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NEW SCOLIOIDEA.

BY NATHAN BANKS, EAST FALLS CHURCH, VA.

The following notes and new species apply to that section of the fossorial Hymenoptera, in which the pronotum reaches back to the tegulae. Ashmead transferred them to the Vespids, in a superfamily, but they have little affinity with them in most of their structure, and most authors still keep them in association with the other fossorial Hymenoptera.

PSAMMOCHARIDÆ

Priocnemis Schiödt.—This name should be used instead of *Cryptocheilus* in my table to genera (Journ. N. Y. Ent. Soc., 1911, p. 222). The type of *Cryptocheilus* is *C. annulatus* and in this species (which I have recently obtained) the hind tarsi have spines below on the last tarsal joint; thus *Cryptocheilus* will replace *Priocnemoides*, at least until this genus is divided.

Priocnemis semitincta, n. sp.—Similar to *P. arcuata*, but the wings are faintly uniformly tinged with yellowish, not darker at tip. The spurs are nearly as dark as the legs, and the second recurrent vein curved outward. The posterior margin of pronotum hardly angulate.

Length 8 mm.

From Las Vegas, N. Mex., 23rd July, 1902 (Oslar).

Priocnemis directa, n. sp.—Similar to *P. arcuata*, but the spurs are about as dark as the legs (pale in *P. arcuata*) and the hind margin of the pronotum is strongly angulate; the wings are coloured as in *P. arcuata* but the second recurrent vein is straight, not bent near tip as in *P. arcuata*.

Length 10 mm.

From Lee Co., Texas, Aug., Sept. (Birkman).

Priocnemis minorata, n. sp.—Similar to *P. conicus*, and runs to it in my table (Journ. N. Y. Ent. Soc., 1911, p.) but it has only about eight teeth on the hind tibia above (in *P. conicus* there are 10) and in this species the teeth are not nearly as long as the space

between them, while in *P. conicus* they are as long. This species is also much smaller. The wings are dark, but darker on tip than elsewhere; the basal vein curved, and the clypeus truncate.

Length 10 mm.

From Great Falls and Falls Church, Va., in April.

Priocnemis relicta, n. sp.—Similar to *P. germanus* but much smaller, and the legs more brown; the hind tibia has only about six teeth above, and these very weak (in *P. germanus* stronger and about ten present); the veinlet between the second and third cells is nearly straight and the second recurrent vein arises but little beyond the middle of the anal cell; clypeus hardly truncate.

Length 6 mm.

From Sea Cliff, N. Y., in September.

Psammochares georgiana, n. sp.—Black, except the abdomen which is entirely reddish; and the hind tibiæ and tarsi are also reddish, the latter with the tips of the points black. The third joint of the antennæ is not quite as long as the width of the vertex. The metanotum has a broad, deep, median furrow; the long spur of the hind tibia is about two-thirds the length of the metatarsus; and the third submarginal cell is no longer than the second, and with a very oblique vein on the outer side. The structure is very similar to *P. fuscipennis*, but the lateral ocelli are plainly nearer to the eyes than to each other; the abdomen has a compressed tip.

Length 12 to 14 mm.

From Bainbridge and Pomona, Ga., Sept. (Bradley), and Southern Pines, N. Car., June, Aug. (Manee).

Pseudagenia nanella, n. sp.—Bluish or purplish and black, clothed with whitish hair, dense on the clypeus; pronotum arcuate behind; metanotum grooved; abdomen polished; wings hyaline, venation black; third submarginal cell much longer than broad, its outer side very oblique; long spur on hind tibia nearly one-half the length of the metatarsus, latter not spined, with only very short, fine bristles. Similar to *P. architecta*, but uniformly much smaller, the face much more narrow, being as high as broad; antennæ less slender, the third joint but little longer than the fourth; and few if any long hairs above on the basal segment of the abdomen.

Length 6 to 7 mm.

From Sea Cliff and Ithaca, N. Y., Great Falls, Chain Bridge and Glencarlyn, Va., June to Sept.

SCOLIIDÆ

The true Scoliidæ are most easily recognized from all other families of this superfamily by the striated nature of the apical part of both wings. The strongly emarginated eyes also distinguish them, but some other forms have the eyes slightly emarginate.

SCOLIA

The species of *Discolia* have in the female a smooth macula on the sides of the second abdominal segment; it is less distinct in the male. Our species of this section known to me may be tabulated on colour marks as follows:

1. No pale marks on head or thorax; costal area, venation and the entire wing black.....2.
- Pale marks on head or thorax.....6.
2. Abdominal segments fringed with black hair; abdomen black at tip..3.
- Abdominal segments fringed with fulvous hair; abdomen reddish at tip.....4.
3. Broad, white bands on second and third segments, no spots on venter.....*bicineta* Fabr.
- White spots or band on first segment; bands on second and third segments more or less broken into two spots; two spots on second ventral segment.....*undata* Klug.
- Widely separated white spots on sides of several segments, sometimes only on third; no ventral spots; abdomen more elongate.....*guttata* Burm.
4. No yellow spots on abdomen, more than apical half reddish.....*hæmatodes* Burm.
- Yellow spots on third, sometimes also on fourth segment.....5.
5. Black hair above on fourth and fifth abdominal segments; second segment usually black.....*dubia*.
- Only reddish or yellowish hair on fourth and fifth segments; second segment more or less reddish (from Palmerlee, Arizona)..*thalia*, n. sp.
6. Abdominal segments margined with dark or black hair; second and third segments with yellow spots; wings and venation all black.....*nobilitata* Fabr.
- Abdominal segments fringed with fulvous hair.....7.

7. Venation dark, costal area (except base) black.....8.
 Venation largely yellow, costal area yellowish to the stigma.....9.
8. Large yellow spots on second segment, spots or bands on third and fourth..... *consors* Sauss.
 No yellow spots on second segment, which is reddish; spots or bands on third and fourth segments.....*amæna* Cress.
9. Abdomen reddish, with spots or bands of yellow on second, third, fourth and fifth segments; metanotum and head mostly reddish.....*ridingsi* Cress.
 Abdomen with second and third segments black, with separated yellow spots; metanotum and head mostly black.....*lecontei* Cress.

S. flavicostalis Cress. is probably the male of *S. lecontei*; *S. inconstans* Cress. runs to *S. lecontei* but has no spot on the second segment; *S. amæna* may be only a variety of *S. consors*.

Trielis hermione, n. sp.—Black, densely clothed with long white hair; that on the posterior margin of segments three to five black, on sixth and seventh segments all black hair. Clypeus white, with a median black spot reaching to the front margin; a small spot each side above clypeus near the eyes, and sometimes a median one below the antennæ, white; pronotum with white band above reaching back to the tegulæ, but each side is excised below before tip; band or spot on scutellum, and the post-scutellum whitish. Abdomen segments one to four with a white sub-apical band, narrowed in middle, the first sometimes interrupted; on fifth segment a median transverse spot, and a dot on each side; venter usually with narrow apical bands on third to fifth segments, and spots on the second, sometimes some or all bands absent. Femora black except white apical spots, hind tibiæ mostly blackish, and front tibiæ with black behind; rest of legs pale yellowish; all densely white haired. Wings nearly hyaline, stigma and venation brownish yellow; third submarginal cell ends at about middle of lower edge of marginal cell. It is higher than broad and nearly twice as broad above as below.

Length 12 to 14 mm.

From Southern Pines, N. Car., June (Manee).

