number of persons residing outside of the States desirous of joining, it was decided on December 15th and 16th, 1904, when a permanent organization was effected, to substitute "American" for "National."

The Constitution and By-laws adopted provide for seven classes of membership. An active member pays $2.00 annually. A sustaining member is an individual or an organization contributing $5.00 annually. An associate member pays $10.00 a year; a benefactor, $25.00 at one time; a life member, $100.00; a patron, $500.00; and a founder, $1,000.00. Annual dues are payable in January of each year. An appeal is now made for the payment of the 1905 dues and for further contributions.

The work of the Society for the past year has been to distribute all the literature published in 1903-4. It is proposed for the year 1905 to issue a year book for 1904-5, containing the very interesting and important features of the second convention and other matter new to those joining, bringing the record of work, as complete as we have it, up to date.

The public advocacy of scientific relief from mosquitoes for the betterment of communities is rapidly growing, so that it is only necessary to continue the dissemination of information to hasten the carrying out of urgent improvements.

Such a society can, by its conventions and the consequent interchange of ideas and through the circulation of its proceedings and other literature, as well as by its correspondence, lead to many crusades, as this society has already done.

It can gather the accounts of crusades in various sections and put them in the hands of enquirers, which it is constantly doing. Requests come from many parts of the States for suggestions for organizing, and foreign countries are asking for information.

A general body like this can, without just cause of offense, strive for the cure of monumental evils by legislation and otherwise, as it has done in the case of the New Jersey-Staten Island marshes, where only great engineering plans, involving many interests, will permanently change conditions.

It can suggest Government or State and local action and laws, without being considered intrusive.

It can interest the press in the idea and secure articles urging action in respective localities. This has been going on for years past with most important results. There are few periodicals now that treat the question otherwise than as a great public question.

Possibly the most important press aid secured, on account of its five million, and over, readers, is that of the "Ladies' Home Journal," which in its June number gave some plain facts and directions for the abatement of the evil in domestic situations.

At the request of the Society, the New York State University has sent to our selected list the very valuable report on Mosquitos by Dr. E. Porter Felt, the New York State Entomologist, and Dr. Felt is also preparing a pamphlet to go to all the public school teachers of the State.

"Gran'-pa! I say, gran'-pa! There's such a funny fly on the ceiling!" (No answer.)

"Gran'-pa! There's a 'normous big fly on the ceiling."

"Yes, yes, boy! All right; put your foot on it—don't bother me!"—*Newspaper.*

"I've been working like a dog today," said the State entomologist, wearily.

"How's that," said his friend, guilelessly, "catching insects?"—*Newspaper.*

I HAVE just returned from southern Indiana, where I have been spending a few days. I was very greatly impressed during my visit to that region by the evidences on every side of the ravages of the larvæ of *Ceratomia catalpæ*. On my property at Hope, Bartholomew county, at either side of the main entrance to the place, are two magnificent specimens of *Catalpa speciosa* Warder, over forty feet high. As I drove up to the place I was astonished to discover that they were as bare of foliage as in winter, and was informed that the foliage had been stripped off of them within a week. Near the trunk of one of the trees was a small branch which still had on it some fragments of foliage, and on this branch I found a belated larva of *Ceratomia catalpæ* greedily feeding. On the rear of the property are many trees, both of *Catalpa speciosa* and of *Catalpa catalpa* Linnæus. Every one of these trees was completely stripped of its foliage. In the village I could not find a single catalpa tree that was not either totally denuded of foliage or partially denuded. One very fine cluster of *Catalpa catalpa* surrounding a residence, which I have always admired when in bloom, appeared to be less infested than any other group of trees that I could discover, but all through Bartholomew, Shelby, and Marion Counties, Indiana, wherever I went, I found that the larvæ of this Sphinx had been at work. A few years ago the insect was absolutely unknown in that part of the world. I collected every summer in southern Indiana from about 1882 until 1893, and in all that time I never found there a specimen of the larva or imago of this hawkmoth. When I arrived in southern Indiana the damage had been done, and most of the larvæ had disappeared, evidently to pupate. One of my friends informed me that the pavements at one place, where there is a fine avenue of these trees, had a few days before been simply alive with the caterpillars crawling in every direction, and that it was simply impossible to step without crushing them. I can well believe that there must have been thousands of the larvæ at this point, from the fact that the great avenue of trees had been completely denuded of its foliage, nothing but the petioles of the leaves being left adherent to the branches. —W. J. HOLLAND, Carnegie Museum.

HAVING resigned from the position of Entomologist of the North Carolina Department of Agriculture at Raleigh, to accept a chair in the Agricultural College of Ontario, my address, after September 1, 1905, will be Department of Entomology and Zoology, Ontario Agricultural College, Guelph, Canada. Mailing-lists, etc., will be corrected accordingly. For the present at least, Mr. R. S. Woglum will have charge of the work in North Carolina.—FRANKLIN SHERMAN, JR.

I AM engaged in a study of the North American Scarabæidæ with a view toward an ultimate monograph of this family, and will be glad to receive any information as to habits, larval stages, food, methods of capture, etc. I would also be thankful for damaged specimens for study of the mouth parts, and will gladly pay transportation.—C. B. HARDENBERG, 224 Washington Ave., Madison, Wisconsin.

P. C. S. OCKHAUSEN, PRINTER 55 N. 7TH ST. PHILADELPHIA

NOVEMBER, 1905.

ENTOMOLOGICAL NEWS

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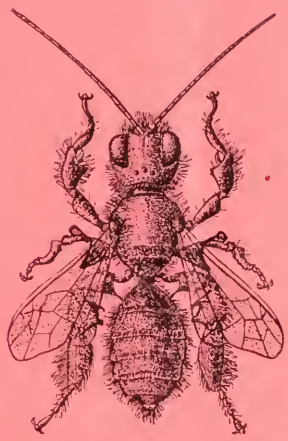

Cryptohalictoides spiniferus Viereck.

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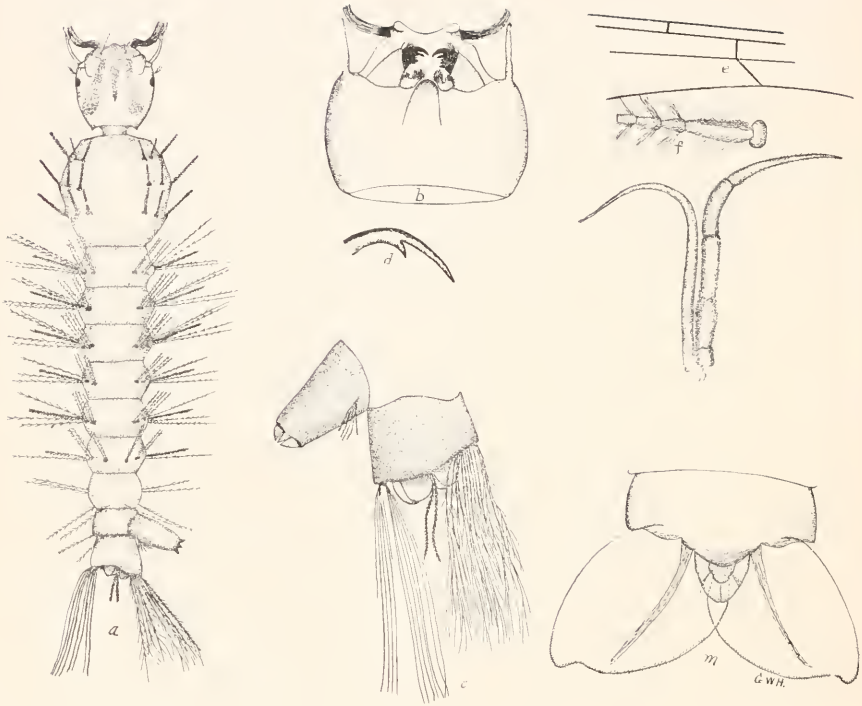


MEGARHINUS PORTORICENSIS

a. Larva of *M. portoricensis.*
b. Under side of head showing mandible.
c. Last anal segment with anal flaps.
d. The larger claw of the midtarsi ♂.
e. Cross-veins of wing ♂.
f. First five segments of antenna ♂.
h. Palpus and beak ♂.
m. Anal flaps of pupa.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. NOVEMBER, 1905. No. 9.

CONTENTS:

Notes on Some Mississippi Mosquitoes.

BY GLENN W. HERRICK, Agricultural College, Mississippi.

In our campaign against *Stegomyia*, *Anopheles*, and other species of mosquitoes here at the college during the present season, we have taken several interesting adults, some of which are worthy of note.

Megarhinus portoricensis.—In the cup-like bottom of a massive iron post supporting one corner of a large water tank, where the former rested on the masonry, were found the larvæ of the foregoing species. The receptacle in the post was about twelve inches deep and half full of rain water. Here we found five large dark brown, very spiny larvæ and also remnants of cast pupal skins, conspicuous for their long spines made especially prominent by the colonies of Vorticellæ clinging to them. Other larvæ, *C. pipiens*, were present in the water.

The larva of *Megarhinus* reminds one strongly, at first glance, of that of *Psorophora*, except that it is much darker in color and noticeably thicker and heavier. It is remarkable for the

number and character of the spines, for the short, rounded anal flaps, and for the strong mandibles fitting it for a carnivorous existence. We fed the larvæ entirely on *Culex* larvæ and great numbers of the latter were devoured. For example, three *Megarhinus* larvæ in four days ate 83 large *Culex* larvæ, besides many small ones just hatched from eggs put in by us but which we could not count. The abdomen of the larva bristles with long, slender, much branched spines. The thorax carries conspicuous, short, stiff, dark spines and two spines of the same character are found on each of the abdominal segment (a, Plate X). The larvæ transformed to pupæ on September 28th.

The pupæ are not strikingly different from those of other mosquitoes except, of course, in size. They are somewhat larger and darker than those of *Psorophora*, and most of the abdominal segments have a few long, slender spines. The respiratory tubes are long and open obliquely. The pupal stage of two pupæ lasted four days while that of the third extended over a period of five days. The anal flaps seem to have a characteristic shape (m, Plate X) and the edges, for the most part, are beset with short, stiff spines.

We reared three adult males from the larvæ and they differ somewhat from Mr. Theobald's description given in his Monograph of the Culicidæ, Vol. I, page 232. He says the penultimate segment of the palpi is as long as the last. In the three specimens bred, the penultimate segments were only half as long as the last (h, Plate X). Moreover, the head is bluish green (iridescent) instead of brown and the penultimate segments of the hind tarsi are white except a black ring at the distal ends. These variations are hardly enough to establish a new species and Mr. Coquillett, to whom I referred the specimens, says they are undoubtedly *portoricensis*.

In addition to the foregoing species we find *Megarhinus rutila*, common here, in fact more numerous than *portoricensis*.

Stegomyia fasciata.—Among the specimens of this mosquito taken here we find a variety in which the abdomen is creamy white, except the last segment. It corresponds with Theobald's variety, *queenslandensis*, except that the mid lobe of the scutellum is all white instead of blue.

We have specimens of *S. fasciata* from Biloxi, Tillman, Raymond, Summit and Agricultural College. Without doubt it is widely distributed in the states.

Anopheles.—We have taken a fourth species of this genus, undoubtedly *niger*.

Melanoconion.—Several species of this genus are common in this State. The larvæ and pupæ occur abundantly in ponds and ditches when the water contains plenty of Algæ. I have taken the larvæ in deep water among the surface Algæ about an old log. They are remarkable for their long respiratory tubes which are dark on the distal fourths. The anal flaps are long and slender. The antennæ are covered (sparsely) with short dark spines and at the offsets, about two-thirds of their length, is a whorl of many much-branched bristles. The ends of the antennæ are beset with four stiff, black spines. The antennæ are black at the bases and on the distal thirds from the offsets. We have taken *indecorabilis*, *humilis*, and *atratus*.

Other Species.—In addition to the foregoing and to those mentioned in Bull. 74 of this Expt. Stat., we have taken *C. tæniorhynchus*, Ocean Springs; *C. signifer*, Agricultural College; *C. triseriatus*, Agricultural College; *C. discolor*, Agricultural College; *C. sylvestris*, Agricultural College; *C. fatigans*, Agricultural College; *Grabhamia sollicitans*, Ocean Springs; *Psorophora howardii*, Agricultural College; *Uranotænia sapphirina*, Agricultural College.

Notes on the Life History of Hepialus Sequoiolus Behrens.

By Francis X. Williams, San Francisco, Cal.

During the months of November and December, 1904, I collected about two dozen mature *H. sequoiolus* larvæ from the stems of the yellow lupine (*Lupinus arboreus*). Of these larvæ about one-half of their number pupated, and nine pupæ produced imagines, six ♂ ♂ and three ♀ ♀. Mould is a very fatal disease among these larvæ which always keep their galleries wet; as many as twelve full-grown larvæ could be found in one large lupine trunk, but never more than half that number was alive, the rest being whitened corpses.

Some of my larvæ which I placed together with lupine stumps in a large glass aquarium half filled with sandy soil, buried themselves in the latter, others were contented with holes in lupine into which I introduced them. These latter immediately closed the entrance to the burrows with particles of wood fastened together with silk, those which had descended into the soil pupated therein mostly in January and February. The larvæ in the lupine appeared to hibernate as well as those in the earth, as they ate little or nothing and did not pupate for some time.

The cocoons formed below the surface of the soil do not differ essentially from those spun in the lupine. Both vary in

Hepialus sequoiolus, Fig. 1, mature larva.

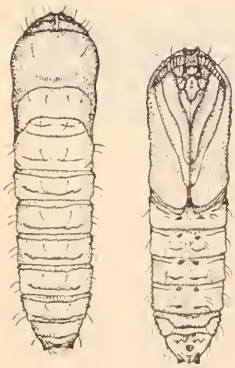
length, some being hardly two inches long, while others are as much as six inches or even more in length.

Those cocoons spun in the soil extend vertically in the same to within a fraction of an inch from its surface. Grains of earth loosely attached to the cocoon form a weak outer covering. The cocoon itself is quite thin but of strong texture, dirty white or brown, cylindrical in form, usually more pointed below and weakly closed at its summit. In making this cocoon which requires several days, the larva appears to work by night, rounding off the cocoon, smoothing its sides and probably enlarging it by strking the wall of the cocoon with its strongly chitinized head which together with the forepart of its body it vibrates rapidly from side to side. This procedure continues for two or three seconds at a time and when the cocoon is spun against a hard surface, this vibration produces a sharp rattling noise audible from quite a distance. When the vibration ceases the larva resumes its spinning until more thumping is necessary. The cocoon being finished the larva retires to its basal part where, in the course of a few days or in some cases in a few weeks, the pupa is formed. Those larvæ

pupating later in spring probably require less time for pupation than those which pupate in winter.

I do not know for certainty whether *H. sequoiolus* pupates in the soil in nature, but judging from the number of deserted galleries in the lupine as well as from the small size of the roots of *Helenium puberulum* on which it also feeds, it is probable that it pupates in the earth in nature as well as in the stems of its food-plants.

The cocoons formed in the lupine stems usually connect with the exterior by a turn of the gallery in which they are spun, in other cases they open between forking branches. The cocoon is the whole length of the gallery which is closed below with tightly packed woody fibres if formerly extended. The outer end of the gallery opens through the bark. The cocoon is often partly surrounded by woody fibres chewed into bits, is more or less pointed at its lower end and weakly closed at the entrance of the gallery by chips of wood and bark. The pupa fits snugly into this cocoon which often becomes mouldy ; the former in common with others of the same family is capable of considerable activity, moving backwards and forwards with ease. It is light amber, becoming reddish-brown on the dorsum of thorax and head, the third abdominal segment is capable of slight motion, the fourth, fifth and sixth being flexible while the seventh is fused with the remaining three segments. From figures 2 and 3, it will be seen that the pupa is of nearly uniform thickness bearing a few setæ and provided with rows of teeth on the abdominal segments, those on the venter of the seventh segment being especially well developed. The cephalic end of the pupa bears two roughened projections useful in breaking through the cocoon. A medium sized pupa is 21 mm. in length.



Figs. 2 and 3, ventral and dorsal aspect of pupa.

When the time for emergence is at hand, the pupa by the aid of its teeth, and by vigorous wriggling, reaches the

outer end of the cocoon where it is extruded as in the Ægeridæ and Cossidæ, the pupal shell bursts and the moth is liberated. As far as I could observe, the imagines always emerged in the afternoon and as early in the season as February. A few larvæ did not pupate till May, when they developed into moths a few weeks later.

Late in April while examining yellow lupine for borers, I had the good fortune of finding a pupa partly extruded from a trunk. Soon a fine ♀ emerged which developed rapidly. The ♀ ♀ are, as a rule, larger than the ♂ ♂ and less variable. When it is growing dark the ♂ ♂ commence their oscillating flight which is sustained only for fifteen or twenty minutes when they alight. This oscillating flight is continued over the same spot, the arcs described are of ten or twelve inches. The ♀ ♀, much less frequently seen, fly rather heavily and, as in the ♂ ♂, close to the ground; they lay their eggs when on the wing, throwing them out rapidly. The eggs are very minute, turning black after a time; a single ♀ lays a great many. These insects are very easily recognized when on the wing by their peculiar flight and form; they are of many colors, whitish, slate, red, black and other shades with the silvery fascia usually very prominent in the ♂ ♂ and rarely so in the ♀ ♀.

Concerning the habits of the larvæ, these inhabit only old plants boring in their thicker portions, sometimes going well into the roots and again ascending into the branches. Usually,

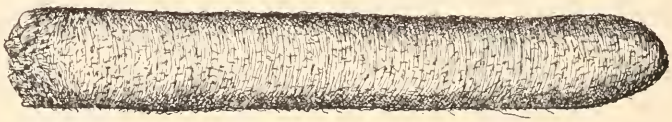


Fig. 4, cocoon found in lupine.

however, they are found in the main trunk above or below ground; a large decumbent stem is a particularly favorable locality for them. In the same lupine stem may be found the larvæ of the large noctuid, *Gortyna immanis*, quite sluggish as compared with *sequoiolus*. The larva of *H. sequoiolus* appears to have no insect enemies; in all the larvæ which I have found

I have discovered no parasites. Mould, however, more than makes up the deficiency of insect enemies, for it is very evident that it reduces the number of larvæ by one-half or more. The ♀ lays an immense number of eggs but the family Hepialidæ is apparently an unsuccessful one for the imagos are always comparatively scarce. In past years they were more plentiful, but now the progress of civilization has wiped out many of the favorite haunts of *Hepialus sequoiolus* so that at present it is a rather rare insect.

Descriptions of two new Hymenopterous Egg-parasites.

By A. Arsene Girault, Washington, D. C.