Dielis fulvopilosa, n. sp.—Black, densely clothed with long fulvous hair; the ocellar region, posterior slope of metanotum, most of pleura, and inner posterior side of femora mostly free of hairs. Abdomen with fulvous hair at tip of segments, very dense near tip; rest of surface with pale

yellow hair. Venter with fulvous hair at tips of basal segments, the apical third almost covered with fulvous hair. Tarsi yellow; tibial spurs yellow; basal abdominal segment with two transverse yellow spots behind, not quite touching. Second and third segments each with two large yellow spots nearly reaching base, and more widely separated in front than behind, and each rather notched on inner side. Pygidial area covered with short scale-like tanny hairs. Head and thorax coarsely punctate, but the lower part of metanotal slope smooth; abdomen with scattered finer punctures; venter more coarsely punctate, second ventral with a transverse smooth area. Posterior side of hind femora smooth, except punctate near base and a streak of punctures reaching toward the tip; tibial spurs long, slightly spatulate at tip; antennæ short, curved and heavy, basal joints punctate. Wings slightly smoky, the costal area fulvous and with fulvous hair; beyond stigma is a dark cloud.

Length 16 mm.

From Palmerlee, Arizona. Similar to *Elis limosa* Sauss., but the abdomen marked differently, and that species has sharp pointed spurs and more white hair on femora and venter.

TIPHIDÆ

Scoliphia, n. gen.—With the venation as in *Epomidiopteron* and *Paratiphia*; with marginal cells in female open, in male closed, first cubital cross-vein not reaching across; the first recurrent vein curved back above; stigma very small in both sexes. Mesonotum with a sulcus each side; tegulæ extremely long, twice as long as broad. Basal abdominal segment with a transverse carina, truncate in front; second ventral produced prominently in front. The large tegulæ and second ventral segment like *Epomidiopteron*; but the carina on basal segments like *Paratiphia*. In general appearance it is like *Epomidiopteron*.

Scoliphia spilota, n. sp.—♀ black; coarsely punctate; a white spot on each side of clypeus, on each humerus of pronotum, on mesopleura, a median spot on scutellum and postscutellum; spot on each side of basal three segments of abdomen, that on the second largest; sixth segment white across base; wings black, violaceous. Clypeus elevated, rounded below, a faint transverse furrow above the ocelli, head sparsely gray-haired, pronotum with anterior carina black-haired above, mesonotum smooth in middle, likewise on scutellum and postscutellum; latter with a pit each side. Metanotum with large basal area coarsely confluent punctate and

rugose; sides smooth except behind, posterior surface margined by a carina which is emarginate above, the enclosed area punctate only on the sides. Segments of abdomen with smooth posterior margins, first segment more coarsely punctate, apical segments with transverse median row of black hairs, black hairs on sides and on venter; second segment nearly as long as broad; ventral segments with apical margins also impunctate; legs with white hairs, tibial spurs two-thirds of metatarsus. Wings with second discoidal more than twice as long as broad, third cubital much longer than broad, receiving the second recurrent vein at the middle, second cubital longer than the first. Male similar to ♀; more slender and scutellar spots often absent; clypeus wholly white; basal area of metanotum with two submedian carinæ, the whole metanotum more hairy than in female. In the female the last dorsal segment is roundedly produced at tip, basal half before the row of bristles coarsely punctate, beyond extremely finely punctate. In the male the last dorsal segment is coarsely punctate, black-haired, a median carina on apical half; the curved apical spine lying in a groove of the tip and barely visible.

Length ♀ 20 mm., ♂ 16 mm.

From Palmerlee, Arizona (Biederman).

In markings this is close to *Epomidiopteron juli* of South America, but differs in markings from *E. elegantulum* as well as in sculpture and structure.

THYNNIDÆ

Glyptometopa eureka, n. sp.—Reddish yellow throughout; smooth, but with distinct, rather large, sparse punctures, and sparsely clothed with long white hair. Antennæ 12-jointed, no longer than width of head, first segment longest, punctate in front; practically no clypeus, the antennæ close down to the margin; mandibles long, broadest near tip where they are angulate on inner side and thence concave with a minute tooth to the acute tip. Head flat above, nearly twice as wide as long, a curved punctate groove on each temple, not fringed with hair; many punctures between eyes, a few on vertex behind. Pronotum three times as broad as long, but little punctured; the mesonotum shorter than pronotum, the pleura strongly produced in a vertical ridge fringed with erect white hairs. Metathorax about as long as the prothorax and mesothorax together, broadest behind where the sides are rounded, sparsely coarsely punctate all over, the posterior surface sloping. Abdomen as long as head and

thorax together, slender, second and third segments about of equal width, each segment with a bowed finely punctate transverse line before tip; the first segment more densely punctate especially on the sides than the others and with a dark spot on the side at tip, on lower sides with three straight carinæ from base toward this dark spot, the upper carina well separated from the others, which are close together and parallel; last dorsal segment elongate, triangular, convex, with a median ridge on apical part and a few punctures each side near tip. A distinct bilobed process between the middle coxæ; legs short, middle and hind tibiæ spinulose on the outer sides, the spurs long, tarsi slender.

Length 12 mm.

From Palmerlee, Arizona, Sept. (Biederman).

Differs from type in larger size, in more punctate body, much broader head (compared with length), etc. This is the third Thynnid described from north of Mexico.

SAPYGIDÆ

Eusapyga carolina, n. sp.—♂ black; a transverse curved band on margin of clypeus, a large transverse spot above antennæ with a median upper projection, the blister each side by upper part of eye, and a stripe each side on the scape, yellow. Thorax with an interrupted band on front of pronotum, a band behind, two spots on the scutellum, two on the post-scutellum, a large spot on mesopleura and a rather smaller one on meta-pleura, yellow. Abdomen with a large spot each side on basal segment, two dots near middle of hind margin, second segment with broad, straight band over rather more than apical half, third with dot in middle near hind margin, fourth and fifth with narrow undulate bands, yellow. Venter black, with lateral yellow spots on second to fifth segments, growing smaller behind. Legs yellow, femora and coxæ mostly black, middle coxæ mostly yellow. Wings fumose, very dark in anterior part, stigma yellow. Body clothed with short, dense, mostly white hairs, head and thorax densely coarsely punctate. Clypeus with a minute tooth each side near middle on lower margin; the posterior pair of bosses on vertex are larger than the others; abdomen beyond first and second segment mostly smooth, the punctures on hind border of first segment rather large, this segment concave in front above.

Length 10 mm.

Southern Pines, N. Car., Aug. (Manee).

NEW GENERA OF NORTH AMERICAN LITHOBIIDÆ¹

BY RALPH V. CHAMBERLIN, UNIVERSITY OF PENNSYLVANIA, PHILADELPHIA.

(Continued from p. 178)

Genus *Gosibius*, gen. nov.

Anterior margin of the prosternum wide. Teeth, 2 + 2; small, the line of apices clearly recurved; ectal spines springing from a rounded nodule, long and slender, being much more slender than the teeth, but stouter than the bristles.

Antennæ long, the articles all long and slenderly cylindrical.

Coxal pores circular, uniseriate.

In the known species the last four pairs of coxæ are armed laterally. The penult legs bear two or three claws and the anal one or two. In both males and females the anal legs are armed dorsally with 1,0,3,2,2 spines, as are also the penult. Characteristic also of this genus is the presence on the tibiæ of most of the legs (e.g., the 5th to 12th pairs), of three ventral spines, as against but two in the related genera. The posterior legs are short and slender, with the prefemur and femur, and also sometimes the tibia, of anal pair more or less longitudinally furrowed above: in the male the penult legs always unmodified, and the anal legs also unmodified or with the femur alone modified, being then widened and complanate and more distinctly furrowed dorsally.

Gonopods of female nearly as in related genera, the claw being large and entire and the first article conspicuously excavated on mesal side of base, which side is also strongly chitinized. Basal spines, 2 + 2 or 3 + 3.

The species of this genus are less strongly narrowed cephalad than those of *Arenobius*, and the first plate is nearly as wide as or wider than the third.

Type.—*G. paucidens* (Wood).

Distribution.—Southern California, etc.

In addition to the type only one species, *G. monicus*, Chamb., is at present known, with certainty, though mutilated specimens from Los Angeles seem to represent a second.

1. Owing to a mistake of our own, the several new species of *Arenobius*, to have been described below, have been published elsewhere by Mr. Chamberlin. We regret the awkward division of the article which our error has necessitated.—[EDITOR.

A NEW PALÆARCTIC *GERANOMYIA* (TIPULIDÆ,
DIPTERA).BY C. P. ALEXANDER AND M. D. LEONARD, ITHACA, N. Y.¹

The following species is described from material sent to the authors by Prof. Dr. M. Bezzi. It was received by him from a correspondent in Ile Djerba, off the northern coast of Africa. Our thanks are due to Dr. Bezzi, and we take pleasure in dedicating this interesting species to him.

Geranomyia bezzii, sp. n.

Male (alcoholic). Colour light yellow; proboscis with a brown subapical band; thoracic dorsum with four longitudinal brown stripes; pleuræ with a few dark brown spots. Wings hyaline with four rather indistinct spots.

Length, 7.2-7.5 mm.; wing, 6.3-6.4 mm.; head, total, 2.2 mm.; thorax, 1.7 mm.; hind femora, 5 mm.

Head: Proboscis light yellow, with a conspicuous, brown, subapical band; palpi brown; antennæ yellow. Front, vertex and occiput light brownish yellow.

Thorax: Ground colour yellow; dorsum with two median and two lateral brown stripes. Mesothoracic præscutum pale yellow, with two brown longitudinal bands, a little wider than the dividing median line, these bands darker on the outer margin; they begin near the cephalic margin of the sclerite and continue caudad, fading out at about two-thirds the length of the sclerite. Just cephalad of the end of the median stripes begin the dark brown lateral stripes; on the præscutum they are arcuated, continuing back onto the scutum, where they are also broader; end of the scutellum darker brown on either side of the pale median line; caudal edge of the postnotum dark brown. Pleuræ concolorous with the dorsum, lateral margin of the mesothoracic præscutum dark brownish black, most intense on the margin of the sclerite; an intense brown semilunar mark on the pronotal pleuræ, midway between the anterior coxæ and the dark mark on the edge of the mesothoracic præscutum; an irregular, interrogation-like mark below the wing root; ventral portion of the mesothoracic episternum and sternum brown. Halteres light yellow, knob clear yellow. Legs light brownish yellow, tips of the segments not appreciably darker.

Abdomen yellow, with a brown mark on the ventral edge of the tergites, the first elongate, expanded over two segments; behind this there

1. Contribution from the Entomological Laboratory of Cornell University.
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are five marks on successive segments. On the dorsal edge of the sternites are six corresponding marks, rather less distinct than the tergal marks. Hypopygium light yellow, fleshy apical appendages almost white.

Wings: Hyaline or nearly so; veins light brownish yellow; very pale brown clouds around the base of R_s , around cross-vein r , and in the middle of cell Sc . Venation: Sc ending about opposite the origin of R_s ; Sc_2 slightly retracted proximad of the origin of R_s , about one-half the length



FIG. 6.—Wing of *Geranomyia bezzii*, sp. n.

of Sc_1 . R_s moderately long, about twice the length of the basal deflection of R_{4+5} ; cross-vein r at the tip of R_1 , which is abruptly upcurved beyond it, very indistinct; R_{2+3} and R_{4+5} arcuated and parallel; cross-vein $r-m$ short, pale; basal deflection of Cu_1 about equal to Cu_2 ; Cu_1 fusing M distad of the fork M .

Holotype, ♂, Ile Djerba, Tunis. (Museo Torino.)

Paratype, 3 ♂s, Ile Djerba, Tunis. (One in Museo Torino, two in Cornell University.)

Remarks: Some venational variation occurs in the paratypes. In some Sc_2 is exactly opposite the origin of R_s , and Sc_2 is only a little shorter than Sc_1 ; basal deflection of Cu_1 at the fork of M , or even slightly proximad of it. (See figure.) The relative length of Cu_2 and the basal deflection of Cu_1 varies somewhat, Cu_2 , however, being generally a little the shorter.

Key to the Palearctic Geranomyiæ:

1. Wings unspotted (No Palearctic species).
Wings spotted 2.
2. Thoracic dorsum without distinct stripes 3.
Thoracic dorsum with distinct stripes 4.
3. Antennæ and palpi yellowish brown; femora and tibiæ black at tip *atlantica* Woll.¹

1. Wollaston—Ann. Mag. Nat. Hist., ser. 3, I, p. 115 (as *Limnobia*), (1858).

- Antennæ and palpi black; femora and tibiæ not black at tip..... *canariensis* Bergr.²
4. Thoracic dorsum with two dark stripes..... *bivittata* Becker.³
- Thoracic dorsum with more than two dark stripes..... 5.
5. Costal margin of wings with six large equidistant brown spots..... *caloptera* Mik.⁴
- Costal margin of wings with four spots..... 6.
6. General colour yellowish brown; proboscis unicolorous..... *unicolor* Hal.⁵
- General colour light yellow; proboscis light yellow, with a dark subapical band..... *bezzii*, sp. n.

This key is based entirely on the published description of the species hitherto proposed. Some of these descriptions are very insufficient, for example, those of *atlantica* Wollaston and *unicolor* Haliday. One, *maculipennis* Curtis,⁶ is so brief and unsatisfactory that we have not attempted to include it in the above key. The complete description reads as follows: "Rather larger than *G. unicolor*, and is of a lurid ochre, the wings tinged with the same colour. It may be merely a variety, differing principally in colour, arising possibly from age.

Whether or not *Aporosa* Macq. (1838), in which Enderlein has placed *maculipennis* Macq. (= *canariensis* Berg.) and *vicina* Macq., is distinct from *Geranomyia* is uncertain. The character of a radial cross-vein should be sufficient to distinguish this group of species from the typical *Geranomyia* group. Enderlein⁷ states that *vicina* has but one marginal cell; however, Macquart (Diptères Exotiques, V, 1, pt. 1, p. 70), states clearly that there are two marginal cells. It is doubtful whether *vicina* is a *Geranomyia*; the statement of "rostre un peu alongé" being quite insufficient to give it a position in the genus *Geranomyia*.

Acknowledgements are made to Mr. Frederick Knab for his kindness in supplying a reference not otherwise obtainable.

The drawing of the wing was made by means of the projection microscope in the Entomological Laboratory.

2. Macquart—Diptères Exotiques, Vol. I, pt. 1, p. 63 (as *Aporosa maculipennis*) (1838); changed to *canariensis* by Bergroth, Wiener Entomol. Zeitung, Vol. 8, p. 118 (1889).