Paracentrobia flavipes sp. nov.

Female.—Length 0.81 mm.—Body bright yellow, the head a shade deeper; legs, venation, cheeks below the eyes, portions of the face, pronotum, pleura and tegulæ, and caudal margins of the abdominal segments, dilute black, forming a beautiful contrast to the yellow of the body, the abdomen thus with five dusky rings. Articulations of the legs; the anterior tibiæ, and tarsi; the basal two-thirds of the tibiæ and the tarsi of the intermediate legs; the basal tibiæ and the tarsi of the posterior legs; and the knees, pale yellow. Tips of the tarsi dark. Eyes and ocelli deep red, the latter three in number, in a triangle on the vertex. Submarginal vein paler.

Head rounded slightly; deeper in color than the body; the vertex much swollen, transversely striate, eyes ovate, coarse; mandibles falcate, tridentate at tips, the outer tooth slightly the largest; in color, apical half reddish brown, basal half pale. Thorax subconvex, shorter than abdomen; faintly longitudinally striate, the metanotum acute. Abdomen cylindric oval, longer than thorax, the ovipositor visible, acute, pale yellowish; caudal segment of abdomen obliquely truncate. Wings short and broad, marginal fringes short. The whole body with scattered stiff hairs, arranged more regularly on the abdomen and antennæ.

Antennæ sub-concolorous with thorax, a little dusky because hispid; 7-jointed, scape, pedicel, ring-joint, 1-jointed funicle, 3-jointed club. Scape nearly as long as pedicel and funicle combined; pedicel oval, much shorter than the funicle joint; the latter and basal joint of club subequal, the funicle joint longer and cylindrical oval; club inversely club-shaped, its basal joint subhemispherical, the second much smaller, obtusely conical, its apical joint still much smaller, narrower, acutely conical. Basal joint of the club the broadest, the apical joint the narrowest of all the antennal joints. Ring-joint very flat, as broad as the base of the funicle joint; inconspicuous.

From two specimens.

Male.—Length, 0.78 mm.—The same. Caudal segment of abdomen obtusely rounded, the abdomen itself less stout.

Antennæ 7-jointed, short, with a scape, pedicel, a ring-joint, 1-jointed funicle, and a 3-jointed club. Scape long, cylindrical, tinged above with dusky, nearly twice the length of the pedicel; the latter obovate, smaller than the funicle joint, but about equal to it in length. Ring-joint nearly as broad as the funicle joint at base, difficult to distinguish. Funicle joint nearly globular, slightly longer than broad, subequal in length to the pedicel. Club ovate, or subconical, its base somewhat rounded, the longest joint of the flagellum, but not as long as the scape; hispid, indistinctly 3-jointed, apparently solid, the middle joint the largest.

From three specimens.

Supposedly bred from the eggs of *Anthonomus quadrigibbus* Say, in the fruit of *Cratægus*, sent in by Mr. J. H. Beattie from Fort Valley, Georgia, in connection with the Deciduous Fruit-insect Investigations, Bureau of Entomology, United States Department of Agriculture, June 12, 1905. Probably, however, from some Lepidopterous egg found concealed under the calyx end of the fruit. Occasional.

Type.—No. 8942, U. S. N. M.

There is some uncertainty in regard to the generic position of this species, and finally it may prove to be the type of a new genus.

In structure, the antennæ apparently disagree with any of the known genera.

Gonatocerus anthonomi sp. nov

Female.—Length, 0.83-0.87 mm., 0 85 mm., avg.—Head and thorax piceous black, shining, the abdomen suffused with brown, piceous along the sides and towards apex, its basal segment lighter in color. The front of the head with a distinct inverted V-shaped marking of pale, reaching from a point on the vertex to the lower inner margin of eye. The margins of the eyes pale. On the thorax, there is an oblique longitudinal pale streak, distinct or indistinct. Legs honey yellow, excepting the whole of the middle of the femora, the posterior femora, the coxæ, portions of basal joint of trochanters, and most, if not quite the whole, of the tibiæ, excepting the anterior tibiæ, all of which are blackish. Tips of the tarsi darker. Antennæ dull reddish brown with some black, excepting the scape and pedicel, which are yellowish, tinged with blackish along the upper edges.

Head deeply concave along the face; eyes and ocelli dark. Thorax impunctate, faintly shagreened, about as broad and stout as the abdomen. Abdomen pointed, subsagittate; the first segment faintly striate, with a round fovea at base; the middle segments about equal. Wings

normal, iridescent, with a purplish hue to naked eye; marginal fringe rather long; venation dusky yellowish. Body bearing sparse short whitish hairs.

Antennæ 11-jointed, elbowed. Scape long, its base slender, slightly curved, as long as the next four joints combined; pedicel short, oval, much longer than the following joint; 3, 4, and 5, shortest, subequal, 5 slightly longer, each about half the length of the pedicel, globular; 6 longer and wider, next the smallest joint after 3, 4, and 5; 7 the longest funicle joint, cylindrical, much thicker than 6, and slightly more so than 8, equal in width to 9 and 10; 8 smaller than 9 and 10, larger than 4; 9 next the longest funicle joint, equal in width to 7 and 10, the latter short but longer than 4; 11 or the club, about as long as 8, 9, and 10 combined, the thickest joint cylindrical. Antennæ pubescent, shorter than body.

From three specimens.

Male.—Length, 0.81 mm.—The same. More slender. Antennæ 13-jointed, filiform. Scape short, longer than the following joint, the latter, the pedicel, rounded, not half as long as the first funicle joint. The following joints cylindrical, about equal, or slightly longer cephalad. Apical joint, or the club, subconical.

From a single specimen.

Bred supposedly from the eggs of *Anthonomus quadrigibbus* Say, in the fruit of *Cratægus*, June 18, 1905, sent in by Mr. J H. Beattie from Fort Valley, Georgia, in connection with the Deciduous Fruit Insect Investigations, Bureau of Entomology, United States Department of Agriculture.

Type.—No. 8435, U. S. N. M. 1 ♂, 1 ♀.

Descriptions of New Coleoptera from Arizona with Notes on Some other Species.

By Henry Skinner.

Plusiotis beyeri n. sp.

Form oval, somewhat elongate; surface bright apple green. Head sparsely punctate, clypeal margin narrowly reflexed. Antennæ piceous, basal joints rose pink. Thorax not twice as wide as long, a little narower at apex, broadest at middle, hind angles nearly rectangular, surface finely punctate with no admixture of coarser punctures. Elytra very little wider at base than the thorax, broadest at the middle, surface very obsoletely striate, the striations under a lens appearing confused. Body beneath lighter and of a more golden tint; metasternum coarsely punctate. Legs entirely rose pink with a pearly opalescence, except the femora of the first pair which are golden apple green. Length 31 mm.

This species is quite different from its closest ally *P. woodii* Horn. It is larger, more elongate, with the elytral margin having a pronounced outward curve near the centre. The legs are entirely and strikingly different in color from those of *woodii*, the latter being bright green with the tarsi metallic violaceous. The hind tibiæ are less spined and pitted in *beyeri* which has an entirely different facies. It has more the general appearance of some of the species of *Chrysina*. About a year ago I received a specimen from Reef, Cochise County, Arizona, and have also examined one in Mr. Wenzel's collection presumably from the same place in the Huachuca Mountains. During the past summer I saw a number of specimens taken by Messrs. Beyer, Schaeffer and Biederman, and learned that the species had been distributed in collections under the name *Plusiotis woodii* Horn. Named in honor of Mr. G. Beyer, of New York, that enthusiastic and indefatigable collector who has done such good work in making better known many rare species. Described from four specimens, two from Carr Canyon, one from Miller Canyon, Huachuca Mountains, Arizona, and one in Mr. Wenzel's collection probably from the same mountains. I wrote to Dr. H. C. Wood, of Philadelphia, in regard to the exact locality of *Plusiotis woodii* and received the following reply: "The beetles you speak of were, I believe, collected near El Paso, Texas. Certainly either there or in the valley of Tornellias (spelt from memory) creek in the great bend of the Rio Grande, as these were the only places at which our expedition touched the Rio Grande." *Plusiotis gloriosa* was taken commonly at about five thousand feet elevation and *P. leconteei* is believed to be fairly abundant above six thousand feet in both Carr and Ramsey Canyons, although but few specimens were found.

Acanthocinus linearis n. sp.

Head covered with dense pubescence, composed of a mixture of brown and gray hairs. Antennæ brown with alternating gray patches. Thorax vinaceous buff, pubescent with black punctuation and lateral line or fascia of velvety brown; central dorsal surface with a wide longitudinal band or fascia of dark brown, in some specimens broken into three distinct lines. Abdomen with mixed pubescence of gray and white (vinaceous buff?). Humeri same color as the thorax; basal two-thirds of elytra heavily pu-

bescent with the brown hairs predominating. Lower or apical third ferruginous, separated from basal third by an oblique raised ferruginous stripe, composed of three elevations. This oblique stripe will serve to separate this species from its allies. Length, ♂, 12.5 mm.; ♀, 14 mm., including ovipositor 19 mm.

This fine and distinct species is from the same locality as the others herein described. Six specimens. August, 1905.

Oncideres quercus n. sp.

Elongate and convex, densely clothed with light gray pubescence. Thorax wider than long, narrowed behind the lateral tubercle. Bases of elytra with dense ferruginous pubescence, with the same character of spots on the apical third, some of which near the apex are yellowish. Length 12 mm.

This species is allied to *texana* Horn, but slenderer, less robust, lighter in color and the elytral spots more distinct, raised and differentiated from the elytron. Described from two specimens taken in Carr Canyon, Huachuca Mountains, Southern Arizona, in August. Probably half the oak trees at about five thousand feet elevation had branches and twigs severed by this species, and it must be quite abundant but is difficult to see and find, except when at work cutting off branches.

Prionus heros Fall, was fairly abundant and its hum just at dusk was a common sound.

Lypsimena tigrina n. sp.

Entire beetle light grey with linear dashes of black on the elytra arranged as follows from base to apex: One, two, four, two. Of the apical two spots one is cardioid and the other linear. The thorax has three black dots in the form of a triangle. The antennal joints are half black and half grey. Length 12 mm.

This is a very handsome and distinctly marked species and is the largest in the genus. Described from one specimen from Carr Canyon, Hucahuca Mountains, Arizona, and one in the Horn collection from Southern Texas.

An interesting find was *Ophistomis ventralis* Horn, described from El Taste, Southern California.

Clerus bimaculatus n. sp.

Head, thorax, abdomen and legs brown, pubescent, obsoletely punctate. Elytra brown, with a central, round, pink or flesh colored spot; the lower or apical third of the elytra covered by course hairs which

make up part of the maculation or ornamentation. The pink spots may also be considered a central fascia sharply interrupted in the middle by the elytral suture. The color of the elytron posterior to these spots is darker in color, almost piceous. Length 11 mm.

This species is most nearly allied to *quadrisignata* Say, and was common in Carr Canyon in August. It is a large and handsome species.

Cymatodera tricolor n. sp.

Form moderately slender, sparsely pubescent. Antennæ pale brown; anterior and middle legs brown, posterior pair dark brown, almost black. Head and outer third of the thorax very dark green, a red band crossing the thorax at the middle, the basal third of the thorax red. Abdominal segments black. There is a yellowish white median fascia, narrowest at the suture; anterior to this is a black band of about the same width and from this black band to the base of the elytra is red. From the fascia to the apex the elytra are piceous.

It is perhaps more nearly related to *belfragei* than to any other species. It is very striking and distinct. From one specimen, Carr Canyon, Huachuca Mountains, Arizona. I hope to publish a list of the Coleoptera I took in Arizona and will mention at this time a few rarities.

Byrsopolis lanigera Bates.

Biol. Cent.-Amer. Coleop. ii, pt. ii, p. 291, a large and handsome lamellicorn was taken (3 specimens).

Pasimachus mexicanus a beautiful species. *Euphoria holochloris* recently described by Prof. Fall was fairly common. *Amblychila baroni* which appears to be quite distinct from *A. cylindriformis* and a much smaller species. It is still very rare in collections.

DESPITE the prevalence in Germantown, Philadelphia, of the praying mantis, the queer bug from Japan, to many people it is still a terror. A pupil in one of the public schools in that district found a nest of the insect's eggs on the branch of a tree the other day, and thinking it was a butterfly's cocoon took it to her teacher. It was hung up in the school room and soon showed signs of life, but instead of the butterfly came hundreds of bugs which looked like large mosquitoes. They could not fly, but crawled around on the branch with such threatening aspect that the teacher, afraid to touch them, was compelled to dismiss the class. The janitor was called in, but promptly refused to tackle the job of removing the mantids until, upon further urging, he got a bucket and, with the aid of a long scrubbing brush-handle, dropped the branch into it. Then he clapped a cover on the bucket and removed the perfectly harmless insects, and the pursuit of education was resumed.—*Newspaper.*

Parasitic Hymenoptera of Algonquin, Illinois.—II.*

By Wm. A. Nason, M.D.

ALYSIIDÆ.

Cratospila ferruginens Ashm. n.sp.
2 specimens, ♂, ♀.
July 22, 1894.
Sept. 17, 1895.
Co-types, type in Ashm. coll.

Mesothesis abdominalis Ashm. n.sp.
1 specimen, ♂.
Type in Ashm. coll.

Aphæreta muscæ Ashm.
11 specimens, ♂, ♀.
Aug. 20, 1894.
Aug. 1 to Oct. 3, 1895.

Asobara illinoisensis Ashm. n. sp.
1 specimen, ♀.
Type in Ashm. coll.

Coloboma americana Ashm. n. sp.
1 specimen ♀.
Type in Ashm. coll.

Delocarpa dimidiata Ashm. ms.
4 specimens.
July 3 to 15, 1894.

Aspilota caudata Prov.
6 specimens ♀.
Oct. 4, 1893.
May 25 to June 8, 1894.
June 4, 1895.

Aspilota davisii Ashm. ms
1 specimen ♂.
May 21, 1896.

Pachysema americana Ashm. ms.
1 specimen ♂.
October 5, 1895.

Cœlinius meromyzæ Forbes.
9 specimens ♂.
Aug. 10 to Sept. 4, 1894.
July 16 to Oct. 5, 1895.
May 13, 1896.

Rhizarcha rubricincta Ashm. ms.
2 specimens ♂.
June 12, 15, 1895.
Co-types, type in Ashm. coll.

Dacnusa crassiceta Prov.
4 specimens ♂, ♀.
Aug. 31, 1894.
June 3, 1895.
May 21, June 1, 1896.

Dacnusa illinoisensis Ashm. ms
6 specimens ♂, ♀.
May 8, 10, 1895.
Co-types, type in Ashm. coll.

Dacnusa laeviceps Cr.
1 specimen ♀.
June 2, 1896.

Dacnusa spatulata Prov.
4 specimens ♂, ♀.
June 2 to Sept 2, 1895.

BRACONIDÆ.

Ephedrus incompletus Prov.
1 specimen ♂.
Sept. 17, 1895.

Praon simulans Prov.
1 specimen ♀.
Oct. 2, 1895.

Aphidius avenaphis Fitch.
2 specimens ♀.
May 9, 1894.
Oct. 5, 1895.

Aphidius nigriceps Ashm.
1 specimen ♀.
Aug. 30, 1894.

Aphidius obscuripes Ashm.
2 specimens ♀.
Sept. 17, Oct. 2, 1895.

Trioxys ovalis Prov.
1 specimen ♀.
May 2, 1896.

Peristenus mellipes Cr.
4 specimens ♂, ♀.
Aug. 8, 10, 1895.

Lipolexis chenopodiaphis Ashm.
1 specimen.
Oct. 2, 1895.

* Determinations were all made by Dr. Wm. H. Ashmead of Washington, D. C.

Lipolexis rapæ Curt.
3 specimens ♀.
Aug. 7, 1894.
Oct. 5, 10, 1895.
Perilitus dorsalis Ashm. Mus.
5 specimens ♂, ♀.
Aug. 31, 1894.
July 23 to Oct. 2, 1895.
May 25, 1896.
Perilitus gastrophysæ Ashm.
1 specimen ♀.
Oct. 2, 1895.
Meteorus communis Cr.
2 specimens ♂, ♀.
July 12, Sept. 2, 1895.
Meteorus gracilis Prov.
4 specimens ♂.
June 19 to Aug. 31, 1894.
Sept. 2, 5, 1895.
Meteorus intermedius Cr.
2 specimens ♂.
June 13, 17, 1896.
Meteorus orchesiæ Ashm.
1 specimen ♀.
May 13, 1896.
Meteorus proximus Cr.
2 specimens ♂, ♀.
June 4, July 3, 1895.
Meteorus politus Prov.
16 specimens ♂, ♀.
June 4 to Sept. 4, 1894.
Aug. 1, 12, 1895.
Meteorus robustus Prov.
6 specimens ♂, ♀.
Sept. 4, 1894.
June 10, 1896.
Meteorus vulgaris Cr.
7 specimens ♂, ♀.
June 28 to Sept. 14, 1894.
May 23 to July 19, 1895.
Macrocentrus delicatus Cr.
5 specimens ♂, ♀.
May 8 to June 18, 1896.
Macrocentrus iridescens French.
1 specimen ♀.
June 10, 1896.

Amicoplus crambi Ashm.
1 specimen ♂.
Sept. 2, 1895.
Amicoplus iridescens French.
2 specimens ♂, ♀.
Aug. 31, 1894.
Helcon ligator Say.
7 specimens ♂, ♀.
June 15, 1895.
Blacus defectuosus Prov.
1 specimen ♀.
Nov. 6, 1895.
Blacus nanus Ashm. Mus.
11 specimens ♀.
July 20 to Oct. 18, 1895.
Blacus rufipes Ashm. Mus.
1 specimen ♂.
May 2, 1894.
Orgilus fuscipes n. sp. Ashm.
5 specimens ♂, ♀.
June 4 to Aug. 12, 1895.
Co-types, type in Ashm. coll.
Orgilus mellipes Say.
27 specimens ♂, ♀.
May 12 to Sept 3, 1894.
May 20 to Sept. 10, 1895.
April 29 to June 17, 1896.
Eubadizon americanus Cr.
31 specimens ♂, ♀.
June 4, 1894.
May 20 to June 6, 1896.
Eubadizon phymatodis Ashm.
9 specimens ♂.
June 2, 3, 1895.
Allurus lævis Cr.
1 specimen ♂.
June 6, 1896.
Allurus orchasiæ Ashm. Mus.
1 specimen ♂.
May 10, 1896.
Calyptus crassigaster Prov.
3 specimens ♂, ♀.
In Ashm. coll.
Calyptus tibiator Cr.
1 specimen ♂.
May 25, 1895.