3. Becker—Berlin Mitt. Zoöl. Mus., Vol. 4, p. 187 (1908).

4. Mik—Verhandlungen Zoöl.-Bot. Gesellschaft Wien., Vol. 14, p. 791 (1864), as *maculipennis*, n. sp.; changed to *caloptera* Mik, Verh. Zoöl.-Bot. Gesellschaft Wien., Vol. 17, p. 423 (1867).

5. Haliday—Entomological Magazine, Vol. 1, p. 155 (1833); Curtis, Brit. Entomol., Vol. 12, p. 573 (excellent coloured figure); Macquart, Suit. à Buffon, Vol. 2, p. 652 (1835).

6. Curtis—Brit. Entomol., Vol. 12, p. 573 (1835).

7. Enderlein, G.—Zoologische Jahrbücher, Vol. 32 part 1, p. 79, 80 (1912).

DRAGON FLIES COLLECTED AT POINT PELEE AND PELEE ISLAND, ONTARIO, IN THE SUMMERS OF 1910 AND 1911.

BY F. M. ROOT, OBERLIN, OHIO.

- Lestes unguiculatus* Hagen.—Point Pelee. One specimen.
- Lestes forcipatus* Rambur.—Pelee Island. Very common.
- Lestes vigilax* Hagen.—Point Pelee. Common around ponds.
- Enallagma carunculatum* Morse.—Pt. Pelee. Fairly common near ponds.
- Enallagma pollutum* Hagen.—Pt. Pelee. Fairly common near ponds.
- Ischnura verticalis* Say.—Pt. Pelee and Pelee Island. Common.
- Gomphus vastus* Walsh.—Pelee Island. Five specimens taken near woods.
- Anax junius* Drury.—Pt. Pelee and Pelee Island. Common. (See note at end.)
- Æschna clepsydra* Say.—Pelee Island. One specimen taken.
- Æschna constricta* Say.—Pt. Pelee and Pelee Island. Fairly common. (See note.)
- Epicordulia princeps* Hagen.—Pt. Pelee. Fairly common about large ponds.
- Pantala hymenæa* Say.—Pelee Island. One taken, others seen. (See note.)
- Tramea carolina* Linné.—Pt. Pelee. Rare. (See note.)
- Tramea lacerata* Hagen.—Pt. Pelee and Pelee Island. Common. (See note.)
- Celithemis eponina* Drury.—Pt. Pelee. Common near ponds.
- Celithemis elisa* Hagen.—Pt. Pelee. Rare.
- Leucorrhinia intacta* Hagen.—Pelee Island. Common at swamps.
- Sympetrum rubicundulum* Say.—Pelee Island and Pt. Pelee. Fairly common.
- Sympetrum vicinum* Hagen.—Pelee Island and Pt. Pelee. Very common. (See note.)
- Sympetrum corruptum* Hagen.—Pt. Pelee. Rare. (See note.)
- Erythemis simplicicollis* Say.—Pt. Pelee and Pelee Island. Common near ponds. (See note.)
- Pachydiplax longipennis* Burm.—Pt. Pelee and Pelee Island. Common. (See note.)
- Libellula basalis* Say.—Pt. Pelee and Pelee Island. Fairly common near ponds.

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Libellula incesta Hagen.—Pt. Pelee. Common at the ponds.

Libellula pulchella Drury.—Pt. Pelee and Pelee Island. Common.
(See note.)

Plathemis lydia Drury.—Pt. Pelee. Rare, but seen regularly.

NOTE.—On Pelee Island in 1910, about the middle of August, or a little later, there were three days when dragon-flies of species hitherto not seen in large numbers swarmed around the end of the Point. Presumably they were migrating. The principal species concerned were *Anax junius*, *Æschna constricta*, *Tramea lacerata* and *Pantala hymenaea*.

On Point Pelee in 1911, about the middle of August, the deer-flies became suddenly much more numerous, and on August 17 great numbers of dragon-flies appeared (perhaps following the deer-flies). The great bulk of these were general *Anax junius* (with reddish-purple abdomens), and towards evening they clustered so thickly on the cedars near the end of the Point that eight or ten could be captured any time by a single sweep of the net. With them were large numbers of *Sympetrum vicinum* (which preferred the low junipers to the cedars) and smaller numbers of *Tramea lacerata* and *Æschna constricta*. There were also a few each of *Tramea carolina*, *Sympetrum corruptum*, *Erythemis simplicicollis*, *Pachydiplax longipennis* and *Libellula pulchella* with the flocks. They remained until August 20.

THREE DAYS IN THE PINES OF YAPHANK. RECORDS OF CAPTURES OF HEMIPTERA HETEROPTERA.

BY J. R. DE LA TORRE BUENO, WHITE PLAINS, N. Y.

The name Yaphank (with the stress on the "hank") has a truly barbarous cadence. It is an interesting relic, one of the few remaining vestiges of the great Shinnecock tribe, once Lords of Long Island. The place that bears this cacophonous name is, indeed, one of the very few regions near New York and its teeming millions not utterly spoiled to the lover of nature by the "improvements" of modern progress as exemplified by its advance agents, the real estate dealers. Here and there in this land of sand and pines and scrub-oak, are still to be found ancient trees that stood when Hendrick Hudson first sailed into the Narrows. The present holders of the land are descendants of original Royal Patentees, and they own great stretches of wilderness. So it comes about that insect life is abundant in numbers and rich in species, not the least among them being the

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Hemiptera. The chief collecting grounds are about two miles from the railroad station and the vegetation consists mainly of pine, scrub oak and along the roads, maple trees, and the weeds and shrubs common to this latitude.

Toward the end of September, 1911, I had the good fortune to spend three days there with Mr. G. B. Engelhardt, who was guide, philosopher and friend. We arrived about 11 a.m. the morning of the 23rd, and indulged in a little collecting before the noon-day meal, after which we went out and did some sweeping and beating with good results, one being the capture of a new *Corizus*, described elsewhere. In the evening, between 8 and 10, Engelhardt went sugaring, carrying a trap lantern, while I swept. The following day was rainy in the morning, but as soon as it cleared up sufficiently we took our way to the Carman River, a clear, shallow stream flowing over a bed of sand where a little dredging was done, which yielded among other things one specimen of *Belostoma lutarium* Stal. (taken by Engelhardt), which is the farthest Northern authentic record for the species known to me. In the afternoon sweeping and beating made up the programme, in the brush and trees about a cranberry bog and in the grasses growing in it. Night sweeping gave good results, no less than 16 species being taken in clearings in the woods, while *Ozophora picturata* Say flew to light, its great agility making it hard to catch. The morning of the 25th dawned grey and muggy, the day finally clearing in the late afternoon. Sunshine or rain being one to the waterbugs, Engelhardt and I betook ourselves to the lake, where wingless *Rheumatobates rileyi* Bergr. was far from uncommon, but only one *Trepobates pictus* H. S. was seen, although I was out in a boat looking for it. Here, in the floating duck-weed and algæ I secured what seems to be a new species of *Microvelia*, in goodly numbers. On the way to and from the lake sweeping and beating were done with good results, and this part of the programme repeated in the afternoon yielded among other things, no less than 11 specimens of the new *Corizus*, 2 being fully winged, the other brachypterous. In the evening our stay was wound up by Engelhardt visiting his sugared trees, while I watched the trap light and caught two *Ozophora*. Altogether, in the three days, in spite of unfavourable weather, we got between us some 300 specimens and 82 species of Hemiptera. The identified species are listed here-

after, with appropriate comment. Many of these are recorded from Long Island for the first time, and some of the other records are unusual or remarkable.

Apateticus (= *Podisus*) *cynicus* Say.—Was taken at sugar in the evening—a most unusual manner.

Apateticus maculiventris Say.

Apateticus serieventris Uhler.

Apateticus modestus Dallas.

Apateticus placidus Uhler.

Halcostethus (= *Peribalus* M. & R.) *limbolaris* Stal.

Trichopepla semivittata Say.

Euschistus euschistoides Voll. (= *fissilis* Uhler.)

Euschistus variolarius P. B.

Thyanta custator Fabr.

Nezara hilaris Say.—At sugar, taken by Mr. Engelhardt.

Dendrocoris humeralis Uhler.

Brochymena arborea Say.

Tetyra bipunctata Fabr.—Was taken at light.

Aradus shermani Heid.—This species was taken under bark of dead pine tree, a few adults and a number of nymphs in various stages. Apparently first notice other than the type locality in Pennsylvania.

Aradus cinnamomeus Panz.

Mezira granulata Say.

Corynocoris typhaeus Fabricius.—Swept from weeds in a dry field. This appears to be the preferred habitat of this species.

Alydus eurinus Say.

Alydus pilosulus H. S.

Megalotomus 5-spinosus Say.—Common on false indigo (*Baptisia tinctoria*). Some specimens were also swept at night.

Harmostes reflexulus Say.

Corizus lateralis Say.

Corizus hirtus Bueno.—In a sandy spot, in short grasses, by sweeping.

Jalysus spinosus Say.

Lygaeus kalmii Fabr.

Nysius providus Uhler.—Swept and taken at light.

Nysius thymi Wolff.

Ischnorhynchus geminatus Say.

Geocoris piceus Say.

- Phlegyas abbreviata* Uhler.—One long-winged specimen was swept.
- Crophius discnotus* Say.—Beaten from oak.
- Ligyrocoris diffusus* Uhler.
- Pamera basalis* Dallas.
- Antilocoris* (= *Cligenes*) *pilosulus* Uhler.—Taken by sweeping grasses in dry cranberry bog.
- Pseudocnemodus bruneri* Barber.—Two long-winged specimens were swept, one by daylight, the other at night. This is a pretty common and widespread species.
- Carpilis ferruginea* Stal.—Two specimens taken by sweeping in a marsh. This species has apparently not been recognized since Stal described it in 1874, in En. IV, pp. 144, 153. This is a notable addition to our fauna, and serves to show how little is known of the Hemiptera of any given region.
- Ozophora picturata* Uhler.—A number of specimens were taken at light and one was beaten from oak. This is a most agile species.
- Drymus unus* Say.
- Corythuca juglandis* Fitch.—Taken by beating.
- Corythuca crataegi* Morrill.—Taken by beating.
- Corythuca pergandei* Heidemann.
- Physatocheila plexa* Say.—Beaten from oak.
- Reduviolus sordidus* Rent.
- Reduviolus ferus* Linné.
- Mesovelgia bisignata* Uhler.
- Rhagovelia obesa* Uhler.
- Microvelia americana* Uhler.—There are also 3 seemingly undescribed *Microveliae*.
- Gerris marginatus* Say.
- Gerris remigis* Say.
- Trepobates pictus* H. S.
- Rheumatobates rileyi* Bergroth.—Abundant on the lake.
- Næogus* (= *Hebrus* Curtis) *concinuus* Uhl.—Quite abundant on the damp edges of a cranberry bog.
- Pygolampis*, sp.—Nymph.
- Pseliopus* (= *Milyas*) *cinctus* Fab.—Beaten and swept. Found mating.
- Zelus luridus* Stal.—Nymphs.
- Fitchia aptera* Stal.—One large fully-winged female was swept in a little meadow.

Siena diadema Fab.

Sinea spinipes H. S.—Beaten from trees. Crandell states that this species ranges over the southern and central parts of the United States. It is now for the first time recorded from the northeastern part. It is a most interesting addition to the fauna of N. Y.

Ranatra americana Mont. (= *f. denta* Uhl., Bno. et auctt).

Triphleps insidiosus Say.

Piezostethus sp.—Beaten from pine, in company with *Aradus cin-namomeus*.

Cardiastethus sp.—One specimen only of this small species was beaten from pine.

Gelastocoris sp.—Nymphs in about 2nd instar were common, hiding in crevices in the debris at the shores of the cranberry bog. No adults were noted, whence it may be inferred they hibernate as nymphs.

Pelocoris femaratus P. B.

Belostoma flumineum Say.

Belostoma lutarium Stal.—The only specimen authentically northern of which I have any knowledge. This is a notable addition to the fauna of New York.

Corixa.—Two unidentified species.

Notonecta undulata Say.

Notonecta variabilis Filber.

Buena elegans Filb.

Plea striola Filb.—As usual, in water weeds.

There are in addition six species of Capsids not identified.

LEPIDOPTERA FROM YUKON TERRITORY.

BY ALBERT F. WINN, WESTMOUNT, QUE.

Through the kindness of Mr. Lachlan Gibb, I have had the opportunity of studying a collection of butterflies and moths taken during the summer of 1910 at, or near, Dawson City, Y. T. A smaller collection was made in 1911 but butterflies must have been scarce last year, the collector having been out on 17 days and capturing but 54 specimens in all. As but little has been published in this magazine on the insect fauna of this northern part of our country, the list which follows, covering both seasons' captures may be of interest to entomologists studying distribution and particularly to those engaged on the preparation of the list of Canadian Insects.

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Papilio turnus Linn.—June 4th to 22nd, a number of specimens all small in size, average expanse $3\frac{1}{4}$ inches, but markings exactly the same as in those found about Montreal.

Papilio machaon var. *alaska* Scud.—June 1912, one specimen.

Pontia napi var. *hulda* Edw.—May 15 to July 4, apparently the commonest butterfly about Dawson. Some of the females are darkly suffused and approach var. *heyoniæ*.

Pontia nelsoni Edw.—July 17th, one specimen only.

Euchlœ ausonides Bdv.—June 15th to July 2nd, several specimens.

Colias chippewa Edw.—June 20th to July 17th.

Colias skinneri Barnes.—July 14th to August 1st, three ♂, one ♀.

Argynnis electa Edw.—July 20th, one ♂ in battered condition.

Argynnis frigga var. *saga* Kaden.—June 15th to July 7th, several specimens. Apparently a common species. One specimen has, in the black portion at base of pormiaries, a circular fulvous spot with two black dots.

Phyciodes pratensis Behr.—July 4th to 15th, three specimens.

Vanessa milberti Godt.—Several specimens, May 20th to June 18th, hibernated, fresh specimens July 17th to August 8th; exactly similar to those found in Eastern Canada.

Vanessa antiopa Linn.—Many hibernated specimens May 15th to June 26th; those taken after June 15th are in fragmentary condition. Fresh specimens July 27th to August 8th. Most of the specimens have the dark portion of the wings beneath marked with yellowish transverse striæ, in some forming a central band nearly as wide and distinct as outer border.

Coenonympha kodiak var. *yukonensis* Holland.—Three specimens, June 25th to July 2nd.