Cenocœlius populator Say.
2 specimens ♂, ♀.
Cenocœlius rubriceps Prov.
1 specimen ♂.
July 4, 1894.
Sigalphus catogeni Ashm. ms
1 specimen ♀.
June 6, 1896.
Schizoprymnus texanus Cr.
2 specimens ♀.
July 10, 1895.
Chelonus basicinctus Prov.
2 specimens ♂, ♀.
Aug. 1, 9, 1895.
Chelonus electus Cr.
1 specimen ♀.
June 12, 1895.
Chelonus fissus Prov.
3 specimens ♀.
June 8, 1894.
Sept. 4, 1894.
Chelonus insularis Cr.
1 specimen ♂.
Aug. 12, 1895.
Chelonus iridescens Cr.
1 specimen.
Aug. 16, 1895.
Chelonus lunatus Hald.
1 specimen ♀.
July 3, 1895.
Chelonus rufiscapus Prov.
1 specimen ♀.
Aug. 8, 1895.
Chelonus sericeus Say.
1 specimen ♂.
Aug. 7, 1895.
Ascogaster intermedius Ash. MSS.
3 specimens ♂, ♀.
Aug. 25, 26, 1894.
Co-types, types in Ashm. coll.
Ascogaster pilosifrons Ash. n. sp.
1 specimen.
Type in Ashm. coll.
Ascogaster proximus Ashm. ms
1 specimen ♀.
June 4, 1894.

Phaneratoma tibialis Hald.
1 specimen ♀.
June 10, 1895.
Cremnops semirubra Brullé.
5 specimens ♂, ♀.
June 28, 1895.
Agathirsia divisus Cr.
2 specimens ♀.
Aug. 30, 1894.
Microdus annulipes Cr.
3 specimens ♀.
June 29, 1895.
May 21, 23, 1896.
Microdus discolor Cr.
1 specimen ♀.
Aug. 10, 1895.
Microdus earinoides Cr.
6 specimens ♂, ♀.
June 10, 14, 1894.
July 18, 1895.
Microdus laticinctus Cr.
2 specimens ♂, ♀.
June 14, 1894.
Microdus simillimus Cr.
7 specimens ♂, ♀.
June 14, 1894.
Aug. 16, 1895.
May 26 to June 17, 1896.
Earinus limitaris Say.
1 specimen ♂.
Protapanteles femurnigrum Prov.
1 specimen ♀.
June 10, 1896.
Apantelcs algonquinus Ash. MSS.
1 specimen ♂.
Aug. 12, 1895.
Co-type, type in Ashm. coll.
Apantelcs carduicola Pack.
1 specimen ♂.
Oct. 17, 1894.
Apantelcs carpatus Say.
1 specimen ♀.
June 26, 1894.
Apantelcs cinctus Prov.
1 specimen ♀.
Sept. 15, 1895.

Apanteles columbianus Ashm. ms.
2 specimens ♀.
Co-type, type in Ashm. coll.
Apanteles congregatus Say.
5 specimens ♂.
Sept 4 to Oct. 5, 1895,
Apanteles cramboides Ashm. ms.
1 specimen ♂.
Aug. 12, 1895.
Apanteles cyanides Riley.
1 specimen ♀.
May 21, 1896.
Apanteles ensiger Say.
4 specimens ♀.
May 24 to Aug. 12, 1895.
Apanteles eupetheciæ Ashm. MSS.
1 specimen ♀.
Type in Ashm. coll.
Apanteles flaviconchæ Riley.
1 specimen ♂.
Aug. 9, 1895.
Apanteles forbesii Ashm.
11 specimens ♂, ♀.
Sept. 4, 1894.
June 11 to Aug. 12, 1895.
Apanteles glomeratus L.
21 specimens ♂, ♀.
July 6 to Oct. 27, 1895.
May 8 to June 15, 1896.
Apanteles hartii Ashm.
7 specimens ♂, ♀.
Aug. 26, 30, 1894.
May 3 to Sept. 20, 1895.
Apanteles nasonii Ashm. MSS.
2 specimens ♂.
Sept. 21, 1894.
Co-types, type in Ashm. coll.
Apanteles xylina Say.
17 specimens ♂, ♀.
May 9 to July 3, 1895.
May 3 to June 16, 1896.
Pseudapanteles tortricis Ashm.
1 specimen ♀.
In Ashm. coll.
Microgaster carinatus Pack.
1 specimen ♂.

Microgaster brevicaudus Prov.
6 specimens ♂, ♀.
June 10 to Sept. 20, 1895.
Microgaster gelechiæ Riley.
1 specimen ♀.
June 24, 1895.
Microgaster zonatus Say.
9 specimens ♀.
Sept. 17 to 22, 1895.
Urogaster carinaria Ashm.
1 specimen ♀.
June 10, 1896.
Urogaster ensiger Say.
1 specimen ♀.
April 16, 1896.
Urogaster forbesii Ashm.
10 specimens ♂, ♀.
May 18 to June 15, 1896.
Urogaster hartii Ashm.
5 specimens ♀.
May 21 to June 10, 1896.
Microplitis atrocoxalis Ashm. ms
4 specimens ♂.
May 21 to June 10, 1896.
Microplitis ceratominæ Riley.
2 specimens ♂.
Aug. 1, Oct. 5, 1895.
Microplitis cinctus Ashm.
2 specimens ♂.
June 11, 1894.
June 10, 1896.
Microplitis forbesii Ashm. n. sp.
1 specimen.
Type in Ashmead collection.
Microplitis gortynæ Riley.
1 specimen ♂.
May 26, 1896.
Microplitis illinoisensis Ashm. ms
1 specimen ♂.
Microplitis maturus Wied.
4 specimens ♂, ♀.
Oct. 9, 1893.
July 12, 1895.
Microplitis ohioensis Ashm. ms
1 specimen ♀.
Aug. 16, 1895.

Microplitis similis Ashm. ms.
1 specimen ♂.
June 10, 1896.
Microplitis sphingis Ashm. ms.
1 specimen ♀.
Zeletes pallipes Prov.
5 specimens ♂, ♀.
May 25, Sept. 19, 1894.
Aug. 24, Sept. 3, 1895.
Zeletes rufipes Ashm. n. sp.
2 specimens ♂.
Sept. 14, 1894.
Type in Ashm. coll.
Bioisteres anthonomyiæ Ashm. ms
5 specimens ♂, ♀.
Oct. 3, 1895.
May 21, 26, 1896.
Allotypus rufocinctus Ashm. ms.
1 specimen ♀.
Type in Ashm. coll.
Desmiostoma algonquinus A. n.sp.
1 specimen ♂.
Type in Ashm. coll.
Utetes algonquinus Ashm. n. sp.
1 specimen ♀.
July 17, 1895.
Co-type, type in Ashm. coll.
Opius algonquinus Ashm. n. sp.
9 specimens ♂, ♀.
July 10 to Oct. 16, 1895,
May 13 to June 10, 1896.
Co-types, type in Ashm. coll.
Opius brunneiventris Cr.
1 specimen.
Aug. 24, 1895.
Opius dimidiatus Ashm. n. sp.
5 specimens ♂, ♀.
Sept. 4, 1894.
June 2 to Aug. 12, 1895.
Co-types, type in Ashm. coll.
Opius minutissimus Ashm. n. sp.
26 specimens ♂, ♀.
May 10 to June 15, 1896.
Co-types, type in Ashm. coll.
Melanobracon simplex Cr.
2 specimens ♀.

Melanobracon charus Riley.
3 specimens ♂, ♀.
Sept. 3, 1895.
Melanobracon rugosiventris Ashm.
3 specimens ♂, ♀.
July 27, 1895.
Bracon apicatus Prov.
1 specimen ♀.
June 27, 1895.
Bracon ? argutator Say.
1 specimen ♂.
Sept. 17, 1895.
Bracon cookii Ashm.
2 specimens ♂, ♀.
June 8, July 11, 1895.
Bracon dorsata Say.
2 specimens ♂, ♀.
Oct. 16, 1895.
June 13, 1896.
Bracon juncicola Ashm.
1 specimen ♀.
Aug. 31, 1894.
Bracon lativentris Ashm. ms
10 specimens ♂, ♀.
April 18 to Oct. 16, 1894.
Bracon longicaudus Prov.
1 specimen.
June 11, 1895.
Bracon lixi Ashm.
3 specimens ♀.
Aug. 10, Sept. 2 to 21, 1895.
Bracon nigetor Say.
1 specimen ♂.
July 25, 1895.
Bracon opaciceps Ashm. ms
1 specimen ♀.
June 19, 1895.
Bracon pirrodes Ashm. ms
1 specimen ♀.
July 26, 1895.
Bracon saperdæ Ashm. ms
1 specimen ♀.
June 18, 1896.
Bracon scrutator Say.
3 specimens ♂, ♀.
Aug. 12, Aug. 30, 1894.

Bracon trifolii Ashm.
2 specimens ♂, ♀.
Aug. 30, 1894.
Bracon vernoniæ Ashm.
1 specimen ♀.
July 10, 1894.
Bracon xanthostymus Cr.
3 specimens ♀.
July 23, Aug. 1, Sept. 15, 1895.
Gnamptodon flavibasilaris Ashm. ms
2 specimens ♂.
May 21, 1896.
Co-types, type in Ashm. coll.
Iphiaulax eurygaster Br.
1 specimen ♀.
Tropidobracon connatus Ashm. ms
2 specimens.
May 13, June 16, 1896.
Tropidobracon gasteroidea Ashm. ms
2 specimens.
May 8, June 16, 1896.
Tropidobracon ruficentris A. n. sp.
1 specimen ♀.
Type in Ashm. coll.
Habrobracon hebetor Say.
4 specimens ♂, ♀.
Sept. 17, 1895.
Nov. 4, 1895.
Nov. 6, 1895.
Liobracon nigrolineatus Ashm. ms
1 specimen ♀.
Sept. 21, 1894.
Liobracon nuperus Cr.
5 specimens ♂, ♀.
Sept. 15, 1895.
Sept. 16, 1895.
Clinocentris mellipes Ashm.
1 specimen ♀.
Clinocentris minimus Ashm. ms
1 specimen ♀.
July 20, 1895.
Clinocentrus niger Ashm.
1 specimen ♂.
Sept. 21, 1894.
Rhyssalus lonolinieæ Ashm.
2 specimens ♂, ♀.
May 21, 1896.
June 10, 1896.
Rhogas abdominalis Cr.
1 specimen ♀.
June 1, 1896.
Rhogas intermedius Cr.
6 specimens ♂, ♀.
Aug. 30, 1894.
Sept. 21, 1894.
Aug. 12, 1895.
Sept. 17, 1895.

Rhogas nasonii Ash. n. sp.
1 specimen ♂.
Type in Ashm. coll.
Rhogas parasiticus Nort.
5 specimens ♀.
Aug. 26 to Sept. 21, 1894.
Rhogas plecypterygia Ashm. ms
1 specimen ♀.
Oct. 16, 1895.
Rhogas stigmator Say.
1 specimen ♀.
July 25, 1895.
Rhogas terminalis Cr.
36 specimens ♂, ♀.
June 6 to Sept. 4, 1894.
June 6 to Sept. 10, 1895.
Doryctes rufiventris Ashm. ms.
3 specimens ♀.
Doryctes rugosus Prov.
1 specimen ♀.
Chremylus nigriventris Ash. n. sp.
1 specimen.
Type in Ashm. coll.
Chremylus terminalis Ashm.
1 specimen ♂.
May 28, 1896.
Hormius erythrogaster Ashm.
2 specimens ♀.
Sept. 21, 1894.
July 20, 1895.
Hormius melleus Ashm. ms.
2 specimens ♀.
Sept. 16, 1893.
May 13, 1896
Cænophanes anthaxiæ Ashm.
2 specimens ♀.
May 13, 19, 1895.
Cænophanes languriæ Ashm.
2 specimens ♂, ♀.
June 4, July 3, 1895.
Spathius canadensis Ashm.
1 specimen ♀.
Spathius simillimus Ashm.
1 specimen ♀.
May 20, 1896.
Spathius trifasciatus Riley.
5 specimens ♂, ♀.
June 19, 1894.
Oct. 2, 1895.

ADDITIONAL SPECIES.

Megastygmus illinoisensis A. n. sp.
1 specimen ♀.
Type in Ashm. coll.
Amiclus terminalis Ashm.
1 specimen ♀.
July 25, 1895.

Itinerary of a Collecting Trip, Made Especially in Search of Dragonflies, in Central America.

By E. B. Williamson, Bluffton, Indiana.

As the result of much planning and correspondence there met on board the steamer Taunton, lying at the dock in New Orleans, on January 5, 1905, the following party bound for a collecting and sight seeing trip in Central America, especially in Guatemala: Professor W. A. Kellerman, interested in parasitic fungi and tropical botany in general; Mr. and Mrs. C. C. Deam, interested in the higher plants and Lepidoptera; Mr. Newton Miller, interested in fish; Professor J. S. Hine, interested in insects and especially Diptera; and Mr. and Mrs. E. B. Williamson, interested in dragonflies.

During the trip collections in general were made, including birds, reptiles and several groups of invertebrates. The following itinerary, prepared at the request of Dr. Calvert, has for its purpose facility of reference to the dragonflies (to which I gave especial attention, collecting about 2700 specimens) which have been sent to Dr. Calvert for study in connection with the invaluable work he is doing for the Biologia Centrali-Americana. In addition to my own collecting, the material sent to Dr. Calvert includes collections in this order made by Professor Hine, Mr. and Mrs. Chas. C. Deam and Mrs. E. B. Williamson. Once in the tropics our party was much dispersed and in the following notes I speak only for myself.

January 9, 1905.—Landed from steamship Taunton at Belize, British Honduras, and spent about two hours, from eleven A. M. to one P. M., collecting along ditches and bits of marshes in and closely adjacent to the town. Weather rainy and dragonflies not abundant.

January 10, 1905.—Landed at Puerto Barrios, Guatemala, and took train about nine A. M. for Gualan. Passed through tropical swamp and wet tropical country for about sixty miles to where the railroad crosses the Motagua River. A few miles beyond this bridge, a region where the distinction between the rainy season and dry season is well marked is reached. From this point to El Rancho, the present inland terminus of the Ferrocarril del Norte de Guatemala, the country at this sea-

son grows more and more arid becoming, a few miles beyond Gualan, a desert region in which tree cacti flourish. Gualan is eighty miles from Puerto Barrios and 420 feet above sea-level. El Rancho, at an elevation of 901 feet, is nearly one hundred and thirty miles from Puerto Barrios. We arrived at Gualan about nine P. M.

January 11, 1905.—Vegetation about Gualan becoming dry and leafless, a small leguminous tree, resembling a peach in habit of growth and color of flowers, is in full bloom. Maize on the hill sides has been harvested and not replanted. Smaller streams have shrunken in volume and native gardens are being irrigated. About half a mile above station at Gualan the railroad crosses a tributary of the Motagua known as the Gualan River. On this date the Gualan River has an average width of about one hundred feet. The stream is divided by many bare islands which, like the bed, are composed of boulders and coarse gravel. A small tributary of the Gualan, just above the railroad bridge, is followed for some distance and Libellulines and smaller Agrionines are found in great abundance. Dragonflies are rare, almost wanting, along the main stream. A short distance above the mouth of this small tributary the Gualan River is formed by two nearly equal streams.

January 12, 1905.—Collected along the small tributary mentioned above and followed the Gualan River, nearly to its mouth, but with practically no success along the main stream.

January 13, 1905.—Collected for about one and one half miles along the left hand stream, which joins with a similar stream to form the Gualan River, and in irrigated fields and along ditches adjacent to this stream, as far as a village named Sing Sing, situated on the Honduras road.

January 14, 1905.—Same territory as January 13th.

January 15, 1905.—In fields and along the Gualan River, paying little attention to dragonflies. During these five days at Gualan the mornings were cloudy, but without rain, until about nine A. M. after which the sun shown uninterruptedly till sundown. Air very dry, temperature not oppressive, nights cool and with good breeze, no mosquitoes. Lizards of four easily distinguished species abundant. No snakes or tur-

tles seen, streams clear and fish few. Insects not abundant, apparently in quiescent state in many cases, seeking moisture by burying themselves beneath leaves and stones. Butterflies worn and not abundant. Vegetation not luxuriant, whitening on the mountain sides.

January 16, 1905.—At Los Amates, on the Motagua River, a station on the railroad, sixty miles from Puerto Barrios, railroad section 14, elevation 160 feet. The railroad is divided into sections of variable lengths, usually between four and five miles, and these sections are numbered from the coast towards the interior. Conditions about Los Amates are humid and tropical. Cannas and other large leaved Monocots, not observed commonly or at all at Gualan, are abundant. Bamboos grow to a large size. Rainfall abundant and likely to occur at any time of the day or night. Weather always cloudy and cool in the morning. Collected at a swamp near the railroad buildings and along a tributary of the Motagua about three-fourths mile below town. The swamp above mentioned is alonside the railroad track, its area is approximately three fourths acre. It is of very uniform depth, about two to two and one-half feet at this season. It is filled with small floating, grass-covered islands on which jacanas love to search for food. During sunshiny periods of the day before about four P. M. dragonflies are very abundant about this pond or swamp which contains many small fish. The tributary of the Motagua visited on this day has an average width, near the railroad bridge, of fifteen or twenty feet. Its banks are steep, more or less overhanging and beaches are rare. I followed the bed of this stream for possibly three-fourths mile. Much of this distance is in shade. Near this stream are a number of dark, quiet pools, shallow and shaded by Monaca palms and apparently devoid of odonate life.

January 17, 1905.—Crossed the Motagua and followed a trail at right angles to the river. Above the first hill is a flat prairie country of peculiar appearance. Small streams lose themselves in the rank grass which grows above one's head. Occasional low shrub clumps alone relieve the monotony of the immediate landscape. Below Los Amates the railroad crosses

this same prairie strip. Dragonflies here are scarce and usually immature as though adults sought more congenial surroundings,

January 18, 1905.—Along railroad track about a mile below town where, about quiet, dark shaded grass- and sedge-grown pools a species of dragonfly found nowhere else was taken.

January 19, 1905.—Followed the Izabal trail for a distance of one and one-half to two miles. Some very small streams cross the trail but dragonflies are scarce. Along this trail among the hills, a species each of pine and oak and an orchid in full flower are observed. Selaginellas carpet the ground, shaded by a variety of trees and palms. At Los Amates insects in general abundant. Butterflies fairly numerous and frequently freshly emerged. Birds numerous. A few turtles seen in pools along railroad track.

January 21, 1905.—Returned to Gualan to store material, which, unless artificially dried, could have been preserved with difficulty at Los Amates. Conditions at Gualan slightly drier than on January 11th, but otherwise practically the same. Were told that this drought continued till vegetation was largely parched, but that, when the rains began, usually in May, everything became green again almost in a night. And it was then, and during the months of June, July and August that insects (or at least butterflies) were most in evidence.

January 25, 1905.—Went from Gualan to El Rancho. At Zacapa, elevation 602 feet, on the Zacapa River, Deam and Miller collected a few dragonflies during the previous three days. Zacapa is a region well watered by numerous streams from which many small irrigating ditches are supplied. El Rancho with an elevation of 901 feet, is in a region at this date practically barren, excepting for the most xerophytic plants and along water courses. At sheltered places along the Motagua, dragonflies of a few species were numerous, but for considerable distances the river flows through a valley of boulders which are the bed of the stream during the rainy season.

January 27, 1905.—Enroute by mule from El Rancho to Sanarate. Many small mountain streams were encountered in this twenty-three miles journey and a few dragonflies were col-

lected during the day. The weather conditions are perfect for collecting, clear skies and little or no breeze.

January 28, 1905.—By mule from Sanarate to Guatemala City, forty-seven miles. A few dragonflies were collected along the trail.

January 29, 1905.—Sightseeing about Guatemala City. Weather clear and cool. *Pantala flavescens* seen at the principal cemetery of the city.

January 30, 1905.—Journeyed on Ferrocarril Central de Guatemala from Guatemala City to Escuintla. Collected along a stream a few miles south of Guatemala City, while the train stopped a few minutes at a station, and again at Laguna, the railroad station at the place where the railroad crosses Lake Amatitlan.

January 31, 1905.—Collected during the forenoon along a small stream near Escuintla. Escuintla, 1248 feet above sea level, is a flourishing town in a rich and beautiful country. Insects were abundant, the flora varied. Left Escuintla about noon by railroad and went to Santa Lucia where we arrived about two P. M. Santa Lucia is about a mile from the railroad. During the afternoon collected about open places in woods, banana fields and along roads where Libellulines were flying abundantly.

February 1, 1905.—In the morning collected along the river east of town and in the afternoon along a ravine west of town.

February 2, 1905, was spent in this ravine. Weather ideal for collecting, the mornings being cloudless from sunrise.

February 3, 1905.—Along a stream and its two tributaries east of Mazatenango, with an elevation of 1085 feet. Conditions similar to those at Santa Lucia.

February 4, 1905.—Collected for twenty minutes in the morning along a river west of Santa Maria, and in the afternoon in a mangrove swamp just back from the beach and just west of San Jose.* Mrs. Deam and Mrs. Williamson spent February 2nd, 3rd and 4th at Escuintla where they did some collecting.

* All the towns visited on the Pacific slope were reached from Guatemala City by the Ferrocarril Central de Guatemala.

February 5, 1905.—Explored country for a mile or two back from the coast during the morning in an effort to find Agrionines. Spent the remainder of the day in the mangrove swamp. With the exception of *Pantala flavescens* and *Orthemis ferruginea* no dragonflies were seen away from the mangrove swamps, and here only Libellulines were seen. These were fairly abundant especially in sunny spots.

February 6, 1905.—At Lake Amatitlan, at the extreme lower end of the lake and along its outlet just below the lake. Amatitlan has an elevation of 4212 feet.

February 7, 1905.—Along south shore of lake. Scarcity of dragonflies disappointing. Several acres of level marsh land were fairly filled with white water lilies in full bloom, but over or about this area not a dragonfly was to be found. The south side of the lake near outlet is largely sedgey though the descent to deep water is rather abrupt. In the afternoon along the north side of the lake. A road follows around this side which is precipitous, without beach in many places, the lake bed descending vertically, sedges in small isolated areas. During this day a large *Argia* seen nowhere else in Guatemala was taken. This note is inserted for the reason that nearly all the species of dragonflies collected were taken frequently and at many localities.

February 8, 1905.—Along south side of lake and about outlet in the forenoon. In the afternoon enroute Amatitlan to Guatemala City, collecting a few dragonflies at Laguna when the train stopped there. Laguna has an elevation of 3877 feet.

February 9, 1905. On the return trip to the Atlantic coast. A few specimens collected at Agua Caliente.

February 10, 1905.—A few specimens collected at Sanarate.

February 11, 1905.—Sanarate to El Rancho.

February 12, 1905.—El Rancho to Gualan.

February 13, 1905.—Gualan to Puerto Barrios. A few dragonflies collected to-day as opportunity offered when the train stopped at stations.

February 14, 1905.—Puerto Barrios to Livingston. Livingston is on a bluff about thirty feet high from which the ocean is visible in three directions.

February 15, 1905.—Went up Rio Dulce to Puerto de San Felipe, at outlet of Lake Izabal. Collected along the river within sight of the old fort.

February 16 and 17, 1905.—Weather very unfavorable, raining. Not well, suffering from tropical fever, contracted at San Jose.

February 18, 1905.—Spent several hours in a dugout paddled by Carib boy. Followed the left shore of Rio Dulce and explored two of its small tributaries. Weather bright during this time but breeze rather too strong for good collecting.

February 19 and 20, 1905.—Collected a little in immediate vicinity of Livingston as weather and health permitted. Collecting here the poorest found on the entire trip. About noon February 20th returned to Puerto Barrios.

February 21, 1905.—Landed in afternoon at Puerto Cortez, Honduras. Collected for a few minutes in Pontederias along wharf. Took train on Ferrocarril del Norte de Honduras to San Pedro Sula.

February 22, 1905.—San Pedro has an elevation of about 250 feet. It lies near the west side of the valley, the mountains beginning within a mile or two of the town. Collected about small prairie streams west and east of town.

February 23, 1905.—West of San Pedro along a small stream flowing in a northerly direction parallel to the mountain range and along small streams diverted from it for irrigating purposes. The city derives its water by a system of water works from this stream. Vegetation about San Pedro luxuriant, flora rich, but not especially tropical in appearance, suggesting greatly conditions frequently seen in Indiana in rank pasture fields and brush lots. Monaca palms, occasional coffee fields, and the very frequent banana plantations of course remind one that he is far from the wintry skies at home.

February 24 and 25, 1905.—West of San Pedro along same stream but further up the stream, spending most of the time in a low level pasture field which lies between the main stream and a smaller stream diverted from it.

February 26, 27 and 28, 1905.—Ravine two miles south of San Pedro reached by following the main street south, past the

slaughter houses. Where the road crosses the stream is only a short distance from where the stream leaves the mountain gulch. This ravine was explored for a distance back in the mountains of more than a mile. It is forest-shaded, deep, dark and noisy with waterfalls, apparently the last place in the world to expect sun-loving insects like dragonflies. February 26th, it rained nearly all day but during the three days spent in the ravine over three hundred dragonflies were taken.

March 1, 1905.—Enroute San Pedro to Puerto Cortez.

March 2, 1905.—Collected for three or four hours about the wharf at Puerto Cortez, and about two o'clock in the afternoon boarded the steamship Anselm bound for New Orleans.

The week February 21st to February 28th was spent at Puerto Barrios by Mr. Deam and a valuable lot of dragonflies were collected there by him, though the weather was very unfavorable, rain falling every day, and the sky being almost continually obscured by clouds.

To the Editors of Entomological News:

Dear Sirs:—In the October number of the News you reprint a circular of the National Mosquito Extermination Society, and among the names in the Advisory Board of Entomologists my own appears. Permit me to say that my name is used not only without my permission but in spite of a very decided protest on my part, made to the Secretary and apparent mouth-piece of the Society. Lest it seem strange that one so strongly identified with the anti-mosquito campaign as myself should decline to be concerned with a body whose expressed aims are in every respect laudable, I will ask permission to explain that while the professions of the Society are sound its actions through its Secretary are underhanded, dishonest and not in accord with recent developments as to practice.

For three years New Jersey had, through the writer, conducted a mosquito survey of the State and in the early days of 1905 had published an elaborate report on the results, following a preliminary report and bulletin, all of which were sent to Henry Clay Weeks, Secretary, etc. Yet at the 1905 session of the New Jersey Legislature, said Henry Clay Weeks, purporting

to be acting as Secretary, etc., procured the introduction of a bill to establish a commission to do exactly the work that had just been completed and reported upon, and, though my name appeared on the Advisory Board of Entomologists and Mr. Weeks had been kept advised of my work, no notice whatever was sent to me of the intent or introduction of the bill. It was a manifest attempt to sneak through a bit of legislation which the promoter was unwilling to bring to the notice of the official most concerned. Fortunately the ignorance behind the bill was equal to its dishonesty, and of the officials named as members of the Commission, the majority had no existence in New Jersey. The bill died the day I learned of its introduction.

In the report already referred to, I showed in detail that the Hackensack Meadows were not breeding places for mosquitoes except to a very insignificant extent; yet the investigation of the Hackensack Meadows formed a feature of the attempted investigation, either an intended reflection upon the work done under my direction or ignorance of its accomplishment.

In the reprinted circular the New Jersey–Staten Island problem is referred to as if it were a serious matter and many interests were to be considered; as a matter of fact the whole problem is solved and all the interests involved have been reconciled. Neither Mr. Weeks nor the Society for which he speaks has been consulted, and, therefore, may not know that so far as New Jersey is concerned more than half of the work involved in the New Jersey–Staten Island problem is already done; that so far as Staten Island is concerned a survey of the territory was made under my direction and a report made that $17,000 would do all the necessary work; that this sum was asked for by the New York Board of Health, duly appropriated by the Board of Estimate and Apportionment, and that a contract was actually made to mosquito-drain the salt marsh area of the entire Staten Island area for less than $16,000; proof that my judgment as to the cost of work to be done does not err in the direction of an underestimate.

It is always unpleasant to introduce a personal element into a matter of public concern, but in this case the publication of the circular in the NEWS leaves me no option. As at present

managed, the National Mosquito Extermination Society is, in my opinion, simply an attempt to advertise its Secretary, and not an effort directed to the extermination of the mosquito pest. The use of my name is quite as much without authority as was the use of that of Governor Murphy, of New Jersey, who was advertised, in spite of his emphatic refusal, as presiding officer at one of its meetings.—JOHN B. SMITH.

AN APPARENTLY NEW CHINCH-BUG.—A few years ago my wife found at San Geronimo, New Mexico, two specimens of an apparently new *Blissus* or chinch-bug. It was hoped that further specimens might be discovered to test the constancy of the characters observed, but as the species has not been seen again, and there is little chance of collecting in the same region, I place the find on record. The insect was referred to Mr. Heidemann, as the best authority on the subject, and he reported that in size and the reduction of the membrane to a small semi-circular band it agreed well with the description of *B. pulchellus* Montandon, from Costa Rica. It also showed a remarkable resemblance to the European *B. doriæ* Ferrari, especially in the downward sloping shape of the head. From the common *B. leucopterus* Say, Mr. Heidemann found it to differ thus: Eyes smaller, less protruding; the tylus shorter, not so prominent, and the head distinctly sloping downward anteriorly; elytra much shorter than in any of the brachypterous forms observed, the reduced circularly-formed membrane reaching not quite to the apex of the first dorsal segment, while in *leucopterus* the same is always longer, reaching nearly to the base of the second or even the third dorsal segment; antennæ comparatively shorter, less robust, with the ultimate joint not much longer than the second.—T. D. A. COCKERELL, Boulder, Colo.

IMPORTANT ANNOUNCEMENT CONCERNING THE DIVISION OF ENTOMOLOGY OF THE NORTH CAROLINA DEPARTMENT OF AGRICULTURE.—1.—On July 10, 1905, Mr. G. M. Bently resigned his position as Assistant Entomologist to accept the position of Assistant Entomologist at the Agricultural Experiment Station at Knoxville, Tenn., which is now his address.

2.—On September 15, 1905 the resignation of Mr. Franklin Sherman, Jr., as Entomologist will take effect, he having accepted the Professorship of Entomology and Zoology in the Ontario Agricultural College at Guelph, Canada, which will be his address after the first of September.

3.—Mr. R. S. Woglum, appointed as Assistant in place of Mr. Bentley, will be in charge of the entire work for the present. The appointment of other assistants will be made later.

4.—The "Bulletin" of the N. C. Department of Agriculture for May, 1905, deals with "Insect Enemies of Corn," and is by Mr. Sherman. It may be had by addressing a request to "N. C. Department of Agriculture, Raleigh, N. C."

5.—Neither Mr. Bentley nor Mr. Sherman resigned because of any dissatisfaction with the work here, but simply because their new positions offer them better inducements, which they could not afford to decline.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., NOVEMBER, 1905.

The great importance of the study of insects in relation to the distribution of many diseases, would appear to necessitate a short course at least, on entomology, in our medical colleges. Some few years ago we called attention to the fact that a well known medical journal contained an article on malaria, in which the writer stated that the mosquitoes were spontaneously generated from decomposing vegetable matter in water. We have known of pediculosis being diagnosed as carpologia and a fatal prognosis given.

The effect of the "red-bug" (*Leptus irritans*) is usually diagnosed as hives and treated by cathartics and other internal medication.

We have also known the same thing to be diagnosed as a Syphiloderm. The New England Medical Monthly, p. 335, for August, this year, contains an editorial, "The Brown-Tail Moth Lesions" from which we quote: "During the past few weeks certain portions of New England, notably, New Hampshire and Massachusetts, have been infested by the brown-tail moth pest * * * * * large acres of territory in several States have been so widely infected that the extermination of the insect has become a most serious problem. While the bite of the moth demands some consideration, the skin lesions produced by contact with the caterpillar are of a much more serious character." * * * * If the moth bites, it is a scientific and medical fact of some importance and should be more generally known. We willingly confess our ignorance and acknowledge that we never have known a lepidopterous insect that could bite in the imago stage.

Notes and News.

Dr. Ewald Bergroth, the well known Finnish dipterist, has emigrated to this country on account of the political difficulties of his native land, and after a summer in Alaska has settled in Seattle. His address is The Plaza, 1403 Third Avenue.

Professor J. M. Aldrich has a year's leave of absence from the University of Idaho, which he is spending at Stanford University. His address is 325 Hamilton Avenue, Palo Alto, California.

"New" Facts that are Not New.—If some of our entomologists would take the trouble to do a little reading before printing their observations, they might save valuable space in the current magazines. Two cases in point occur in the October News. Mr. Sherman records observations on *Harrisimemna trisignata* (page 254) and Miss Soule on *Telea polyphemus* (page 275).

The pupation of *Harrisimemna* has long been known, since 1840, when Harris wrote to Melsheimer (Ent. Corr. T. W. Harris, pp. 114, 174, 1869). The forming of the burrows is carefully described by Goodhue (Can. Ent., xviii, 58, 1886). Other references to the larva are found in Packard's Guide, p. 304, 1869; Ent. News, vi, 340, 1895; Proc. U. S. Nat. Mus., xxi, 183, 1898 and Lugger's Fourth Rept. Ins. Minnesota, 157, 1898.

Concerning Mr. Sherman's query as to whether similar pupating habits are known in other Lepidoptera, the case of *Polygrammate hebraicum* occurs to me (Proc. U. S. Nat. Mus., xxi, 9 note, 1898). There are doubtless others. The use of wood chips in cocoons and the partial hollowing of wooden surfaces is common in many genera, e. g. *Apatela* among Noctuids, *Cerura* in Notodontians and *Tacoma* in Pyralids. The burrowing habit is doubtless a development of this.

The stemmed cocoons of *Telea polyphemus* referred to by Miss Soule, have been described by Grote (Proc. Am. Philos. Soc. xli, 401, 1902) and commented on by Cockle (Can. Ent , xxxv, 139, 1903).—Harrison G. Dyar, Washington, D. C.

At the Field Meeting of the Newark, Brooklyn, New York and Philadelphia Entomological Societies at Jamesburg, N. J., on July 4, 1905, I was fortunate enough to capture twenty-two species of Tabanidæ.

Two of the species taken (*Chrysops cursim* and *C. mitis*) have not been recorded from New Jersey before. All the doubtful material has been kindly identified by Prof. Jas. S. Hine of the Ohio State University, to whom I am greatly indebted.

The following is a list of the species taken :

Chrysops callidus O. S.	*Tabanus cinctus* Fabr.
" *pudicus* O. S.	" *trispilus* Wied.
" *cursim* Whitney.	" *hinei* Johns.
" *flavidus* Wied.	" *astutus* O. S.
" *univittatus* Macq.	" *recedens* Walk.
" *lugens* Wied.	" *pumilus* Macq.
" *vittatus* Wied.	" *lineola* Fabr.
" *fallax* O. S.	" *costalis* Wied.
" *obsoletus* Wied.	" *sagax* O. S.
" *nigribimbo* Whitney.	" *stygius* Say.
" *mitis* O. S.*	" *superjumentarius* Whit.

H. S. Harbeck.

* Prof. Hine states in reference to specimen sent to him for identification "according to Osten Sacken's description this would be *mitis*."

Doings of Societies.

A stated meeting of the Feldman Collecting Social was held on the 21st of June, at the residence of Mr. H. W. Wenzel, No. 1523 South 13th Street, Philadelphia. There were eleven members present, and Mr C. F Adams, of Chicago, visitor. Letters were read from Dr. D. M. Castle and Mr. Wenzel, Jr.

Dr. Calvert stated that in springs of 1902 and 1903 he had distributed young larvæ of *Tenodera sinensis* on different trees in the Botanical Gardens of the University of Pennsylvania, but that until this year there had been no imagos found; two specimens, however, were found by a student, one in May and the other in the early part of June of this year.

Mr. Laurent stated that he went to look for the same species at Germantown, and that he found it very rare.

Mr. Huntington showed photographs taken by the new color photo process.

Mr. Daecke reported taking the following insects at Rockhill, (near Perkasie, Pa.:) *Chrysops indus*, *Lagoa crispata*, *Thyris maculata*, and at Da Costa, N. J., the following: *Mantispa brunnea*, beaten from bushes, *Buprestis ultramarina*, *Coptodisca splendoriforella*, cocoons on pine bark, *Odospis* spec. ?, and *Enarmonia* spec. ?

Dr. Calvert spoke of the use of carbon tetrachloride as an insecticide. FRANK HAIMBACH, *Secretary*.

A stated meeting of the Feldman Collecting Social was held September 20, 1905, at the residence of Mr. H. W. Wenzel, No. 1523 South 13th Street, Philadelphia. There were eleven members present, and Mr. Viereck visitor.

Dr. Henry Skinner gave a brief but very interesting sketch of his recent trip to Arizona.

Dr. D. M. Castle exhibited 56 species of Coleoptera collected at Bamber, N. J., on September 1st.

FRANK HAIMBACH, *Secretary*.