Erebia discoidalis Kirby.—Three specimens, June 15th to 20th.

Erebia disa var. *mancinus* Doubl.-Hew.—One specimen, rather broken, June 27th.

Erebia epipsodea Butl.—One specimen, June 22nd.

Eneis jutta var. *alaskensis* Holland.—A number of specimens June 18th to July 2nd.

Chrysophanus helleoides Bdv.—One female Aug. 5th, the latest date on any of the species of butterfly received. The specimen has a yellowish washed-out appearance.

Lycæna sapiroilus Bdv.—June 20th to 29th, several.

- Lycæna lygdamus* Doubl.—Several specimens more or less worn; 19th to 26th June.
- Lycæna rustica* Edw.—One ♂, July 22nd.
- Lycæna lotis* Lintn.—Several specimens, July 7th to 16th.
- Lycæna pseudargiolus* spring from *marginata* Edw.—One ♀ specimen much broken, June 19th.
- Lycæna pseudargiolus*, spring from *lucia*, Kirby.—The commonest form in the North, June 10th to 26th.
- Carterocephalus palæmon* Dallas—One specimen, June 25th.
- Thanaos persius* Scud.—One specimen, June 23rd.
- Deilephila galii* Rott.—One specimen, July.
- Rhynchagrotis rufipectus* Marr.—Two specimens, July 22nd.
- Noctua baja* Linn.—Two specimens, July 12th to 22nd.
- Noctua clandestina* Harr.—One specimen, July 8th.
- Leucania yuconensis* Hamps.—Eight specimens mostly rubbed, July 1st to 15th.
- Leucania commoides* Guen.—One specimen June 28th.
- Falcaria bilineata* Pack.—One specimen June 18th.
- Euchæca albovittata* Hübn.—One specimen June 23rd.
- Eustroma testata* Linn.—One, Aug. 7th.
- Eustroma propulsata* Walk.—Several July 8th to 20th.
- Eustroma nubilata* Pack.—Four specimens July 8th to 14th.
- Eustroma triangulata* Pack.—Aug 2nd to 11th, several.
- Keolexia scylina* Hulst.—Apparently the commonest moth, many specimens July 26th to Aug. 8th.
- Rheumaptera hastata* Linn.—June 20th to July 2nd. As usual with this species in the west, most of the specimens are much marked with white.
- Rheumaptera sociata* Bork.—Four specimens, June 28th to July 2nd. The white band on fore-wings is much more even and contrasting than in Eastern specimens.
- Rheumaptera luctuata* D. & S.—Several June 15th to 29th, very variable.
- Mesoleuca silaceata* Hübn.—Six specimens, July 16th to 28th.
- Larentia multiferata* Walk.—Several June 15th to 28th, all badly rubbed.
- Hydriomena furcata* var. 5-fasciata Pack.—Ten specimens, July 15th to 22nd.
- Cænocalpe magnoliata* Guen.—One specimen, June 20th.
- Gypsochroa designata* Haw.—Numerous specimens, June 15th to 28th.

Xanthorhoe convallaria Guen.—Twenty specimens, July 2nd to 20th.
A common species.

Xanthorhoe ferrugata Clerck.—Six specimens, July 19th to 26th.

Cosymbia lumenaria Hübn.—One specimen, June 20th.

Leptomis frigidaria Moeschl.—Six specimens, June 29th to July 15th.

Eufidonia notataria Walk.—One specimen, June 23rd.

Sciagraphia granitata Guen.—One specimen, July 20th.

Sciagraphia denticulata Grote.—One specimen, June 19th.

Diastictis bicolorata Fabr.—Three specimens, July 15th to 22nd.

Diastictis inceptaria Walk.—Two specimens, July 12th; seem to agree with *argillacearia* Pack, which is considered a synonym of *inceptaria* Walk.

Diastictis subcessaria Walk.—One specimen, July 14th.

Gladela julia Hulst.—Three specimens, July 14th to 22nd.

Sicya macularia Harr.—One specimen, July 26th.

Metrocampa perlata Guen.—Eight specimens, June 30th to July 27th.

NEW NOCTUID SPECIES.

BY WM. BARNES, M.D., AND J. MCDUNNOUGH, PH.D., DECATUR, ILL.

Fotella olivia, sp. nov.

♀.—Head and thorax pale ochreous, more or less heavily sprinkled with dark gray, abdomen ochreous, untufted; primaries dark gray-brown, considerably sprinkled with pale ochreous scales, giving a general rough and mottled appearance; the ochreous scaling is often such that a basal dash of the ground colour is apparent, extending to below orbicular; t. a. and t. p. lines represented by a small dark patch on costa, the latter line at times being visible across wing as a row of dark dots bent inward in submedian fold; orbicular and reniform two small and rather diffuse whitish patches, not clearly defined, former with or without central dark dot; terminal area narrow, ochreous, defining, in contradistinction to dark subterminal space, the s. t. line, which is very irregular, angled outwardly below costa to nearly terminal border and slightly bent inward opposite cell and in submedian fold; terminal space broadest at costa; terminal row of dark dots; fringes dark, slightly dotted with ochreous. Secondaries dull white, slightly smoky outwardly. Beneath shiny white, with faint sprinkling of brown scales. Expanse 25 mm.

Habitat.—La Puerta Valley, San Diego Co., Calif. (G. H. Field, July.) Five ♀s. Type coll. Barnes. Cotype with Mr. Field.

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With the exception of the depth of ground colour of primaries, all the specimens are constant in markings. The species possesses a small frontal navel-like tubercle, and agrees generically with *fragosa* Grt., which we recently redescribed as *Hadenella cervoides*, differing from this species in the more mottled appearance, the pale terminal area and better defined orbicular. We place it in *Fotella*, as it seems to bear considerable resemblance to *notalis* Grt., the type of the genus; it is, however, to judge by the description, much smaller and has the orbicular present.

Phyllophila aleptivoides, sp. nov.

♀.—Thorax smoothly covered with flat gray and white scales; abdomen ochreous, primaries dark gray, mingled with white and ochreous; basal portion of costa broadly white; lower basal portion of wing between submedian fold and inner margin extending to t. a. line, ochreous; a broad wedge-shaped patch of dark gray extends obliquely inward from costa to submedian fold, broadest on costa and bordered outwardly by t. a. line; this latter very obscure, geminate; median area dark gray, sprinkled with white along costa and with ordinary spots prominent, white, ringed with black; orbicular round, with dark central dot; reniform constricted centrally, shaped like figure 8, with central dark dots in upper and lower halves; claviform oval, pure white, about same size as orbicular; between orbicular and reniform an ochreous patch; t. p. line geminate, indistinct at costa, inwardly oblique and semiparallel to outer margin; subterminal space ochreous, with the exception of a dark apical dash extending inward to t. p. line; terminal space narrow, dark gray, with terminal row of dots edged inwardly with white; fringes dusky. Secondaries smoky with whitish fringes.

♂.—Our single specimen differs considerably from the ♀, in that the whole median area is suffused with white, obscuring the three spots and leaving merely the two dark central dots of reniform visible; the dark costal patch near base of wing becomes on this account much more prominent; the secondaries are paler than in the ♀.

Beneath in both sexes dull white, immaculate. Expanse 19 mm.

Habitat.—La Puerta Valley, San Diego Co., Cal. (G. H. Field, July). One ♂, one ♀.