A meeting of the Entomological Section of the Academy of Natural Sciences of Philadelphia, was held September 28th, Mr. Philip Laurent, Director, presiding. 17 persons present. Dr. Skinner exhibited a specimen of *Amblychila baroni* which he had taken in the Huachuca Mountains in Arizona, and referred to the literature relating to the species.

Mr. Wenzel said he had seen the type of *baroni*, and the specimen exhibited, according to his recollection, was the same thing.

Mr. Rehn said he had been commissioned by the State of Pennsylvania to examine the wharves, river fronts and incoming vessels at the quarantine station for *Stegomyia fasciata* but had not found any. He also reported that in company with Mr. Morgan Hebard he had spent eleven days in North Central Florida and took four thousand Orthoptera. They found *Stegomyia fasciata* common at Cedar Keys, and *Anopheles* and *Culex* on the steamer between Jacksonville and New York.

Mr. H. W. Wenzel exhibited beautiful specimens of the workings in wood of the following species of Scolytidæ: *Hylesinus opaculus*, *fasciatus*, *Chramesus icoriæ*, *Corthylus punctatissimus*, *Pityophthorus consimilis*.

Dr. Calvert exhibited specimens of *Amphiagrion* (*Hesperagrion*) *heterodoxum* Selys, from Mexico and Arizona, and plate VI of the Neuroptera volume, Biologia Centrali–Americana, to show the great range of color variation in this species. Data were given to show the basis for his opinion that these color differences are chiefly due to age, and in this respect he considered this species to be, perhaps, the most remarkable Odonate known to him.

Mr. Ilg exhibited the life histories of a number of moths and butterflies in Riker mounts.

Mr. Daecke said the older Jersey list contained sixteen species of *Chrysops*, and the later Johnson list added one species. During the past summer he had brought the record up to twenty-five species which includes two described by himself and one to be described by Prof. Hine. He was also studying the coloration of the eyes in this genus.

Mr. Laurent exhibited a specimen of *Papilio glaucus* which showed a large admixture of yellow. He also made some remarks on *Tenodera sinensis* and distributed specimens among the members. Brown marks on the tegmina were attributed to drops of water acting as a burning glass.

Mr. Wenzel said, about three years ago egg masses of this species had been placed at Anglesea, N. J., and recently a living imago had been sent to him from that place.

Mr. Rehn also reported the species from Atlantic City, N. J.

HENRY SKINNER, *Recorder*.

P. C S OCKHAUSEN, PRINTER 55 N 7TH ST. PHILADELPHIA

DECEMBER, 1905.

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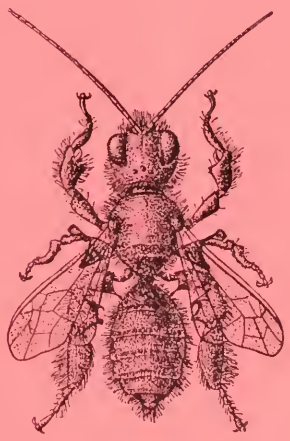

Cryptohalictoides spiniferus Viereck.

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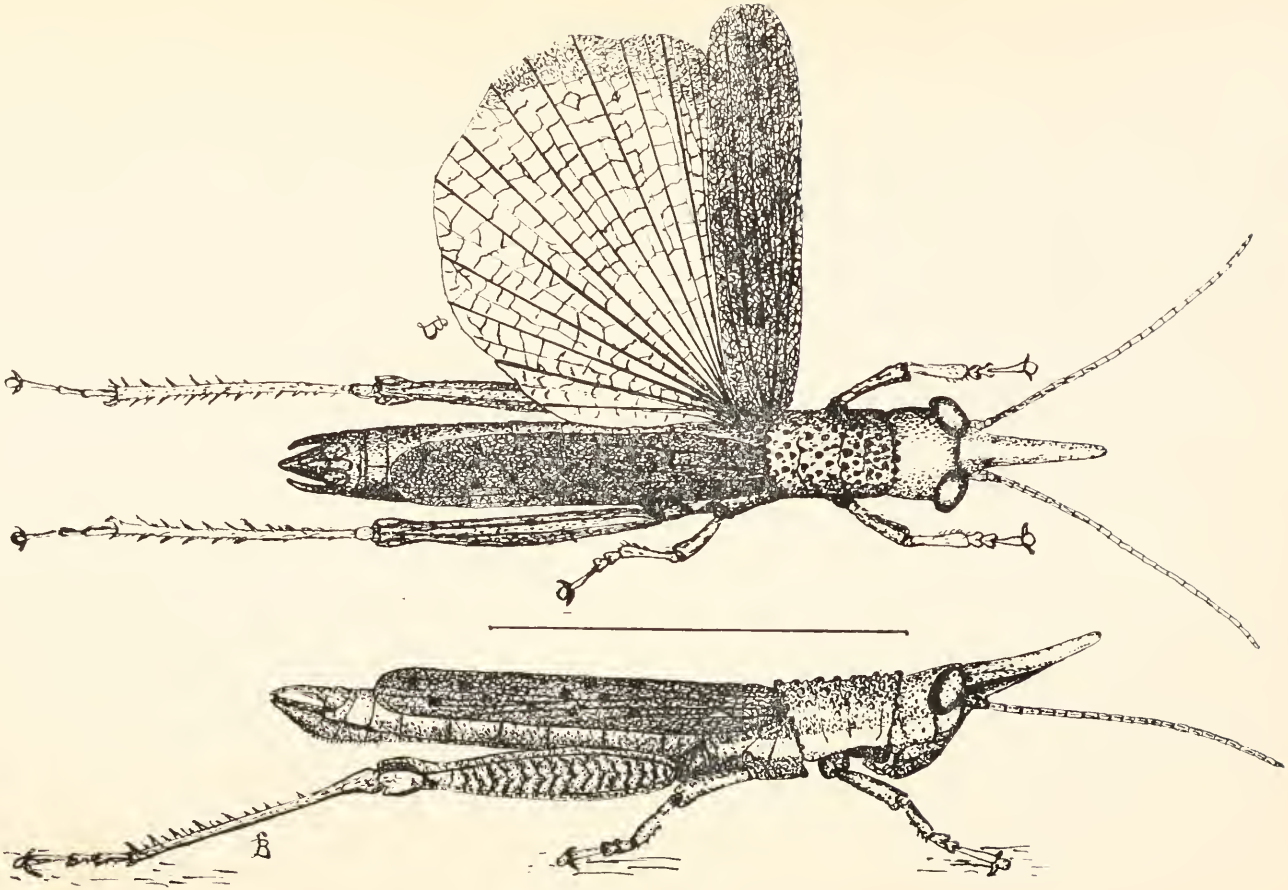

SCOLOCEPHALUS MIRABILIS BRUNER.

ENTOMOLOGICAL NEWS

AND

PROCEEDINGS OF THE ENTOMOLOGICAL SECTION

ACADEMY OF NATURAL SCIENCES, PHILADELPHIA.

VOL. XVI. DECEMBER, 1905. NO. 10.

CONTENTS:

Two Remarkable New Costa Rican Locusts.

BY LAWRENCE BRUNER, University of Nebraska.

(Plate XI)

While working over the material that has been amassed for the purpose of preparing the manuscript for that portion of the Biologia Orthoptera dealing with the locusts or short-horned grasshoppers, a number of very interesting forms have been encountered. From among these, two have been singled out as being unusually remarkable.

Since preparing the table for separating the subfamilies of these insects that were known at the time to be represented in the territory covered by that great work, an additional subfamily for North America has come to light. This occurred among some very interesting things that were taken in southern Costa Rica, a region which, if carefully explored, would no doubt add to our Central American fauna many striking forms of Acrididæ belonging to South American genera, as well as those indigenous to the region itself. It is too bad therefore that no more careful field work has been done in the way of amassing material belonging to this greatly neglected family in that sec-

tion of country. Most collectors appear to be but little interested in the various locusts or short-horned grasshoppers as they occur in localities being worked, but rather take to collecting the more brightly colored katydids and their allies. Only a specialist, and one thoroughly trained in tropical collecting, would seemingly succeed in bringing together the greater percentage of locusts that are to be found in those rich but difficult regions to work.

Family PROSCOPIDÆ.

Genus **TAXIARCHUS** Brunner.

Taxiarchus septentrionalis sp. n.

Size large. General color dirty olive brown, the only variation from this being faint indications of darker mottlings on the hind femora which tend to cluster so as to form obscure bands on the basal half. Prothorax quite coarsely and evenly granulate, the lower surface as well as top and sides being thus modified. The only exception to this kind of surface over this portion of the insect's body is a narrow, even, smooth strip on the sternum which extends from the base of the front legs to the back edge of the prosternum. In the male this smooth portion is lowered or sulcate and has the appearance of being bounded by broad low carinæ. The surface of the meso- and metathorax is also granular, but to a less degree than that of the prothorax, while their sterna are almost smooth. The sides of the mesopleura while not crenulate, as indicated in Brunner's diagnosis of the genus, suggest a trace of such a characteristic to a sufficient degree to permit of its being placed here. Anterior legs with the femora about two-thirds as long as, and arising a little back of the middle of the prothorax. The hind pair moderately heavy; the tibiæ strongly bowed, considerably longer than the femora, and having 19 or 20 spines in the outer row.

Length of body, ♀, 147 mm.; ♂, 72 mm.; of head, ♀, 20 mm.; ♂, 12 5 mm.; of fastigium, ♀, 3 mm.; ♂, 2.20 mm.; of pronotum, ♀, 37 mm.; ♂, 19 mm.; of anterior femora, ♀, 22.5 mm.; ♂, 10.5 mm.; of hind femora, ♀, 50 mm.; ♂, 24 mm.; of hind tibiæ, ♀, 54 mm.; ♂, 26 mm.

The above description is based on two specimens, a male and a female, which were collected during the month of June at Pozo Azul, Costa Rica, by M. A. Carriker. He told me that they were found on the trunk of a tree where they were so well protected by their color that they were only accidently discovered. Thinking at the time that they were Phasmidæ he did not make a search for others.

Genus **SCOLOCEPHALUS** nov. gen.

This genus of locusts is at once characterized by the spike-like prolongation of the vertex in front of the eyes, by the wide parallel-sided tegmina, the large fan-shaped wings, and the cylindrical strongly tubercled pronotum. It is further differentiated by the long, heavy antennæ, the broadly concave meso- and metasternum, and the long slender abdomen, all of which characters are well shown in the accompanying dorsal and lateral views of *Scolocephalus mirabilis* which is described herewith.

Scolocephalus mirabilis n. sp. (Plate XI.)

Dark brownish olivaceous, varied on cheeks below the eyes, lower portion of sides of pronotum and pleura with a rather wide testaceous band. Inner face of hind femora deep blood-red. Tegmina dark olive brown, the veinlets paler, and the surface faintly and irregularly maculate with dull fuscous markings. Wings dark chrome yellow, the apex somewhat infuscated. Hind tibiæ internally and inner gena of femora black, the outer face dirty olive brown. Pectus and venter yellowish, the abdomen above, especially apically and at the apex of segments, dull olivaceous. Eyes æneous.

Head large, a trifle broader than the front edge of the cylindrical pronotum ; occiput moderately elongate, smooth ; vertex between the eyes about as wide as the shortest diameter of one of them, and provided with a transverse ridge composed of three coalescing tubercles, just in front of this suddenly depressed and giving to the anterior part of the vertex the appearance of being separated from the fastigium. The latter greatly attenuate, rounded and nearly regularly tapering as shown in the illustrations, the sides gently undulate or sinuous, and provided with two series of small acute tubercles ; the extreme apex rounded. Frontal costa linearly produced to the apex of fastigium, near the base furcate and sulcate to the ocellus, obsolete below this. Face from base of antennæ to clypeus short, the lateral carinæ straight, gently diverging, considerably longer than the cheeks below them. Pronotum cylindrical, rough as well as punctate, without carinæ, the anterior and posterior margins broadly rounded and studded with large blunt tubercles as is also the most of the intervening surface ; hind lobe about half as long as the anterior one. Tegmina and wings considerably shorter than the abdomen, but a little surpassing the tip of the hind femora, the former broad, with straight veins, parallel edges and broadly rounded apex ; the latter short and broad with few irregular veinlets. Hind femore elongate, but gently inflated and only slightly attenuated apically, the pinnæ on the outer face somewhat irregular ; tibiæ hairy, rather deep on basal, gently bowed inwardly and more slender on apical half, outer edge seven spined, the

two upper ones small, the apical one present and nearly as long as the others. Hind tarsi long and slender, the first and second joints subequal in length. Tip of abdomen very gently enlarged, the last ventral segment acuminate and in the middle carinate, the apex entire; supra-anal plate scutellate on basal half, attenuate and bent gently downwards on apical half; cerci long and slender, directed backwards and bowed inwards distally. Mesosternal lobes with their inner edges rounded and about one-half as widely separated as the width of one of the lobes. Prosternum long, the spine located near its front edge, short, blunt and directed gently to the rear.

Length of body, ♂, 54.5, of antennæ, 21.5, of fastigium, 9.75, of pronotum, 8, of tegmina, 27, of hind femora, 19 millimeters.

Habitat.—Taken at Pozo Azul, Costa Rica, Central America, in June, by C. F. Underwood. (Collection of L. Bruner.)

From the general appearance of the insect, its somber color, its gently concave breast, the long and slender tarsi and strong claws, etc., it is surmised that it has the habit of clinging to the stems of plants in shady places. The female is without doubt much larger, and is apt to have peculiar modifications of the ovipositor.

A Review of a Review.

By Henry Skinner.

Dr. Dyar, in the Journal of the New York Entomological Society, p. 207, December, 1905, devotes eleven lines and three words to telling the readers of the Journal what he knows about a supplement * published by myself. He says: "*It is somewhat bristling with typographical errors and blunders, but we are used to that sort of thing from Philadelphia.*" The Washington editor of the New York Journal could have used the space to better advantage by pointing out those blunders and the entomological world would have been the gainer thereby. Review by innuendo is of no use to anyone except to vent spleen. I don't know whether the words "*but we are used to that sort of thing from Philadelphia*" is a gratuitous insult to me or to all the Philadelphia entomologists, including the illustrious dead. Now Dr. Dyar has been laboring under a hallucination in relation to what he is pleased to call my position in regard to

* A Synonymic Catalogue of North American Rhopalocera. Supplement No. 1. By Henry Skinner.

up-to-date genera. He says, "*it is easy to stigmatize what one will not take the trouble to understand.*" I have very carefully studied these up-to-date genera and also those proposed in the last thirty years and that is the reason I have not adopted them. If anyone familiar with the Hesperidæ will consult Dr. Dyar's review of the family* he will find generic fantasies to satiation, and will also see that in many cases the species in a given genus are more nearly related to species in other genera than they are to each other. Several examples of generic fantasies will suffice. The species *manataaqua* Scudder and *cernes* Bdl.-Lec. are so close that it is not unlikely that they are forms of one species, yet the former is placed in the genus *Limochroes* and the latter in *Thymelicus*, and these two genera are separated in his review by SEVENTEEN other genera. Associated with *manataaqua* are *arpa*, *palatka* and *dion* which are not closely related to it. The pinnacle of fantasy is illustrated by the following: Thirty-four years ago Mr. Scudder proposed the genus *Atrytone* without description, and cited as the type *iowa* Scudder (*arogos* Bd.—Lec). Dr. Dyar in his review erects the genus *Anatrytone* and places the type of *Atrytone* among the four species in his new genus and considers them congeneric. The species he places under *Atrytone* are not congeneric with the type. The so-called up-to-date genera are replete with this sort of thing, but space forbids dilating on it further. Dr. Dyar is sure of one man who won't swallow up-to-date genera on the imputation that he has never studied them.

The 'Biologia Centrali-Americana.'

[Those interested in the entomology of the United States, especially of their southern portions, will inevitably have their attention attracted more and more to the insect-fauna of Mexico and Central America. As entomological exploration of the region to the north of the Rio Grande and the Gila progresses, the greater will be the number of species found to be common to the United States and to Mexico. Although every writer, in the great series of volumes whose general title is that

* Journ, New York, Ent. Soc. XIII. III. 1905.

of this article, lays emphasis on the incompleteness of his contribution, there can be no doubt that the 'Biologia' will for all time be a, if not *the*, principal source of knowledge on the subject of which it treats. It has therefore seemed to the Editors of the NEWS desirable to present to our readers, and to place on record in a more permanent way, some of the historical and other information contained on the temporary paper-covers and prospectuses of the original parts in which the work has been issued. In doing so the Editors are greatly indebted to Mr. G. C. Champion, secretary of the 'Biologia.' They are aware that much of what follows can be found in one or another of the volumes cited, but they also do not forget that the majority of the readers of the NEWS are prevented from examining these tomes by distance from the larger libraries. The necessarily high cost precludes most private persons from possessing such a magnificent set of books.—P. P. C.]

The full title is "Biologia Centrali–Americana; or, Contributions to the Knowledge of the Fauna and Flora of Mexico and Central America. Edited by F. Ducane Godman and [until his death in 1898] Osbert Salvin . . . . . London: Published for the Editor by R. H. Porter, 7 Princes Street, [earlier 10 Chandos Street] Cavendish Square, W., and Dulau & Co., Soho Square, W."

The temporary covers of the earlier parts bear a prospectus; we quote from a cover of July, 1884:

"Under this title [Biol. Cent.-Am.] it is proposed to publish a series of Quarto Volumes upon the Fauna and Flora of Mexico and Central America—*i. e.* the whole of Mexico from the valleys of the Rio Grande and Gila on the north; the five Central-American States of Guatemala, Honduras, Salvador, Nicaragua, and Costa Rica; British Honduras; and the Colombian State of Panama as far south as the Isthmus of Darien.

"During the past twenty-two years [*i. e.* since 1857, see below] the Editors have been collecting materials for such a work as they now propose. They have themselves* visited parts of the country, and spent several years there; and during the whole of the above period they have received collec-

* Details are given in the Introductions to Vol. I of the Rhopalocera and Vol. I of the Birds by F. D. Godman.—EDS. NEWS.

tions from correspondents, and from naturalists specially employed in visiting many of the previously unexplored districts. The materials thus obtained have been partly retained by the Editors in their own Collection, and partly so distributed as to be most readily available for the present work. In addition to these materials, the Editors propose that all specimens obtained by other travellers should be examined, wherever they may be accessible so as to make the work as complete a record as possible of what is known of the Animal and Vegetable life of the country under investigation.

"The work will be issued in Zoological and Botanical Parts. Those relating to Zoology will contain portions of several subjects. When the work is closed each subject will be complete in itself; and the whole will form a series of volumes of various thicknesses, according to the extent of each subject. The Botanical Parts will contain no other subject.