The species is distinctly quadrified in venation and would fall, according to Hampson (Cat. Lep. Het., Vol. X), close to the genus *Phyllophila* Gn., which as yet has no North American representatives. The front

of our species has a strong rounded frontal protuberance, the surface of which is roughened by numerous minute conical tubercles; the antennæ in both sexes are almost simple, and there are apparently no tufts of hair on any of the abdominal segments; in this latter respect it differs from *Phyllophia*, which possesses a dorsal crest at base, but we hesitate to separate the species on such a minor point of difference.

The species, especially the ♀, has considerable superficial resemblance to *Aleptina inca* Dyar. The ♂ type is with Mr. G. H. Field, the ♀ type in coll. Barnes.

Eustrotia bifasciata, sp. nov.

Head, thorax and abdomen white; primaries white, with sub-basal and subterminal areas dark brown, giving the impression of two irregular bands crossing the wing; base of wing narrowly white; broad dark sub-basal band bordered outwardly by geminate t. a. line, which is filled with ochreous and somewhat irregular in outline; about centre of costa is a small dark patch, and a black dot at end of cell represents reniform; t. p. line geminate, partially filled with ochreous, irregular, bent strongly inward in submedian fold; s. t. line defined by difference between dark subterminal and pale terminal spaces, very irregular, bent inward and closely approaching t. p. line opposite cell, almost touching outer margin at vein M_2 and again incurved above anal angle; slight dark terminal line; fringes white, with faint dark checkerings. Secondaries, basal half white; outer portion smoky brown with pale fringes. Beneath white, with a broad dark border to both wings. Expanse 20.5 mm.

Habitat.—La Puerta Valley, San Diego Co., Cal. (G. H. Fields, July.) Three ♂s.

Type coll. Barnes. Cotype with Mr. Field.

All three specimens are rather worn, and we have been unable to determine whether thoracic and abdominal tufts are present or not. As the venation is markedly quadrifid and the general appearance slight, we place the species for the present in *Eustrotia*. We know of no other species to which it bears much resemblance.

CORRECTION.

In our recent paper on North American Lepidoptera the description of *Diastictis pallipennata* (Vol. XLIV, p. 126), was drawn up from a ♀, and not a ♂, as stated.

J. M. McDUNNOUGH.

NOTES ON THE APHID GENUS, *ERIOSOMA* LEACH.

BY H. F. WILSON, OREGON AGRICULTURAL COLLEGE.

Eriosoma lanigera versus *Schizoneura lanigera*.

At various times since the description and naming of Housmann's *Aphis lanigera* different authors have erected generic names for this species.

There seems to be no doubt of the validity of the specific name for the species of *Aphis* originally described by Housmann as *Aphis lanigera*, but the generic names erected for this insect have been more or less in doubt.

The author of this paper has made a thorough investigation of all the known literature, and concludes that *Eriosoma* was erected and definitely placed with this species, and that *Schizoneura* and other later names are synonymic as far as this species is concerned. Samouelle is generally supposed to have originated the genus in his compendium of useful information, but such is not the case. In 1817 Sir Oswald Mosely gave a paper before the Horticultural Society of London, entitled, "*Aphis lanigera* or American Blight." At the end of this article a note is appended by Dr. William Elford Leach, in which he mentions *Aphis lanigera* of Housmann, and concluding that a new genus should be made for this species he proposes the name *Eriosoma*. The note appended to the original paper reads as follows: "Note on the Insect, by William Elford Leach, M.D., F.R.S., etc. The animal of which so accurate an account is given in the preceding paper is the *Aphis lanigera* of Housmann; it is described by the author in Illiger's Magazine for 1802, page 440, and is referable to Latreille's third division of the genus *Aphis*, but which division I consider to constitute a peculiar genus distinct from *Aphis*, and which I have named *Eriosoma*."

Eriosoma has its body covered by woolly matter; its abdomen has neither horns nor tubercles, and its antennæ are short. The body of *Aphis* is naked, its antennæ are long and setaceous, and the abdomen is furnished with a tubercle or horn-like process on each side.

Although this paper was read in 1817, it evidently was not published until 1818, in the latter half of that year. The entire article is printed in Volume III, Trans. Hort. Society, London, 1820, pages 54 to 61. The preface to this volume is dated January, 1820, but reads, "When the Society completed the second volume of their Transactions in March, 1818, arrangements were made to insure, if possible, the publication of

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portions of the succeeding volumes, at less distant periods than had hitherto been done. They flattered themselves with the hope of being able to complete a volume every second year, by the publication of one-fourth part at intervals of six months, and it is very satisfactory that, so far, that hope has been realized."

The author takes this as sufficient proof to definitely establish this generic name.

ENTOMOLOGICAL SOCIETY OF ONTARIO.

Meetings of the Entomological Society of Ontario were held during the winter months of 1911 and 1912 in the Biological Lecture Room of the Ontario Agricultural College. Before Christmas the meetings were held on alternate Thursday afternoons and after New Years joint meetings were held with the Wellington Field Naturalists Club, weekly. The meetings were well attended by the staff and students of the Ontario Agricultural College and interested citizens of Guelph. The first meeting was devoted to observations by the various members, and during the rest of the season the following papers were read in order.

Observations in Algonquin Park.—Prof. J. E. Howitt.

Foul Brood of Bees.—Mr. G. L. Jarvis.

Ants.—Mr. W. H. Wright.

The Nursery Question.—Mr. L. Caesar.

Mosquitoes.—Mr. C. A. Good.

The Economic Importance of *Calosoma sycophanta*.—Mr. J. Noble.

Insect Intruders in Indian Homes.—Mr. G. J. Spencer.

Birds in Relation to Insects.—Mr. E. N. Calvert.

Fall Collecting of Coleoptera.—Mr. A. W. Baker.

Insectivorous Birds.—Prof. T. D. Jarvis.

NOTE ON GEOPHAGUS.

Geophagus as a name for a genus of the Geophilidea (Attems, 1897), is preoccupied by *Geophagus* in Pisces (Hæckel, 1840), and must accordingly be replaced. *Sogophagus* nom. nov., may be substituted.

R. V. CHAMBERLIN.

During July and August communications for the Editor may be addressed to the Biological Station, Go Home Bay, via Penetang, Ont.

NOTES ON THE LIFE HISTORY OF *ESTIGMENE PRIMA*
SLOSSON.

BY ALBERT F. WINN, WESTMOUNT, Q.

My acquaintance with this "many-spotted ermine moth" was first made on June 12, 1897, when Mr. Dwight Brainerd and I visited the entomologically famous Gomin Swamp near Quebec city, under the guidance of Rev. Dr. Fyles, in search of *Æneis jutta* and other Lepidoptera. In one particularly moist spot my eye was attracted downwards and observed a pair of these moths in coitu. My first impression was that they must be a northern variety of *Spilosoma congrua* (*antigone*) with the black spottings exaggerated. The female was kept alive and laid a good supply of eggs which duly hatched, but through illness I was unable to attend to their needs. Mr. Lyman afterwards took the moths to Washington where Dr. Dyar determined them as *E. prima* Slosson. Figures of this species are given in this magazine, Vol. XXXII, pl. 4, figs. 9 & 10.

No further specimens came my way till June 4th, 1910, when at Shawbridge, Que., in the Laurentian Mts. about 40 miles north of Montreal I captured a battered specimen flying, or rather driven by the cold high wind. It was found to be a female and was therefore boxed for eggs. Three were laid almost immediately. Next day, June 5th, a batch of 45 was deposited; on the 6th, 27; on the 7th, 11; and on the 8th, 36. Total 122 eggs, all laid in daytime and arranged in irregular masses. The moth was then killed to preserve what little was left of it.