"Each Zoological Part will contain twelve sheets (or 96 pages) of letterpress, and an average of six plates, most of which will be lithographs coloured by hand.

"Each Botanical Part will also contain twelve sheets of letterpress and an average of six plates, a few of which will be coloured.

"As it is proposed to include all the materials that may come to hand during the progress of the work, it is not possible to give an exact estimate of its extent; but it is believed that it will not much exceed 60 Parts, equivalent to *about 12 Volumes of 500 pages each, of Zoology* * and 20 Parts of Botany."

A prospectus issued with Part 73, in February, 1889, states "The issue (in Parts) . . . . . was commenced in September, 1879, and has been continued to the present time . . . . . The materials for this work have been gradually accumulated since the end of the year 1857; but during the past nine years, since the publication was commenced, the accessions in all branches of Zoology have been very great, so that the extent of the work has been largely increased. To give an idea concisely of what has been already done in the Insecta alone: the number of species of various orders examined and catalogued nearly reaches 15,000; of these upward of 7500 have been

* The italics are ours.—EDS. NEWS.

described in this work for the first time, and a very large number of them have been figured." This same prospectus announced a contribution to the Archæology of Central America—Mr. A. P. Maudslay on the chief Indian remains of Guatemala.

Part 187 was issued in March, 1905; with it the 'Biologia' had made the following progress. Completed were:

ARCHÆOLOGY.

Five volumes, A. P. Maudslay and J. T. Goodman, 386 pages, 392 plates, 1889-1902.

BOTANY.

Five volumes, W. B. Hemsley, 2517 pages, 110 plates, 1879-1888.

ZOOLOGY.

Mammalia, one volume, E. R. Alston, 240 pages, 22 plates, 1879-1882.

Aves, four volumes, O. Salvin and F. D. Godman, 1689 pages, 84 plates, 1879-1904.

Reptilia and Batrachia, one volume, A. Günther, 346 pages, 76 plates, 1885-1902.

Terrestrial and Fluviatile Mollusca, one volume, E. von Martens, 734 pages, 44 plates, 1890-1901.

Arachnida, four volumes, O. P. Cambridge, F. O. P. Cambridge, R. I. Pocock, and O. Stoll, 1099 pages, 126 plates, 1886-1905.

Coleoptera, thirteen volumes, 6648 pages, 254 plates, as follows:

Adephaga, H. W. Bates, 1881-1884, and D. Sharp, 1882-1887.

Pselaphidæ, etc., D. Sharp, A. Matthews, and G. Lewis, 1887-1905.

Pectinicornia and Lamellicornia, H. W. Bates, 1886-1890.

Serricornia, C. O. Waterhouse, G. H. Horn, G. C. Champion, 1882-1897.

Malacodermata, H. S. Gorham, 1880-1886.

Heteromera, G. C. Champion, 1884-1893.

Longicornia and Bruchides, H. W. Bates and D. Sharp, 1879-1886.

Phytophaga, M. Jacoby, J. S. Baly, and G. C. Champion, 1880-1894.

Erotylidæ, etc., H. S. Gorham, 1887-1899.

Hymenoptera, three volumes, P. Cameron and A. Forel, 1092 pages, 34 plates, 1883-1900.

Lepidoptera: Rhopalocera, three volumes, F. D. Godman and O. Salvin, 1315 pages, 113 plates, 1879-1901.

Heterocera (excl. Micros), three volumes, H. Druce, 1144 pages, 101 plates, 1881-1900.

Diptera, three volumes, C. R. Osten Sacken, S. W. Williston, J. M. Aldrich, W. M. Wheeler, A. L. Melander, and F. M. van der Wulp, 1019 pages, 21 plates, 1886-1903.

Rhynchota: Heteroptera, two volumes, W. L. Distant and G. C. Champion, 914 pages, 61 plates, 1880-1901.

Homoptera, one volume, W. L. Distant and W. W. Fowler, 157 pages, 13 plates, 1881-1905.

Orthoptera, one volume, A. de Bormans, A. Pictet, H. de Saussure, and L. Zehnter, 468 pages, 22 plates, 1893-1899.

At the same date, March, 1905, there had also been published parts of other incompleted volumes, as follows:

Chilopoda and Diplopoda, R. I. Pocock, 56 pages, 5 plates.

Coleoptera: Rhyncophora, parts of three volumes, D. Sharp, G. C. Champion and W. F. H. Blandford, 952 pages, 38 plates.

Rhynchota Homoptera, parts of two volumes, W. W. Fowler and T. D. A. Cockerell, 349 pages, 21 plates.

Neuroptera, A. E. Eaton and P. P. Calvert, 144 pages, 5 plates.

Orthoptera, L. Bruner and A. P. Morse, 152 pages, 1 plate.

The totals of all that had been published to that date were as follows:

Subject	Completed Volumes	Incompleted Volumes	Pages	Plates
Archæology	5		386	392
Botany	5		2,517	110
Zoology	40	8	18,518	1041
Totals	50	8	21,421	1,543

Of the volumes devoted to Zoology 29 completed and 7 incompleted refer to Insects. These 36 volumes treat of the following numbers of species:

	Total Number of Species	New Species Described
Coleoptera	15,293	9,659
Hymenoptera	2,202	1,053
Lepidoptera	5,444	1,672
Diptera	2,320	993
Rhynchota Heteroptera	1.700	870
" Homoptera	1,168	616
Orthoptera	877	310
Neuroptera	152	44
Totals (to March, 1905)	29,156	15,217

The following entomological subjects have not yet been started: Aculeate Hymenoptera and Neuroptera (other than Ephemeridæ and Odonata) for which no one, willing to under-

take them, has been found ; Microlepidoptera, undertaken by Lord Walsingham ; part of the Rhyncophora, undertaken by G. C. Champion and K. Jordan.

Our space limits do not permit us to give even a summary of the generalizations of the various authors. We can only mention that the general relations of the fauna of Mexico and Central America to others is especially treated in the Introductions by H. W. Bates to Vol. I, part 1, and Vol. V, D. Sharp to Vol. I, part 2, H. S. Gorham to Vol. III, part 2 and G. C. Champion to Vol. IV, part 1 of Coleoptera ; by F. D. Godman to Vol. I of Lepidoptera Rhopalocera ; and in several of the non-insectan volumes.

Most of the paper-covers of the original parts have announced that "The Editors will give, at the conclusion of the Work, an Introductory Volume, wherein the physical features of the country will be described and illustrated with maps." Mr. Champion informs us, however, that this has become doubtful, owing to the death of Mr. Salvin. In the present absence of such a volume, it may be mentioned that pp. 138–167 of Vol. IV of the Botany contain outlines of the geography and prominent features of the region.

Many of the contributing authors speak of the extent of the material which they have examined as "enormous." A first set of all specimens belonging to Messrs. Godman and Salvin, has, after completon of that part of the 'Biologia' concerned, been placed in the British Museum of Natural History. As stated in the NEWS for January, 1896, page 6, 61,800 specimens of Coleoptera had been received by the Museum from this source.

The 'Biologia,' a private undertaking, is thus well worthy of comparison with that other great English series of the late Nineteenth Century—the Challenger Reports, published by Government funds.

FIRST KATYDID.—Is that your daughter singing so sweetly in the next tree?

SECOND KATYDID.—Yes ; you see her legs were cultivated in Europe.
—*Life.*

List of Micro-Lepidoptera Taken in Hampton, New Hampshire.

By S. Albert Shaw.

The town of Hampton is situated in the southeastern part of New Hampshire, and borders on the ocean. In the eastern part is a large tract of sand hills and salt marsh, comprising one-fourth of the area of the town, the marsh being as level as any prarie of the West. The rest of the land near the coast is remarkably level, but further back is more rough, though there are no hills worthy of the name. The uplands are well wooded.

Most of my collecting has been done within five minutes walk of my home which is near the northern border of the above mentioned marsh land. No collecting has been done in the northern part of the town.

In the following list are quite a number of records new to New Hampshire and several new to New England as far as I know.

With a very few exceptions the identifications have been made by Mr. Kearfott and Dr. Dietz to whom I would render grateful acknowledgment for their kindness.

It is the intention of the writer to publish additions to this list as new captures are made and identified.

Glaphria sesquistrialis Hübner

Lipocosma fuliginosalis Fernald, vii, 9.

Hymenia fascialis Cramer, vii, 14.

Diastictis argyralis Hübner, v, 10; vi, 4; ix, 3.

Pantographa limata Grote-Robinson, vii, 21; viii, 9.

Sylepta obscuralis Lederer, vi, 24; vii, 7.

Evergestis rimosalis Guenée, vii, 17

Evergestis straminalis Hübner, vi, 13; viii, 20.

Nomophila noctuella Denis and Schiffermüller, viii, 10.

Phlyctænia tertialis Guenée, vi, 10; viii, 27.

Cindaphia bicoloralis Guenée, vii, 5; viii, 27.

Loxostege chortalis Grote.

Pyrausta orphisalis Walker, vii, 18.

Pyrausta fumalis Guenée, viii, 13.

Pyrausta fodinalis Lederer, vi, 20; vii, 8.

Pyrausta acrionalis Walker, v, 30; vii, 26.

Pyrausta insequalis Guenée, vi, 24; vii, 21, ix, 7.

Pyrausta funebris Ström, v, 30; vi, 20.

Eustixia pupula Hübner, vii, 9; viii, 3; ix, 9.

Nymphula icciusalis Walker, vii, 4 and 30.

Nymphula maculalis Clemens, viii, 5
Scoparia basalis Walk., vii, 5; viii, 24
Hypsopygia costalis Fabricius, vii, 7; viii, 8.
Pyralis farinalis Linnæus, vi, 21; vii, 23.
Herculia cohortalis Grote, vii, 9.
Galasa rubidana Walker, vii, 7 and 11.
Schœnobius unipunctellus Robinson, vi, 1.
Schœnobius tripunctellus Robinson, vii, 15.
Schœnobius forficellus Thunberg.
Crambus hastiferellus Walker, vi, 5; viii, 25.
Crambus girardellus Clemens, vi, 27; vii, 9.
Crambus bidens Zell , vii, 14 and 24
Crambus laqueatellus Clemens, vi, 11 and 21.
Crambus agitatellus Clemens, vi, 30; vii, 7; viii, 20.
Crambus albellus Clemens, vi, 13; vii, 20.
Crambus hortuellus Hübner, vi, 23; vii, 6; viii, 25.
Crambus perlellus Scopoli, viii, 4.
Crambus elegans Clemens, vii, 20; viii, 25.
Crambus vulgivagellus Clemens, viii, 20.
Crambus mutabilis Clemens, vi, 6; vii, 20.
Crambus trisectus Walker, vi, 6; vii, 7.
Crambus caliginosellus Clemens, viii, 1 and 20.
Crambus luteolellus Clemens, vii, 7; viii, 20.
Argyria nivalis Dru., vi, 29; vii, 20
Argyria auratella Clemens, vii, 19; viii, 5.
Galleria mellonella Linnæus, vi, 17
Acrobasis rubrifasciella Packard, vii, 9; viii, 6.
Mineola juglandis LeBaron, vii, 15
Salebria basilaris Zeller, vii, 7.
Epischnia boisduvaliella Guenèe, vi, 1 and 21.
Euzophera semifuneralis Walker, vi, 30.
Euzophera ochrifrontella Zeller, vi, 21.
Canarsia ulmiarrosorella Clemens, vii, 10,
Hulstea undulatella Clemens, vii, 3; viii, 3.
Homœosoma electellum Hulst, viii, 16.
Homœosoma reliquella Dyar.
Ephestia kuehniella Zeller, v, 21; vi, 1.
Peoria approximella Walker, vi, 19; vii, 15; viii, 3.

PTEROPHORIDÆ.

Platyptilia pervodactyla Walsingham, vi, 8.
Platyptilia marginidactyla Fitch.

TORTRICIDÆ.

Exartema zellerianum Fernald, vii, 20.
Exartema permundanum Clemens, viii, 8
Exartema fasciatanum Clemens, vii, 24; viii, 9.
Olethreutes nimbatana Clemens.
Olethreutes albeolana Zeller, v, 31; vi, 20; vii, 15; viii, 4.
Olethreutes interruptolineana Fernald, vi, 13
Olethreutes hemidesma Zeller, vi, 30; vii, 25.
Olethreutes osmandana Fernald.
Olethreutes auricapitana Walsingham, vi, 13; vii, 18.
Olethreutes coruscana Clemens, vi, 15 and 25.
Olethreutes constellatana Zeller, vi, 9 and 17.

Olethreutes agilana Clemens, vi, 9.
Olethreutes instrutata Clemens, viii, 19.
Olethreutes campestrana Zeller.
Eucosma albiguttana Zeller, vi, 22.
Eucosma juncticiliana Walsingham, viii, 1.
Eucosma solicitana Walker, vi, 15; viii, 25.
Eucosma strenuana Walker, vi, 15; viii, 20.
Eucosma illotana Walsingham, vi, 3, 14, 30.
Eucosma desertana Zeller, vi, 14.
Eucosma otiosana Clemens, vi, 17.
Eucosma pergandeana Fernald, vi, ii.
Eucosma similana Hübner, ix, 12.
Eucosma dorsisignatana Clemens, ix, 4, 7.
Eucosma minutana Kearfott, viii, 10
Thiodia radiatana Walsingham, v, 30; vi, 17.
Thiodia olivaceana Riley, viii, 1.
Thiodia ferruginana Fernald, vi, 1, 19.
Thiodia striatana Clemens, v, 30; vi, 9.
Thiodia signatana Clemens, vi, 15.
Thiodia rufusana Walker, ix, 1.
Proteopteryx deludana Clemens, vi, 3.
Proteopteryx costomaculana Clemens, v, 12, 30.
Proteopteryx spoliana Clemens, var. iv, 10, 30.
Proteopteryx nubeculana Fernald, MSS. v, 15.
Tmetocera ocellana Schiffermüller, viii, 1.
Ancylis mediofasciana Clemens, v, 10.
Ancylis nubeculana Clemens, vi, 12.
Ancylis subæquana Zeller, vi, 12.
Ancylis tundana Fabricius.
Ancylis laciniana Zeller, vi, 1.
Ancylis dubiana Clemens.
Ancylis comptana Frölich, vi, 11.
Ancylis angulifasciana Zeller.
Ancylis apicana Walker, vi, 12.
Ancylis tineana Hübner.
Enarmonia interstinctana Clemens, vi, 11.
Ecdytolopta insiticiana Zeller, vii, 3.
Hemimene simulana Clemens, vi, 18
Cydia pomonella Linnæus, vi, 6, 11.
Alceris effractana Frölich, v, 1900.
Alceris trisignana Robinson, iv, 4.
Alceris nigrolinea Robinson, x, 2.
Alceris brewsteriana Robinson, v, 10.
Alceris celiana Robinson, x, 28.
Alceris hastiana Linn. var. *maculidorsana* Clemens, x, 28.
Alceris hastiana Linn. var. *inana* Robinson.
Alceris viburnana Clemens, vii, 30.
Alceris ferrugana Schiffermüller, x, 31.
Alceris cervinana Fernald, iv, 12.
Epagoge sulfurena Clem., viii, 24.
Sparganothis puritana Robinson, vii, 14, 31.
Sparganathis xanthoides Walker, viii, 28.
Sparganothis irrorea Robinson, vi, 26.
Sparganothis violaceana Robinson, v, 23; vi, 3.
Archips rosaceana Harris, vii, 19; viii, 14, 16.
Archips purpurana Clemens, vii, 24; viii, 4.
Archips cerasivorana Fitch, vii, 4.
Archips argyrospila Walker, vii, 3.
Archips semiferana Walker, v, 30; vi, 25.
Archips fervidana Clemens, vii, 13.
Archips afflictana Walker, v, 16.
Archips clemensiana Fernald, vii, 9
Archips persicana Fitch, v, 19; vii, 7.

Archips virescana Clemens, vi, 16.
Tortrix quercifoliana Fitch, viii, 28.
Tortrix albicomana Clemens.
Tortrix peritana Clemens, vi, 7; ix, 1.
Eulia triferana Walker, viii, 13.
Eulia politana Haworth, v, 17.
Eulia velutinana Walker, v, 5; vii, 17.
Amorbia humerosana Clemens, vi, 5, 12.
Phalonia rutilana Hübner, vi, 26.
Phalonia seriatana Zeller, vii, 15.
Phalonia angulatana Robinson.

YPONOMEUTIDÆ.

Plutella maculipennis Curtis, vi, 26.

GELECHIIDÆ.

Metzneria lappella Linnæus, vii, 7.
Aristotelia roseosuffusella Clemens, v, 10; vii, 18; viii, 1.
Aristotelia rubidella Clem., vii, 9.
Aristotelia gilvolinella Clemens, vii, 9.
Recurvaria dorsivittella Zeller, iv, 4, 14.
Paralechia cristifasciella Chambers, iv, 14; v, 5, 27.
Trichotaphe alacella Clem. vii, 25.
Anorthosia punctipennella Clemens, vii, 18.
Ypsolophus ventrellus Fitch, vii, 15.
Gelechia trialbamaculella Chambers, vi, 6, 18.
Gelechia maculimarginella Chambers, vi, 11.
Gelechia pseudoacaciella Chamb.
Gelechia mediofuscella Clemens, iv, 30; vi, 2.

XYLORICTIDÆ.

Stenoma schlaegeri Zeller, v, 15; vi, 19.

ŒCOPHORIDÆ.

Cryptolechia quercicella Clemens, vii, 10.
Machimia tentoriferella Clemens, v, 22; ix and x.
Depressaria atrodorsella Clemens, iv, 15 to v, 15.
Depressaria pulvipennella Clemens, x, 20.
Depressaria argillacea Walsingham, viii, 24.
Depressaria fernaldella Walsingham, iv, 26.
Depressaria psoraliella Walsingham, v, 17.
Depressaria heracliana De Geer, x, 22.
Semioscopsis packardella Clemens, iv, 15; v, 2.
Semioscopsis allenella Walsingham
Dasycera newmanella Clemens, vi, 19, 22.

ELACHISTIDÆ.

Coleophora cæspitiliella Zeller.
Coleophora spissicornis Zell. vi, 8.
Cosmopteryx floridanella Beutenmüller, vii, 7, 18.
Cosmopteryx gemmiferella Clemens, vii, 18.
Elachista albapalpella Chambers, v, 3.
Scythris eboracensis Zeller, v, 17 to vi, 17.
Mompha eloisella Clemens, v, 23 to vi, 17.

TINEIDÆ.

Bucculatrix pomifoliella Clemens, vii, 17.
Lithocolletes oslensackenella Fitch, vi, 14.
Lithocolletes nemoris Walsingham, vii, 21.
Lithocolletes populiella Chambers, ii, 9.

Gracilaria belfragcella Chambers.
Gracilaria coroniella Clem , vii, 15
Gracilaria elongella Linnæus, vii, 15, 18.
Gracilaria negundella Chambers, xii, 2.
Gracilaria alchimiella Scopoli, v, 24.
Gracilaria burgessiella Zeller, var.
Tischeria citrinipennella Clemens, v, 13.
Argyresthia andereggiella Duponchel, vii, 1, 15.
Argyresthia goederlella Linnæus, viii, 1.
Tineola biselliella Hummel, vi, 26.
Tinea defectella Zeller, v, 25, 31.
Tinea fuscipunctella Haw., vii, 15.
Tinea granella Linnæus, x, 17.
Tinea pellionella Linn., vii, 15, 18.
Amadrya effrenatella Clem. vi, 26.
Adela purpura Walker, v. 4.
Pseudanaphora arcanella Clemens, vii, 6.
Pseudanaphora mora Grote, x, 11.
Ornix cratægifoliella Clem., viii, 16

Mimicry and Protective Coloration.

By Owen S. Paxson, Devon, Pa.

Having observed many instances of both in our common insects, my theory is midway between Darwin's and that of John Burroughs'. From observations around Devon I believe that protective coloration and mimicry have not the importance scientists have so generally ascribed to it, at least in the class insecta and relatives. They are only of use to the individual for long distances, comparatively speaking.

Take for instance *Vanessa antiopa;* if it is resting on the trunk of a cherry tree eating the exuding sap, its form blends perfectly with the bark. Now, if the insect remains motionless, it is utterly impossible to see the creature at a distance of one hundred feet or more. Even if the distance were shortened to twenty-five feet, I doubt if any person would see the insect. With birds or other animals, probably depending on this insect for food, it is different; anyone would think that their eyesight would be far keener than even those of the trained entomologist. They are alert and on the watch a great proportion of time, therefore, this sense could not help being much more perfectly developed. Suppose that *Vanessa* were a solid scarlet instead of its usual coloration, anybody and any animal could detect it at a much greater distance. If the insect mimicked nothing and was much sought after for food, look at its great danger of utter extermination. Instead of being seen at a comparatively short distance (twenty-five feet or even less), an

object so colored resting on the blackish bark would be revealed to all animals in a much larger area, and would naturally disappear more quickly.

I believe that the senses and feelings, with the acts that proceed from them, are identical in all animals whether men or insects. As an example, I mean that when I once discover a certain insect, I continue to see and find it with greater ease in exactly the same situations in which I was once unable to detect it. This is owing to the fact that the eye is accustomed to the insect's blending perfectly with its surroundings, and can now separate it from these surroundings. Why should not animals be able to do the same thing? I believe they can, for their appetite is back of their being able to observe.

Last year I found several larvæ of *Papilio turnus* on the upper surface of a small tulip tree in the woods, and noticed that their bodies harmonized perfectly with the peculiar dark, bronze, metallic green. I doubt very much if I could have seen this insect at all when a short distance away, when the many leaves are considered and the darkness of the woods, together with this likeness. Even at a less distance than mentioned I could not have seen it if my eyes had not been accustomed to its form, characteristics, and surroundings, unless by accident or continued observation in one place.

The larvæ of many of the Saturniidæ have been practically invisible among the leaves of our common trees, although I knew they were present from the excrement on the ground. Surrounded by the multitudinous green leaves, varying so in light and shadow, their bodies certainly harmonize perfectly. Often have I seen the great resemblance of these larvæ to a rolled leaf, or a leaf overlapping another thus giving the appearance of a dark streak, or an imperfection. All of these conditions, when viewed from a distance, very often and strikingly appear like caterpillars. Now, if these characteristics were brought within a few feet of the observer, all the imperfections would be imperfections and nothing else; the peculiar conditions would vanish and we would only see the real insect. Distance certainly governs to a great extent the laws of protective coloration and mimicry.

A few days ago, while walking along a road, I came to a plant of evening primrose growing close to the roadside. The top was crowned with a number of its beautiful delicate flowers, one of which I noticed was of unusual appearance; on examining more closely I found *Rhodophora florida*, somewhat smaller than the flower, which had crawled into the partially closed corolla for protection and rest during the day. The limbal area of the fore wings was of a delicate yellow similar in every way to the petals of the blossom; this portion was the most conspicuous as the posterior end of the body protruded. The discal area and base were of a delicate pink, thus giving a similar effect of a partially wilted blossom. Driving or walking along the road, although not more than ten feet distant, I doubt whether any one would have seen the moth or even noticed the unusual appearance of the flower. Thus again I think that mimicry and coloration are only meant to protect the wearer from distant enemies.

Then the small spiders of varying colors to suit their habitat and *Phymata wolfii*, which secrete themselves in the crowns of the thistle, carrot, and milkweed, are totally invisible from a short distance, but as you get closer the individual soon takes definite shape in spite of its care in concealment, and its striking resemblance to the surroundings. One of these spiders recently attracted my attention; in color the abdomen was white, while the thorax was of a delicate green. As the latter was uppermost and protruded through the pedicels of the carrot, no doubt in this way it broke the solid white of the abdomen behind thus looking more like the object on which the spider rested. When seen it had come forth and tightly held a honey bee in its mandibles. Even after getting very close I could not see the creature, but the bee looked unnatural. Surely the object of all this great care, is to allow the prey to come within striking distance, when it becomes a question of which is the more agile, stronger or more alert.

The *Catocala* moths, resting during the day on the trunks of our forest trees, are invisible from any distance, but approach more closely and you will soon be able to discern their shape. They keep the hind wings covered, for if they did not, they would be like fire at night, for the contrast is as great. They

seem to know this for never is one seen on the bark with wings spread like a butterfly for any length of time.

With the Hymenoptera the conditions seem very different, for here they are protected by a sting or such contrivance; therefore, we have them moving about fearlessly and not seeking cover.

The Diptera are as a rule very quick on the wing: they that are not, no doubt have some protection, while a few mimic bees or wasps thus escaping injury or being able to accomplish more easily some mischief.

The Coleoptera are so well protected by the hard elytra and chitin that other characteristics seem unnecessary, excepting their wonderful running powers. Their flight is slow and even, and when in danger many rely on falling to the ground, when as a rule they quickly disappear.

Orthopterons have protection, like the katydid, in the grass and bushes; it being difficult to see them even at a short distance, unless in motion. Their wings are very remarkable for a close resemblance to the leaves. The walking-stick when motionless is another excellent example, and a better likeness could not be found. Many of the locusts also are wonderfully protected in their native haunts in the fields or even on the roads; this is the case with *Dissosteira*. This protection is all right until you approach too closely, for then the insect seems to know that it is valueless and immediately flies away. In this order, the Diptera, and very often but not always in the Hymenoptera, great alertness and rapidity play an important part.

The Odonata are exceedingly conspicuous in their natural haunts; even when resting they still remain so. With these insects, phenomenal swiftness in flying no doubt protects them as much as those favored with mimicry. Great alertness also goes hand in hand with their other trait.

Thus, with the insects, some are gifted with mimicry or protective coloration, while others are not so favored. From my observations it appears that only the weak and slow forms have these traits, while they that have some formidable weapon or characteristic move about with apparent impunity at all times. Of course there is great danger to all, but whichever defense they possess answers the purpose admirably, as all natural phenomena do.

A New Bee of the Genus Perdita From Texas.

By T. D. A. Cockerell.

Perdita xanthismæ n. sp.

♀.—Length a little over 5 mm; head and thorax dark shining green, with the light markings a very pale yellowish or ochreous; abdomen broad, deep honey-color, either without any distinct markings, or with brown sublateral spots on the segments, connected by obscure nebulous bands. Tongue long; first joint of labial palpi long, about or nearly twice as long as the other three combined; maxillary palpi 6-jointed; mandibles, labrum, clypeus, lateral face-marks (broad below, ending in a five point on orbital margin a little above level of antennæ), dog-ear marks, and a small transverse supraclypeal mark (sometimes evanescent) all light yellowish; cheeks simple, very hairy; front shining; antennæ a sort of pale orange, flagellum dark brown above except at tip; thorax with much white hair; mesothorax shining; upper margin of prothorax, and tubercles, light yellowish, below this the prothorax is mainly brown; pleura dark; tegulæ hyaline; wings rather milky, stigma and nervures colorless; second s. m. rather large, nearly an equilateral triangle, a little cut off at the top; second r. n. distinct, meeting second t. c.; femora dark except at apex; tibiæ and tarsi light yellowish, the tibiæ more or less darkened; claws simple. The first abdominal segment may be brown with a light band, interrupted in the middle.

Hab.—Goldthwaite, Texas, September 4, 1905, at flowers of *Xanthisma texanum*, D. C., collected by Mr. J. C. Crawford, who states that the species is found in various parts of N. Texas.

The following table separates the above species from those which most resemble it:

Vertex and mesothorax nude; very small species; face-markings white in ♂, none in ♀ . . . . . **semicrocea** Ckll.
Mesothorax more or less hairy, usually strongly so . . . . . 1.
1. Anterior femora yellow; males . . . . . 2.
Anterior femora dark, or mainly so . . . . . 3.
2. Nervures brown; face bright yellow . . . . . **rhodura** Ckll.
Nervures colorless . . . . . **sidæ** Ckll.
3. Stigma with a brown margin; abdomen bright apricot-color. **chamæsarachæ** Ckll.
Stigma with no brown margin; abdomen not so brightly colored . . 4.
4. Face-marks white, lateral marks not attenuated above (Arizona). **mellina** Ckll.
Face-marks light yellowish, lateral marks attenuated above. **xanthismæ** Ckll.

ENTOMOLOGICAL NEWS.

[The Conductors of ENTOMOLOGICAL NEWS solicit and will thankfully receive items of news likely to interest its readers from any source. The author's name will be given in each case, for the information of cataloguers and bibliographers.]

To Contributors.—All contributions will be considered and passed upon at our earliest convenience, and, as far as may be, will be published according to date of reception. ENTOMOLOGICAL NEWS has reached a circulation, both in numbers and circumference, as to make it necessary to put "copy" into the hands of the printer, for each number, three weeks before date of issue. This should be remembered in sending special or important matter for a certain issue. Twenty-five "extras," without change in form, will be given free, when they are wanted; and this should be so stated on the MS., along with the number desired. The receipt of all papers will be acknowledged.—ED.

PHILADELPHIA, PA., DECEMBER, 1905.

One way and another we are confronted by the question of the policy of this journal. We realized the fact that we had different classes of subscribers, from the professional entomologist to the simple lover of nature, who may not even know one scientific name from another, and it has been our aim to be of use to all our subscribers. We not infrequently get letters like the following:

"Most of us would dearly like to have no work but entomology, and thus have time for all the reading and researches we want. I had a letter a few months ago from a woman in a small village. She said she was elderly, a widow, had brought up four children by going out sewing and her one amusement was collecting butterflies and moths and learning what she could of them. One of the ladies had given her an "Outlook" with a moth article of mine. She said 'I never knew before that anyone had written about such things'. She asked me to tell her of books and magazines which she could buy, as she had money saved and said: 'You don't know what it is to me to think of finding books to help me. I have been just starving for them.' To such a person the NEWS is a treasure-trove, and I hope it will keep to the popular side. For twenty-five years she had kept at her collecting without knowing the name of one species! It was as pathetic a bit of life as often comes in my way." This woman is now a reader of ENTOMOLOGICAL NEWS.

Notes and News.

ENTOMOLOGICAL GLEANINGS FROM ALL QUARTERS OF THE GLOBE.

At the annual meeting of the Entomological Society of Ontario held in October last, Professor T. D. A. Cockerell, of the University of Colorado, was unanimously elected an honorary member.

Mexican Flies in the United States.—During the past season I have taken two species of flies around Washington hitherto known only from Mexico. One is a yellowish-red ant-like Ortalid—*Cyrtometopa* (*Odontomera*) *ferruginea* Macq. It rests on the leaves of low shrubbery in June, July and August. The other fly—*Cordyligaster minuscula* Van der Wulp—is a Dexid with a clavate body, and the anterior part of wings fuscous. It was taken only twice, in July, and was at rest on the leaf of a small tree. I have also taken it at Shreveport, La.—Nathan Banks.

The Association of Economic Entomologists will hold its annual meeting in New Orleans in conjunction with the American Association for the Advancement of Science, convening for the first session on Monday forenoon, January 1st. Place and exact time will be announced in the preliminary program. It is expected that the sessions will continue for three days.

A preliminary program will be issued immediately after December 10th, containing the titles of all papers received up to that time. The secretary hopes that all members intending to present papers will send in their titles by December 10th.—H. E. Summers, Iowa State College, Ames, Ia.

Dr. Dyar fails entirely to reach the point of my inquiry in the November number of Ent. News. I wish very much to learn in what parts of the country stemmed cocoons of *Telea polyphemus* are the rule; in what parts they are equally common with the stemless form; in what parts they are not reported.

I think, but I have no copy of the Ent. News at hand, that I made no statement that the "fact" of *polyphemus* cocoons with stems was "new," but that I had never found one, had never seen one until a certain time.

Dr. Dyar should remember that comparatively few of the hundreds who study insects have large entomological libraries at their command, in daily reach as it were, and cannot afford to subscribe to all the periodicals dealing with the subject. Many of us have duties which prevent our spending hours in searching for what we want in a library which may be several miles away.

I think that many of us had supposed that a "popular" magazine like the Ent. News was intended to be of service in just such ways, as well as to give us whatever absolutely "new" and original papers were offered to it. If this is not the case it will be very easy for the Editors to say so. —Caroline Gray Soule.

THE Cambridge Entomological Club held an exhibition of insects on Wednesday, Thursday, Friday and Saturday, November 1, 2, 3, 4, at the rooms of the Appallachian Mountain Club in the Tremont Building, 73 Tremont, corner of Beacon Street, Boston. The exhibition was similar to that of last year, illustrating the insects of the neighboring country, life histories, variation, insect injuries and other matters of general interest. The exhibit was in charge of W. D. Denton, C. W. Johnson and J. H. Emerton.

THE MIGRATIONS OF BUTTERFLIES.—The great flights of butterflies, which flutter by millions along some rivers in South America, have been described by several travelers in the Amazon valley, but according to a writer in the *Revue Scientifique*, no one has yet succeeded in accounting for them satisfactorily. An account of some recent observations, abstracted from *The Bulletin* of the Para Museum, appears in the former periodical (May 20). Says the writer :

"The migrations of birds are well known, but those of butterflies do not appear to be so generally recognized. M. Goeldi, the director of the museum at Para, Brazil, gives some information about such migrations in the Amazon valley, which are positively huge. The author states that he was deeply impressed in 1870 by a migration of this kind, lasting nearly an hour, which he witnessed in Switzerland, near Lake Neuchatel. This was composed of an enormous number of individuals of *Pieris brassica*. These pierides also made up the flight of butterflies in the Amazon valley.

"Such flights have been noted several times, especially by Bates, by Spruce (in 1849), and also in an old Brazilian chronicle in 1615. But some of the authors declare that the flights were southward and others that they were northward. M. Goeldi has reconciled these stories; he followed, on the Rio Capim, a flight of these myriads of butterflies, and showed that the direction varied with the period of the journey.

"The flights were composed exclusively of pierides, of which about 99 per cent. were *Catopsilia statira* and the rest almost entirely *Eurema albula*. Goeldi took instantaneous photographs of the butterflies, of which one is very interesting since it represents a passing irregularity in the disciplined order of their flight; in certain places columns are detached, make a detour, and rejoin the main body later, after describing a sort of circle.

"The excursionists who thus detach themselves temporarily, also do so to direct their course toward a leguminous tree of frequent occurrence on the banks of the Rio Capim. It is called in Brazil the arapary. . . . This tree at the time of the observed migrations (July-August) is in flower, and the blossoms, though not visible to a great distance, give out an intense perfume. The flower has a nectary to which the insects resort to get the juice. It is always in the neighborhood of these trees that the butterflies make their detours. The trees are very characteristic of the river-banks of the Amazon basin, and must offer a highly prized

food to the pierides of the region, which perhaps do the tree a service in aiding its pollinization. But what is the cause of these immense flights—of these enormous assemblages that move in masses along the rivers? M. Goeldi does not attempt to explain them. Spruce thought that the flights were mostly of males and on the other hand that the migratory instinct of the females was to be explained by the necessity of seeking certain species of mimosas to lay their eggs thereon. But so far as we know, no one has advanced any satisfactory explanation of the reason why myriads of pierides should thus join in a common flight."—*Translation made for* THE LITERARY DIGEST.

New Haven, Ct., Aug. 4, 1905.

DEAR NEWS.—I trust that you will allow me space in your columns to call attention to a few good and bad features in the mechanical "make-up" or form of insect catalogues, check lists and monographs. Catalogues and lists are used not only by the specialist, but also by the general worker and amateur. Curators of collections, perhaps, are obliged to use them as often as anyone, and it is in their behalf that I would speak. I have just been examining Prof. J. M. Aldrich's Catalogue of North American Diptera, and have noted its many admirable features. The specific name in heavy faced type at the left margin of the page, with the references indented, is a convenient arrangement, and is found in Dyar's List of Lepidoptera, though in the latter numbers precede the specific names. The numbers are omitted from Aldrich's list, but except for those who exchange and write about species in numerical terms this is hardly an inconvenience, as the species are arranged alphabetically under each genus. The references, where each author's name begins a separate line, are certainly more convenient than when arranged as in Dyar's list, though not so economical of space. Localities printed on the right margin of the page, as in Dyar's list, certainly facilitates looking up the distribution of a species, and must be considered a good feature.

But one of the chief disadvantages of both books just mentioned is that the running titles at the tops of the pages give no idea of the contents of the pages under them, but are the titles of the book. Not so with Osten Sacken's catalogue, where only the name of the family appears at the top of each page.

From the usual arrangement, where the name of the institution or the title of the book is continued as a running title throughout the work, we find the other extreme in Mrs. Fernald's list of Coccidæ, where running titles are omitted altogether. Smith's Insects of New Jersey would be far more convenient for ready reference if the right-hand page gave as a running title the name of the order, if not the family, treated on that page. It is probably unnecessary that such a title be printed on both pages, and the ideal arrangement seems to be that found in the following works: Williston's North American Diptera; Saussure's American wasps; Cresson's North American Hymenoptera; Hagen's North American Neuroptera, and Leconte and Horn's Classification of North American Coleoptera.