In order to have a better chance of breeding the larvæ I asked my friend Mr. Arthur Gibson of Ottawa to take half of the eggs, which he kindly consented to do. For some reason his little larvæ refused both plantain and dandelion, and of other foods offered they selected apple, but unfortunately soon died. I at once re-divided mine which were thriving on plantain and also gave about a dozen to Mr. Lyman who was just leaving on a trip to Europe. We all succeeded in rearing the caterpillars to full growth and into pupa, Mr. Lyman having considerable difficulty in obtaining a supply of plantain leaves in the beautifully kept lawns of England, but mine alone produced moths.

For various causes none of us kept a complete record of all the stages but for the following imperfect record I am indebted to both Mr. Gibson and Mr. Lyman for the notes they made which have been included with my own.

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Egg.—Similar to other eggs of this genus in colour and shape, being dome-shaped; .815 mm. wide, .65 mm. high; appearing smooth to naked eye, but under microscope distinctly pitted all over with depressions of irregular shape. Colour pale honey-yellow when laid, turning buff colour after two days and gradually becoming darker through orange shades till a day before hatching when they appear nearly black. Laid in clusters side by side, on under side of a leaf in confinement. First larva hatched June 14, leaving little of egg shell except the base; duration of egg stage 10 days.

Stage I.—Length 2.25 mm nearly cylindrical, head slightly larger. Head black, shining, cordate; mouth-parts yellowish. Body whitish before feeding turning greenish, with black tubercles from which arise black and gray hairs. Legs black; prolegs grayish. Fed readily on common plantain (*Plantago major*).

Stage II.—Length 4.5 mm. Not much change noted in appearance but colour darker with faint dorsal stripe.

Stage III.—Length 7 mm. Head black, body cylindrical, blackish with tufts of black and grayish hairs from the conspicuous black tubercles. Segments 2, 3 and 4 pale orange with black spots, 11 and 12 similar. A pale yellowish dorsal band from segment 5 to 10.

Stage IV.—Length 11 mm. Head black, mouth parts yellowish; body black with longitudinal stripes yellow, hairs black; legs and prolegs black.

Stage V.—Length 20 mm. No further notes taken.

Stage VI.—Mature larva (description by Mr. Arthur Gibson) "Length 38 mm. at rest, 45 mm. extended. Head 2.8 mm. wide, rounded, somewhat quadrate, conspicuously depressed at vertex, flattened in front, median suture pale, setæ dark brown, long and slender. Skin of body streaked and blotched with dark reddish brown. Dorsal stripe chrome-yellow, conspicuous, distinct on all segments, wider on abdominal ones. Tubercles jet black, each with a bunch of radiating stiff, barbed bristles mostly of uniform length. Tubercle I about one-half size of II; II larger than III; IV, V, VI, elongated. Bristles from tubercle I mostly silvery with a few black ones intermingled; from II, III and IV silvery and black in about equal numbers; from V and VI mostly silvery. Tubercle VII larger than VIII, bristles from these mostly black and short. An indefinite, broken yellow lateral line is also present, most apparent along upper edge of tubercle III. Spiracles

black, close in front of tubercle IV. Thoracic feet black, shiny, bearing short dark bristles; prolegs also black, claspers reddish, bristles dark."

The first of my larvæ began to make its cocoon on July 16th. Mr. Gibson's spun up on July 10th, July 11th and July 14th. Larval period in confinement 32 days; out of doors would probably be about 6 weeks.

Cocoon.—Oval, about 22 mm. long, 10 mm. wide; thinly made of brownish silk, in which the hairs from body are woven. The ends of many hairs project, giving the cocoon a spiny appearance. Some larvæ spun up between leaves, but the majority in corners of the boxes.

Pupa.—Length 18 mm., width 7 mm.; nearly black in colour inclined to dark crimson particularly on wing cases. Body closely punctured, thorax creased, spiracles pearly glistening. Cremaster short consisting of about 8 short stiff reddish capillate bristles.

The first moths emerged (in a cool cellar) on April 21st. The moth is doubtless single-brooded throughout its habitat, which seems to be limited to the northern part of Quebec and Ontario, westward to Winnipeg, Man.; and to the White Mts. of New Hampshire and the Adirondacks and Catskills of New York.

The larvæ are voracious feeders and never seem to stop eating day or night. When disturbed in their repast, or put upon a table for examination they are most active creatures. If a large plantain leaf or an arch made of a sheet of note paper be provided they lose no time in scurrying along to take refuge beneath it.

BOOK NOTICE

BUTTERFLY-HUNTING IN MANY LANDS. Notes of a Field Naturalist.
By George B. Longstaff, M. A., M. D., Oxon.; F. R. C. P., F. S. A.,
F. G. S. Longmans, Green and Co., London, New York, Bombay
and Calcutta. Price 21 s.

The writer of this volume has attempted a very difficult task—that of incorporating into a readable form the entomological diaries kept by him during many years of butterfly collecting in many lands. We think that, considering the difficulties presented by such an undertaking, he has been remarkably successful in carrying out his object, and we attribute this success largely to a marked literary sense and gift of narrative, of which he is the happy possessor. We fear, however, that

there are very few, even among entomologists, who will read the book from cover to cover; only such lepidopterists as are more or less familiar with the butterfly fauna of the entire world will find all of its chapters readable.

Dr. Longstaff's travels have taken him to India, Ceylon, China, Japan, Algeria, Egypt and the Soudan, South Africa, the West Indies, South America, Canada, Australia and New Zealand; so that he has enjoyed the somewhat unusual experience of having collected butterflies in every continent of the globe. His sojourn in Canada was limited to a rapid journey across the continent in 1904 on his return to England from the Orient and very little opportunity for collecting was had on the way, but in tropical countries Dr. Longstaff's experience has been wide and varied and he shows himself to be thoroughly familiar with butterfly life everywhere.

Many amusing anecdotes and interesting impressions of the various countries visited by the author, and of the customs of their inhabitants, are scattered through the volume, greatly helping to enliven it; while all that is of real scientific value is encompassed in the last chapter, entitled "Bionomic Notes". This chapter contains many interesting notes under the following headings: "The scents of butterflies"; "The coloured juice exuded by certain Lepidoptera"; "The tenacity of life of protected species"; "Butterflies bearing marks of the attacks of foes"; "Experimental evidence as to the palatability of butterflies"; "Mimics in the field deceiving man"; "Notes on the flight of sundry butterflies"; "Heliotropism"; "List and shadow"; "The inverted rest attitudes of *Lycænids* and some other butterflies"; "General remarks on rest attitude of butterflies"; "Cosmopolitan Lepidoptera"; "Seasonal dimorphism"; "The selection as resting-places of yellow leaves by yellow butterflies".

As a supplement translations by Ernest A. Elliott, F. Z. S., F. E. S., of a series of important papers by the late Fritz Müller on the scent-organs of Lepidoptera have been appended to the book, together with an introductory note by Prof. E. B. Poulton, by whose suggestion they were included.

The book, including the appendix and the very full index occupies 728 pages. It is illustrated by six good coloured plates, upon which many other insects besides butterflies are depicted, and 19 text figures. The appendix is also illustrated by nine lithographic plates.

Mailed July 15th, 1912.