In the following works the running titles are abbreviated forms of the names of the works, or at least give no more specific idea of the contents of the pages under them :

Dyar's List of Lepidoptera ; Smith's Check List of Lepidoptera ; Smith's Catalogue of Noctuidæ ; Smith's Insects of New Jersey ; Henshaw's List of North American Coleoptera ; Williston's North American Syrphidæ ; Aldrich's North American Diptera ; Ashmead's North American Proctotrypidæ ; Blatchley's Orthoptera of Indiana ; Scudder's Melanopli ; Hancock's North American Tettigidæ.

I am well aware that this may seem a very unimportant matter to the author of a catalogue or list, and also that in most cases the authors probably have nothing to say about it, but the printing is done according to the rules adopted by the institution or official department issuing the publications. Nevertheless, where one has occasion to look up several hundred references in a day, he finds these little matters of considerable value as guides. Without them he must depend largely upon the index.—W. E. BRITTON.

Entomological Literature.

NORTH AMERICAN PHYLLOXERINÆ AFFECTING HICORIA (CARYA) AND OTHER TREES. By Theodore Pergande. Reprinted from Vol. ix. Proceedings of the Davenport Academy of Sciences. Davenport, Iowa.

A contribution to these little-known insects of 89 pages, 21 plates. All the old species of these plant lice have been studied and twenty new species and varieties made known. An interesting account of the life history of one of the new species, *P. perniciosa*, is given, and is characteristic of the majority of the species inhabiting hickory. It is of great value to have such an excellent treatise on these obscure and little-studied insects. The author says : "since the species treated of in this paper comprise but a fraction of those inhabiting the United States there remains still a large field for fruitful investigation which may amply occupy the lifetime of those selecting it as a specialty."—H. SKINNER.

THE BUTTERFLIES OF THE WEST COAST OF THE UNITED STATES. Illustrated by 940 figures in Color-Photography of Butterflies from the West Coast, nearly all of which were captured by the Author, with accurate data for each specimen. With Colored Figures and Descriptions of many New Species and New Varieties. Now first Published. By William Greenwood Wright. The Whitaker & Ray Co., San Francisco. Price $4.00.

This is a very valuable contribution of 257 pages and 32 plates, with nearly 1000 figures, and the author is to be congratulated on getting out

such a valuable work, which represents his labors in this field for twenty-five years. The book is published in good style, the typography being excellent, and the half-tone work equal to any we have seen. This is somewhat marred by the faulty technic in setting the specimens and in many cases the specimens were in very poor condition. The first 30 pages are devoted to the general features of butterfly life, including rearing, collecting and preserving. The names of the authors of species and the generic names are omitted in the body of the book, and all specific names are capitalized. A valuable feature is the list of butterflies of the United States with the names of the coast species in black-faced type. There is also a list of new species and varieties published in this book and a list of some old species, generally unknown, herewith illustrated or described. Then follows the descriptive part of the work. The author has wasted some space in figuring trifling varieties, considered by most writers as synonyms. This sort of thing is shown in pl. 1, figs. 2 and 2b, 4 and 4b, 5 and 5b. The differences described in the text are not borne out by the figures, and any good collection of *sminthens* would show variations of far greater extent and more worthy of names. Figs. 4 and 5 are about as near alike as individuals get to be. This sort of thing reduces natural history to an absurdity. *P. magnus*, pl. 2, fig. 13, hardly warrants a varietal name. *Parnassius eversmanni* has been taken in some numbers in recent years in Alaska, and is so recorded in the literature. *Pieris ochsenheimeri* is a distinct species and is well figured in Romanoff's great work. It is not a form of *rapæ*. Figs. 112, *a*, *b*, pl. XII, are not *carpenterii* but *bremnerii*. *Carpenterii* is a form of *cybele*. Figs. 119, *a*, *b*, are not *bremnerii* but *rhodope*.

Some of the localities given are very vague and indefinite. This should not be, as the author was the collector. Central California is a pretty big place and so is Southern Arizona. The new species *Melitæa eremita* and *M. hermosa* are given these indefinite localities. We see no advantage in describing such things as pl. 20, fig. 181. Mr. Wright has described in *Melitæa* a number of aberrations which are common in the genus, but as they are figured, perhaps there is no harm done! Pl. 25, fig. 277*b* is not *Cœnonympha kodiak*, but is the common *californica*. Figs. 282, *a*, *b* are not *brenda* but are *ampelos*. Fig. 283 is not *pamphilius*. The figures on plate 26 of the *Chionobas nevadensis* group show the absurdity of making species out of them. They occur in many places in their ranges of territory and are not confined to the restricted areas given by Mr. W. H. Edwards. *Lemonias zela* ♂ and *cleis* ♀ are one and the same species. Pl. 27, fig. 322, *b*, *c* is not *Thecla spinetorum*. Pl. 28, fig. 347, *b* is *Chrysophanus hermes* Edw. and San Diego is the type locality. Figs. 352 and 353 on pl. 28 are the same species. *Lycæna monica* Reak. is a synonym of *cnejus* and came from the East Indies. The same may be said for *tejna* which is a synonym of *strabo* Fab. (see Streck. Rhop. et Het. Suppl., 3). Figs. 400 and 401 probably represent one species. 408*b*, *c* is not *Pholisora lena* but the common *Thymelicus garita*. 426 is

not *P. columbia*. 430 and *b* are both males. 431 and *b* and 432 and *b* are also males. *Agricola* and *nemorum* are badly mixed. Fig. 437 is not *Pamphila brettus* ♂ but is *P. phylæus* ♂. The female is *brettus*. 438 and *b* are *Pamphila phylæus* ♂ and ♀. Figs. 464 and 468 appear to be *funeralis* ♀. 469 is not *tristis* but *juvenalis* ♂. 480 looks like *icelus*.

With the west coast butterflies figured the entire territory of the United States is fairly well covered, and our knowledge of North American butterflies will make rapid progress. Progress is, however, not advanced by describing aberrations, geographical races, mutations, varieties, etc., unless they are accurately figured as they are in this book. We were delighted to see Mr. Wright's work, and our purpose in speaking of errors is to place the things correctly for the future.—H. SKINNER.

This, the first book to be published west of the Mississippi on butterflies, will mark an important epoch in the study of the butterflies of California, which will be commented on again, in a short sketch of the development of Californian entomology, which has been prepared by the writer.

Mr. Wright is, at present, the oldest living collector and student of Californian entomology, and this book represents, practically, his life-work.

The dedication to W. H. Edwards is very fitting, as marking the life-long friendship and mutual help.

The photo of the author, as the frontispiece, is a pleasant addition.

Originality of writing and of work and thought and to some extent the idiosyncrasies of the author are exhibited from the preface to the last page, which will be no doubt evident to the reader.

The spirit in which the book was written, to preserve what is known of the Californian butterflies and the life-work of the author, is to be commended. It only makes one more than lament the fact that Dr. Behr did not do the same thing.

To proceed to the main body of the work; most of the species are illustrated in the beautiful plates, and hardly need any further delineation, so the author takes advantage of this, and except in the cases of new species, the descriptions are brief or eliminated, and in their places interesting notes on habits, occurrence, etc., are given.

Now having shown the general excellence of the work, and the place it will take in future work, as a classic really, and the marking of a new epoch, we will proceed to point out the few errors which occur to us.

The comments on subspecies, varieties and aberrations are to the point, but the definition of a subspecies—as a geographical variation—is not brought out strongly.

The capitalization of specific names is against the rules laid down by the A. O. U. Committee on Nomenclature, but there is not any very serious harm done here by so doing.

In the part treating of the general biology of butterflies, of which forty-

five brief sections are given, the short and interesting diversions are instructive and pleasing, and are what might be termed *rafinesque;* where they discuss the subject theoretically they seem curiously uninformed, but where they reveal the personal observations of the author, they contain genuinely valuable material.

Twenty-nine new species and varieties are described, and fifteen others previously described, but which have been little known or ignored by previous writers, and here put on a firm basis.

Del Sud for a specific name was an unfortunate piece of work; the two words should be connected by a hyphen, and with a small *s*, or the two made absolutely into one word, which would be much better.

Lycæna icariodes and *dædalus* have certainly had more than their share of trouble at the hands of systematists, but their troubles are not over yet, as Mr. Wright has named both wrongly; the discussion will not be taken up here, as the writer is working on a revision of the group, which he hopes will straighten things out.

Lycæna maricopa probably refers to one of the preceding species.

Lycæna antiacis is wrongly identified, the one Mr. Wright has under this name being *polyphemus* Bd. *Antiacis* is only found on the sand hills near San Francisco, and is entirely distinct. It is neither figured nor described in this book, but is closely allied to the one figured as *mertila*, which is probably the same. The mistake is continued in the description of *behrii*.

Lycæna melimona described as new, is the same as *Lycæna emigdionis* described in Ent. News for last May; the latter has priority.

Pamphila chiaspa described as new is the same as *Pamphila tecumseh*, described from the high Sierras, in Ent. News, January, 1903; the last name has priority.

Pamphila errans probably never was taken in Yosemite; its record from there is a curious error which has crept in.* The species is an inhabitant of the sea-shore from Santa Barbara to San Diego, a few feet from the water. The larvæ feed on grasses.

The occurrence of *Megathymus neumoegenii* in Southern California is certainly a very interesting fact.

Nisoniades lacustra is the same thing as *Nisoniades callidus* described in Ent. News for April, 1904; the last name has priority.

The figures of *Thecla spadix* are very poor, or do not represent the species at all. It is difficult to tell what species is intended to be represented here.

Lycæna pheres is not named correctly; I am not positive yet what species is intended to be figured here.

The forms figured as *b* and *c* under *Lycæna shasta* are *Lycæna melimona* (*emigdionis*), forms of it probably. There must be a curious polymorphism here.

Heretofore, eastern men have discussed the position and natural his-

* Type collected by Dr. Dyar.—H. Skinner.

tory of our Californian butterflies, when, in fact, they positively have not had the least correct idea of things. In order to understand the nature of anything in California, a residence right here, in order to become thoroughly acquainted with things and the surroundings, is imperative. And I consider it a very fortunate thing for entomology that Mr. Wright has written this book, which in a measure is bound to open the eyes of eastern men and teach them how to look at things Californian.

This book will start a new epoch in which a new vigor will grow up, and not waver until the whole of California has been gone over carefully, the complete distribution of the butterflies worked out, and the complete life history of every single species described in detail and represented in drawings.—FORDYCE GRINNELL, JR.

Doings of Societies.

At the meeting of the Feldman Collecting Social of Philadelphia, held October 18, 1905, nine members were present. Mr. Beutenmüller and Mr. Kaber visitors.

Mr. Beutenmüller spoke of his work on the Cecidomyidæ, and stated that he has raised many new species of gall-flies this year. The same speaker told about his experiments with the chrysalids of *Vanessa antiopa* and *Grapta interrogationis*, which he had placed in a refrigerator, the former producing specimens like those from Alaska, and on the latter the markings on the under side of both wings were very much intensified. Mr. Beutenmüller also reported the capture of *Hypomolyx pineti*, taken on the summit of the Black Mountains on balsam (*Abies frazieri*).

Dr. Skinner spoke of the distribution of *Vanessa antiopa* and stated that the Pacific coast specimens are closely allied to the European form, and that they can only be distinguished from them by the band which is less irrorate in the European specimens. Dr. Skinner also spoke of chrysalids of *antiopa* which were sent to England by Dr. Fletcher, the same all emerging as the variety *lintneri*.

Mr. Haimbach exhibited some rare or at least little known Tortricids, among them being *Olethreutes hemidesma* taken near Perkasie, Pa., on June 18, 1905, *Eucosma adamantana*, Lucaston, N. J., *Thiodia offectalis* taken near Perkasie, Pa., June 18, 1905, *Gymnandiosana punctidiscanum* taken at Phila-

delphia, May 29th to June 11th, and two undescribed species, one from this city and the other from Anglesea, N. J.

Mr. Huntington reported capture of *Dipalta serpentina* taken at Lehigh Gap, July 14th.

Mr. Harbeck reported four species of *Chrysops* new to New Jersey list, *cursim* and *mitis* taken at Jamesburg on July 4th, *sequax* taken at Clementon and Ashland, and *brimleyi* taken at Clementon, May 30th, also *Tabanus astutus* Jamesburg, July 4th, which is the second specimen taken in New Jersey.

Dr. Skinner spoke of collecting insects after a hail storm and thought the collecting for Coleoptera on the ground might be good at such times.

FRANK HAIMBACH, *Secretary*.

A meeting of the American Entomological Society was held October 26th, Dr. P. P. Calvert, president, in the chair. Thirteen persons present.

Mr. E. Daecke said the normal eye maculation of *Chrysops*, consists of a band, the occipital border, then an arrow-head mark with a linear shaft, and three variable spots in front. The modification of the normal in different species was illustrated by sketches and the useful characters indicated. The eyes of the sexes were found invariably different in the species studied.

Mr. Matthews exhibited some rare and beautiful beetles from Japan and Brazil, in Riker mounts.

Mr. Rehn said he was working on the South Amercan Tryxaline genus *Orphuella*. He had one hundrd and fifty specimens for study, but failed to recognize more than one, or at best two, species from this material.

Dr. Skinner exhibited some new and rare beetles from Arizona.

Mr. Matthews reported finding many *Tenodera sinensis* on thorn (Cratægus) which they appeared to select. Dr. Calvert exhibited the Simplex net, which occupies a small space and is reasonable in price. It is made at Lake Forest, Illinois. Mr. Haimbach reported experimenting with the rapid drying of lepidoptera on the setting boards by placing them in an

oven. One lot came out in fine condition and another one incinerated; he had forgotten them. The value of the method in killing possible parasites was mentioned. Mr. Daecke reported having taken the following species of *Chrysops* in New Jersey during the last summer: *celer*, *fugax*, *amazon* (n. sp. allied to *callidus*), *niger*, *brimleyi*, *nigribimbo*, *plangens*, *callidus*, *montanus*, *delicatulus*, *pudicus*, *cursim*, *flavidus*, *indus*, *vittatus*, *univittatus*, *brunneus*, *obsoletus*, *mœchus*, *fallax*, *bistellatus*, *striatus*, *sequax*, *morosus*. These are new records.

HENRY SKINNER, *Secretary*.

Minutes of meetings of Brooklyn Entomological Society held at the residence of Mr. George Frank, 1040 Dekalb Avenue, Brooklyn, N. Y., February 2, 1905. Nine persons present. Mr. Charles W. Leng acted as chairman pro tem, in the absence of the regular officer.

Mr. Leng exhibited a series of specimens of the species of *Cicindelidæ* taken within one hundred miles of New York City and gave brief details of the life history of each including locality and date of capture. *C. unipunctata* had been taken in July, along the mountain drive at Plainfield, N. J., where it was secreted in holes at the side of the road, the head generally alone being visible. When alarmed it quickly retreated out of sight. *C. rufiventris* occurred in July at East Plains, ten miles inland from Barnegat, and *C. abdominalis* in July and August in the Pine Barrens.

Mr. Frank presented his paper upon the genus *Argynnis* with reference to the species *monticola var.* (a) *purpurascens*, *halcyone* and *rhodope* with specimens illustrating the same arranged in series, exhibiting gradations ranging from the extreme light form of *halcyone* to *monticola* and its variation *purpurascens* and thence shading to the dark form distinguished as *rhodope*.

March 2, 1905. Sixteen persons present, the president in the chair.

Mr. R. F. Pearsall read a paper upon the "Geometrid Genus *Venusia* and Included Species," accompanied by a series of specimens embracing *Venusia cambrica* and *comptaria* taken

in July in the Catskill Mountains, *V. duodecimlineata* taken in May at Las Plumas County, California, and *Euchoeca salienta* (n. sp.) Pearsall, taken in April in this locality and adjoining States. His investigations of the antennæ of *duodecimlineata* showed them to be unipectinate, while those of *cambrica* were bipecinate. He had therefore placed the former in a new genus to be designated as *Nomenia*.

The death of Dr. Alpheus S. Packard having been announced, after full expression by those present of the great value and scope of his scientific work, resolutions of regret and condolence were duly adopted.

April 6, 1905. Seventeen persons present, the president in the chair. Mr. Alois Van Pellenburg, of Brooklyn, was duly elected a member.

Mr. Zabriskie exhibited some sample trays of his own device containing phials for the arrangement, handling, preservation and easy examination of minute specimens in liquids, with detailed explanations of the methods employed by him in the construction and joining of the several parts. The phials contained a mixture of equal portions of Price's English glycerine and water with one drop of carbolic acid to an ounce of the liquid. The soft parts of specimens immersed in this solution, after fourteen years were still sufficiently pliable to admit of ready dissection. The trays could be conveniently handled, held in any position without displacing the phials, the contents of which could be plainly seen and each phial removed without disturbing the others.

Prof. Smith gave some details connected with his work in perfecting an entomological dictionary under the title of "Chips from the Glossary," showing the difficulties in nomenclature that had to be overcome, particularly as to the disagreement among various authors in the application of terms and the multiplication of technical expressions, and exhibited a number of drawings showing structural parts to be employed as an aid to the definitions given in the text.

May 4, 1905. Thirteen persons present, the president in the chair. The resignation of Mr. Pearsall as librarian was read and accepted with regret and also with thanks for his effi-

cient services for some years past, and Mr. Ernest Shoemaker was elected librarian in his stead.

Mr. William T. Davis related some interesting facts concerning his observations upon the diurnal flight and emergence from ponds of various species of water beetles, particularly the larva of a large dytiscid which, forsaking its native element, disported itself on a bright sunny day over a mat of moist leaves.

Mr. Pearsall stated that he had captured a number of *Cychrus viduus* under the rough bark of maples in the Catskill Mountains.

June 1, 1905. Seven members present, the president in the chair.

The Secretary reported the capture on May 10th, at sugar, of a specimen of *Catocala nubilis* and that he had in past years taken other specimens of this moth at about the same date, as well as *C. elonympha*, and subsequently obtained fresh specimens of these same species in July and August, which would seem conclusive proof that they were double-brooded. The Secretary further related a number of his recent experiences in hiving bees, among them, that of an exceedingly large swarm which collected about ten o'clock in a very inaccessible position some twenty feet from the ground on one of the small apical branches of a pear tree. Having but a few minutes in which to take a train, he hastily ascended the tree by a ladder, shook the entire swarm, so far as he could discover, into a large water beetle net and transferred it to a hive which was duly placed. When he returned, late in the afternoon, some eight hours afterward he found the swarm again in position on the tree, prepared to pass the night, the queen probably not having been secured, but having delayed flight until the re-assembling of the entire swarm could be effected, which enclosure within the hive had delayed until too late to secure a new habitation. As soon as the sun disappeared the branch was sawn off, carried down the ladder, with much effort on account of the great weight, but without dislodging a single bee, and the swarm successfully deposited in the hive.

ARCHIBALD C. WEEKS, *Secretary.*

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